Italy-U.S. Fish Trade, 1981-88

Introduction

Italy is the world's fourth largest importer of fishery products, surpassed only by Japan, the United States, and France. The value of Italy's fishery imports has more than doubled from $0.7 billion in 1981 to $1.8 billion in 1987. Imports now constitute a larger proportion of Italian consumption of fishery products than does the domestic catch. The latter has increased only gradually since 1981. Italian fishery exports have not kept pace with imports; therefore, the trade deficit in fishery products has increased from $0.6 billion in 1981 to $1.6 billion in 1987.

Although the United States ranks among the world's leading exporters of fishery products, its share of the Italian import market has traditionally been less than 1 percent. In 1988, however, U.S. fishery exports to Italy doubled in value compared with those in 1987 and trebled in quantity. On the other hand, U.S. fishery imports from Italy, never a significant share of the U.S. market, decreased from $4 million in the mid-1980's to only $3 million in 1988[1].

Background

Italy's fisheries sector was mostly an artisanal operation as late as the 1930's. After the widespread destruction during World War II, the fishing industry was rebuilt and modernized along with the rest of the country. Over the past 20 years, the modernization of the fishing industry has continued. The fleet has expanded appreciably since the 1960's: The number of engine-powered vessels has doubled, while the total engine power of the fleet has trebled. The fishing fleet is now the second largest in the European Community (EC) after Spain's. The majority of Italy's 20,000 vessels are trawlers under 50 gross registered tons (GRT), operating mostly in the Mediterranean and the Adriatic. Other types of vessels fishing in the Mediterranean are equipped with multiple gear, purse seines, or dredges (for harvesting bivalve mollusks). While the number of small vessels has increased in recent years, the number of larger high-seas vessels has declined from over 50 to about 30 vessels for reasons discussed below. The remaining high-seas vessels, each over 500 GRT, fish in the Atlantic and Indian Oceans.

Italian fishermen, like fishermen in other countries, faced two adverse international conditions in the 1970's: Increasing fuel prices and decreasing access to many traditional distant-water fisheries, following the implementation of 200-mile Exclusive Economic Zones (EEZ's). The loss of these distant-water fisheries severely affected fishermen in Italy. They had begun to rely on North and West African fishing grounds because Italian coastal grounds were overfished and polluted.

During the late 1970's, well-organized fishery cooperatives pressured the Italian government for aid, claiming that high fuel costs and longer fishing voyages made it uneconomical for them to compete with fishery imports. Initially, the government provided only fuel subsidies, but soon it adopted more comprehensive measures. In 1982, the government introduced a $50 million, 3-year "Plan for Rationalization and Development of Italian Marine Fisheries," designed to restructure Italy's fishing industry. To compensate for the loss of distant fishing grounds and for increasing operating costs, the plan provided for 1) modernization of the fishing fleet by subsidizing the replacement of old vessels, 2) joint ventures between Italian and foreign fishing companies, 3) bilateral agreements with nations off

[1]Significant U.S. imports of "nonedible partial fishery products," mostly jewelry, are not considered in this report. In 1988, these imports amounted to $1,088 million.

whose coasts Italian fishermen had operated prior to the EEZ extensions, and 4) exploratory fishing in unexploited fishing grounds. The Plan produced good results: Many older vessels were scrapped, joint ventures were created (with U.S. fishermen, for example[2]), and fishing agreements with West African countries have been signed (through the European Community). The continuing increase of Italian fishery imports during the 1980's, however, indicates that Italian fishermen have not been able to keep pace with domestic demand for fishery imports.

Italian law requires the formulation of a new national plan for fisheries every 4 years. The current plan (1987-90) emphasizes conservative resource management: Reduced trawling in the Mediterranean, reduced fishing for venus clams, and no increase in fishing for demersal species. One important objective, which several other EC nations share, is to gradually reduce the size of the fishing fleet. Italy plans to decrease the tonnage of its fleet (about 262,000 GRT) by 5 percent before 1990.

In spite of government development plans, part of the fishing industry, particularly in southern Italy, has modernized only slowly, retaining many of its artisanal aspects. Many fishermen sell their catch directly to customers, avoiding official markets. Products sold in this manner are probably not included in government fisheries catch or consumption figures. Thus, official statistics concerning both catch and sales of fishery products are suspect. Informed observers have estimated that as much as one-third of the Italian fisheries catch goes unreported.

Despite their well publicized difficulties, Italian fishermen have doubled their catch over the past 3 decades. The catch continued to increase until 1985, when 583,000 t of fish, shellfish, and other aquatic products were harvested; this total decreased to 554,000 t in 1987, the last year for which the data were available (Fig. 1). The diversity of the catch has allowed fishermen to concentrate on new species as stocks of traditional species have declined. Harvests of some important species have increased recently: Mussels (now the most important species by quantity) from 58,000 t in 1981 to 85,000 t in 1987[3], European hake from 15,000 t to 27,000 t, venus clams from 21,000 t to 37,000 tons. The catch of two important Mediterranean species, however, has decreased significantly: The pilchard catch declined from 78,000 t in 1981 to 47,000 t in 1987, while the harvest of anchovies has decreased from 61,000 t to 20,000 tons. The pelagic catch[4] declined mainly because the use of nets having a mesh smaller than the legally allowed 4 cm has depleted immature fish. In addition, the domestic demand for these species has decreased.

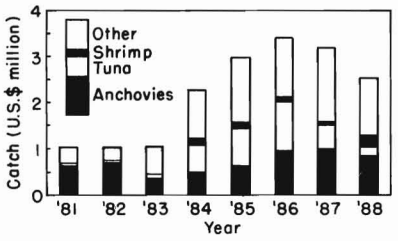

Figure 1—Italy's fisheries catch, 1981-88.

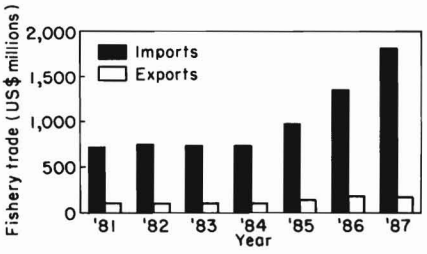

Figure 2.—Italy's fishery imports and exports by value, 1981-87.

Table 1.—Italy's balance of trade in fishery products, by value, 1981-87 (1988 data not yet available)[1].

Year	Trade (US$ millions)		
	Exports	Imports	Bal. of trade
1981	106.7	720.2	-613.5
1982	101.5	752.8	-651.3
1983	104.5	735.4	-630.9
1984	104.9	742.1	-637.2
1985	140.9	985.0	-844.1
1986	183.4	1,360.6	-1177.2
1987	174.4	1,824.0	-1649.6

[1]Sources: FAO Yearbook of Fishery Statistics—Commotidies, var. years; European Supply Bulletin, Dec. 1988.

Fisheries Trade

Italy's trade deficit in fishery products increased from $600 million in 1981 to over $1,600 million in 1987 (Table 1). Over that period, the value of exports varied from $100 million to $180 million, while imports increased from $720 million to $1,800 million (Fig. 2).

Imports

Since 1981, Italy has increased its imports of traditionally popular fishery products—tuna, hake, dried and salted cod, and groundfish fillets—and has supplemented these with additional and growing imports of shellfish[5]—squid, shrimp, and lobster (Fig. 3). In 1986, Italy was the world's second largest importer of squid (behind Japan) and the third largest importer of tuna (behind Japan and the United States). Tuna imports, some of which are canned for reexport, increased from 50,000 t in 1981 to 114,000 t in 1987, when they were valued at $170 million. Squid imports almost trebled over the same 7 years from about 25,000 t to 71,000 t worth $100 million. Shrimp imports increased from 6,200 t in 1981 to 17,000 t, worth $134 million, and lobster imports, under 300 t in 1981, reached 3,600 t in 1987.

Italy's most important suppliers of fishery products are EC member countries. For example, France and Spain supply most fresh and frozen tuna,

[2]There were several joint ventures between Italian and U.S. fishermen in the 1980's, but these no longer operate; U.S. fisheries have been gradually "Americanized" since the mid-1980's.

[3]Partially from increased mussel aquaculture.

[4]Pilchards, sardines, anchovies, and other pelagic species are collectively called "blue fish" (pesce azzurro) in Italy.

[5]In this report, shellfish includes cephalopods (such as squid), following the classification used by the Organization for Economic Cooperation and Development (OECD).

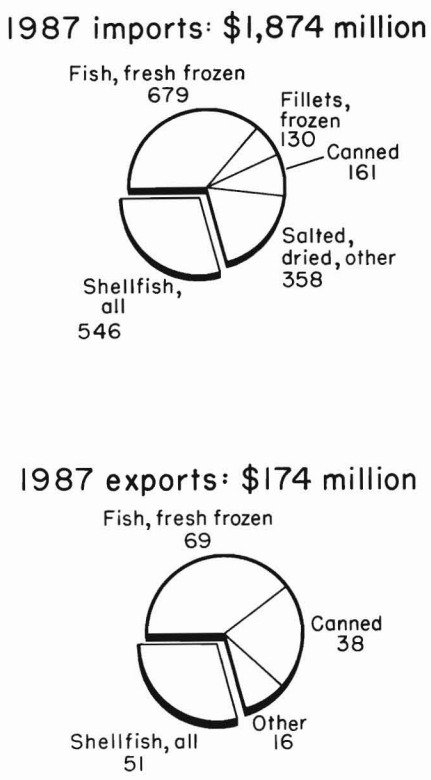

Figure 3.—Italy's imports and exports of fishery products by commodity and value, 1987.

while Spain exports mussels; the Netherlands supplies frozen plaice fillets and the Federal Republic of Germany (FRG) exports canned fillets.

Imports from EC nations are favored because they are exempt from the tariffs (ranging from 5 to over 15 percent by value) which are assessed on fishery imports from non-EC nations. Northern Europe's well-developed transportation system allows the EC member countries to supply Italy's growing market for fresh fish. Importers in Milan, northern Italy's main distribution center for West European fishery products, have reported that fresh fish from abroad often arrives more quickly than fish from Sicily. For example, fish landed in Danish ports can be refrigerated, transported overland across the FRG and Switzerland to Milan, and sold fresh within 3 days after being landed. Italian products, on the other hand, often take a circuitous route to the market: They are first frozen and stored, then later thawed and sold as "fresh" fish. Imported fish has thus become associated with higher quality.

Several non-EC nations are also important suppliers to Italy: Norway (which qualifies for reduced tariffs because of its fishing agreements with the EC) is a major source of salted cod. Poland and Thailand are Italy's largest suppliers of squid, together providing over half of squid imports in 1987 (19,000 t and 17,000 t, respectively). Argentina is Italy's largest source of hake (7,000 t out of 18,000 t in 1987), and Cuba is an important supplier of shrimp (2,000 t out of 17,000 tons).

Italy has strict and vigorously enforced health regulations for imported fishery products. Imports must be accompanied by a health certificate—printed in Italian as well as in the language of the country of origin—identifying the product, certifying that it has been suitably refrigerated or frozen, specifying any chemical additives used, and stating that the product is wholesome and fit for human consumption.

The Italian government has implemented additional health regulations because of concern over heavy-metal contamination in seafood. All fishery imports must be accompanied by a certificate of mercury content, released by the appropriate authorities of the exporting country, testifying that the mercury content does not exceed 0.7 mg/kg (or parts per million). According to the U.S. Embassy in Rome, the Italian Ministry of Health has divided fish species into 2 main categories depending on whether they tend to have low or medium-to-high mercury content. Most species—including U.S. Pacific salmon, pelagics such as herring and anchovy, shellfish such as squid, shrimp, lobster and crawfish—are classed as "low mercury content." For these species, the Ministry will accept a general statement by the authorities of the exporting country that, "the shipment of fish does not have a mercury content higher than 0.7 mg per kg." For medium-to-high risk fish—including tuna, swordfish, and several species of sharks—a detailed mercury content certificate must accompany each shipment to Italy.

The government has also placed specific restrictions on some shellfish imports. After imported squid was found to contain significantly more than the 2 mg/kg limit of cadmium, the Italian Government began restricting squid imports to entrails-free product only. (Although the entrails were not intended for human consumption, there was concern that they could contaminate fish meal or other products.) Italy also temporarily restricted imports of clams from Thailand because of contamination. Imported clams and oysters now must come from approved fishing areas, and importers must have purification facilities.

Exports

Italy's exports of fishery products are significant but they have not increased in proportion to fishery imports (Fig. 2 and 3). Export value remained at about $100 million per year during 1981-84, increased to a high of $180 million in 1986, but declined in 1987 (Table 1). The largest exports are fresh, frozen, and canned sardines and anchovies ($32 million in 1987). Other exports include squid ($26 million), trout ($12 million), canned tuna ($12 million), and mussels ($2 million). The bulk of Italy's exports are sold to other EC nations, primarily to nearby France and Spain.

U.S.-Italy Fisheries Trade

The turnover value of U.S.-Italian fisheries trade (imports and exports) has increased from $5.5 million in 1981 to $17.5 million in 1988. Each country remains only a minor fisheries trading partner for the other. U.S. fishery exports to Italy represented less than 1 percent of total Italian fishery imports in the 1980's (Table 2). U.S. fishery imports from Italy were an even smaller share of U.S. fishery imports, well under 0.1 percent of the total.

U.S. fishery exports to Italy are modest compared with U.S. exports to other EC nations. In 1988, the United States exported $265 million to the EC, 70 percent of which was bought by the UK, France, and the Netherlands (Table 3). Although U.S. fishery exports to Italy increased significantly in 1988, surpassing

Table 2.—Italy's fishery imports from the United States compared with total imports, by value, 1981-88[1].

Year	Imports (US$ millions) Total	U.S.	U.S. share[2] (Percent)
1981	720.2	4.5	0.6
1982	752.8	8.1	1.1
1983	735.4	5.5	0.7
1984	742.1	4.0	0.5
1985	985.0	3.4	0.3
1986	1,360.6	4.3	0.3
1987	1,824.1	6.6	0.4
1988	N/A[3]	14.9	N/A

[1]Sources: FAO Yearbook of Fishery Statistics—Commodies, var. years (for total imports); the U.S. Bureau of the Census (for imports from the United States).
[2]Imports of fishery products from the United States as a percentage of Italy's total fishery imports.
[3]N/A = Data not yet available.

Table 3.—U.S. exports of fishery products to member states of the European Community (EC), by value, 1981-88[1].

Country	Exports (US$ millions) 1981	1982	1983	1984	1985	1986	1987	1988
UK	105.6	46.9	73.6	61.2	51.9	77.3	72.6	81.6
France	60.0	52.7	35.5	34.3	30.6	52.3	72.9	71.8
Netherlands	32.2	26.2	35.6	60.1	34.4	26.0	32.2	33.5
Italy	4.5	8.0	5.5	4.0	3.3	4.3	6.6	14.9
FRG	22.1	10.9	26.9	12.6	11.0	7.9	11.8	13.2
Belg./Lux.	19.8	15.9	11.4	13.1	8.4	10.7	11.9	12.0
Portugal[2]	3.0	3.6	4.3	2.3	2.5	0.8	3.0	11.9
Denmark	3.4	3.7	4.1	4.8	7.3	5.3	7.1	10.3
Spain[2]	1.8	2.5	4.3	1.5	0.7	5.4	3.6	9.4
Greece	4.5	3.5	0.8	0.3	1.0	2.5	2.0	5.6
Ireland	1.4	0.4	0.6	0.8	0.8	0.6	0.4	0.3
Total	258.3	174.3	202.6	195.0	151.9	193.1	224.1	264.5

[1]Source: U.S. Bureau of the Census.
[2]Spain and Portugal became members of the EC in January 1986.

Table 4.—U.S. fishery exports to Italy compared with fishery exports to the EC, in percent, 1981-88[1].

Year	Exports (US$ millions) Italy	Total EC	Italian share (Percent)
1981	4.5	258.3	1.7
1982	8.0	174.3	4.6
1983	5.5	202.6	2.7
1984	4.0	195.0	2.0
1985	3.3	151.9	2.2
1986	4.3	193.1	2.2
1987	6.6	224.1	2.9
1988	14.9	264.5	5.6

[1]Source: U.S. Bureau of the Census.

those of Denmark, the FRG, and Belgium/Luxembourg, they still accounted for less than 6 percent of exports to the European Community (Table 4).

U.S. Exports

U.S. fishery exports to Italy more than doubled in 1988 to $14.9 million, compared with $6.6 million in 1987 (Table 5, 6). Squid exports increased most dramatically: From $2 million in 1987 to $6 million in 1988, when they accounted for 40 percent of the value of U.S. fishery exports to Italy. Salmon exports recovered in 1988 to $2.3 million after declining for several years to only $0.5 million in 1987. Eel exports have also recovered, from under 30 t in the mid-1980's, to 400

Table 5.—U.S. fishery exports to Italy, by commodity and value, 1981-88. U.S. Census Bureau data.

Commodity	U.S. exports to Italy (US$1,000) 1981	1982	1983	1984	1985	1986	1987	1988
Edible								
Fish								
Salmon								
Chinook	1,292	963	301	838	309	274	109	1,045
Chum	159		891	299	54	122	52	212
Other	481	1,104	437	839	457	392	237	653
Canned	208	431	479	406	452	188	76	352
(Salmon total)	(2,140)	(2,498)	(2,108)	(2,382)	(1,272)	(976)	(474)	(2,262)
Eels	516	219	153	79	90	92	730	1,491
Roe (not salmon)	30	72	174	103	396	761	1,518	303
Mackerel		23	48	19			14	
Mullet								63
Cod								36
Other fish	1,203	4,315	1,300	529	414	733	1,021	2,140
Subtotal	3,889	7,127	3,783	3,112	2,172	2,562	3,757	6,295
Shellfish								
Squid[1]								
Loligo, frozen	101	574	1,019	398	998	606	947	2,117
Other, frozen						466	1,092	3,761
Canned		14	124					165
(Squid total)	(101)	(588)	(1,143)	(398)	(998)	(1,072)	(2,039)	(6,043)
Lobster						23	7	1,105
Shrimp								
Fresh/frozen	10	191	15	13		4	4	200
Canned	2		22	115	15	10	40	39
Crab	114	115	2		7	4		64
Sea urchin						11		45
Clams, frozen						7		20
Other shellfish								
Fresh/chilled	225	16	218	256	114	456	573	724
Frozed/cured	7	3	326	59	1	37	117	271
Subtotal	459	913	1,726	841	1,135	1,624	2,780	8,511
Subtotal (edible)	4,348	8,040	5,509	3,953	3,307	4,186	6,537	14,806
Inedible								
Shells	108	44	7	42	53	19	54	106
Fish/marine oils	40				1	47	4	6
Fishmeal				Negl.[2]		1	2	15
Seaweed						1	2	2
Subtotal (inedible)	148	44	7	43	54	68	62	129
Grand total	4,496	8,084	5,516	3,996	3,361	4,254	6,599	14,935

[1]Squid statistics are not differentiated by species before 1986.
[2]Negl. = Value less than $1,000.

Table 6.—U.S. fishery exports to Italy, by commodity and quantity, 1981-88. U.S. Census Bureau data.

Commodity	Exports (metric tons)							
	1981	1982	1983	1984	1985	1986	1987	1988
Edible								
Fish								
Salmon								
Chinook	149	113	40	115	46	45	14	81
Chum	43		216	79	17	42	8	44
Other	262	159	102	222	97	70	46	69
Canned	47	128	155	129	95	73	29	101
(Salmon total)	(501)	(400)	(513)	(545)	(255)	(230)	(97)	(295)
Eels	186	106	68	21	40	22	244	399
Roe (not salmon)	2	2	16	6	32	56	94	18
Mackerel		52	91	34			20	
Mullet								19
Cod								15
Other fish	271	3382	695	244	516	427	333	1,228
Subtotal	960	3,942	1,383	850	843	735	788	1,974
Shellfish								
Squid[1]								
Loligo, frozen	62	396	541	231	839	348	554	1,445
Other, frozen						212	334	1,860
Canned		13	81					111
(Squid total)	(62)	(409)	(622)	(231)	(839)	(560)	(888)	(3,416)
Lobster						2	1	105
Shrimp								
Fresh/frozen	1	42	1	2		Negl.[2]	Negl.	35
Canned	Negl.		4	21	3	2	6	4
Crab	12	8	Negl.		1	Negl.		23
Sea urchin						1		3
Clams, frozen						3		6
Other shellfish								
Fresh/chilled	25	2	119	108	47	198	218	155
Frozed/cured	1	1	95	9		5	62	134
Subtotal	101	462	841	371	890	772	1,176	3,881
Subtotal (edible)	1,061	4,404	2,224	1,221	1,733	1,507	1,964	5,855
Inedible								
Shells	38	24	2	30	55	9	12	24
Fish/marine oils	36				Negl.	36	Negl.	Negl.
Fishmeal				Negl.		8	Negl.	201
Seaweed						Negl.	1	Negl.
Subtotal (inedible)	74	24	2	30	55	53	13	225
Grand total	1,135	4,428	2,226	1,251	1,788	1,560	1,977	6,080

[1]Squid statistics are not differentiated by species before 1986.
[2]Negl. = Value less than 1 metric ton.

t, worth $1.5 million in 1988 (Fig. 4).

The mid-1980's decline of U.S. fishery exports to Italy, like the overall decline of U.S. fishery exports to the EC, can be partially attributed to the strength of the dollar. The value of the Italian lira decreased 40 percent against the dollar from 1981 to 1985, when Italian imports from the United States reached a low point. Since 1985, Italian imports have increased again, as the lira regained much of its former value (Fig. 4, 5).

The increased U.S. squid exports to Italy in 1988 coincided with the increase in total U.S. squid exports. During that

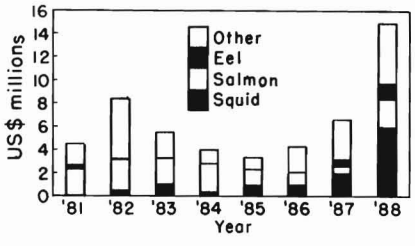

Figure 4.—Italy's fishery imports from the United States by commodity and value, 1981-88.

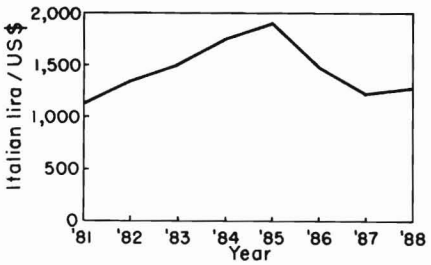

Figure 5.—Exchange rate, Italian Lira:U.S. dollar, 1981-88.

Table 7.—U.S. fishery exports to Italy, by commodity and value, 1981-88. U.S. Census Bureau data.

Commodity	Imports (US$1,000)							
	1981	1982	1983	1984	1985	1986	1987	1988
Edible								
Fish								
Anchovies, canned	652	727	388	526	651	974	1,023	870
Tuna								
Fresh/frozen	2			509	733	929	358	50
Canned	49	16	29	31	35	99	118	108
(Tuna total)	(51)	(16)	(29)	(540)	(768)	(1,028)	(476)	(158)
Sardines, canned	136	30	44	156	598	164	219	74
Surimi						50		42
Salmon	1			1	13	15	19	9
Shark fins							16	6
Other fish	72	19	87	157	204	520	276	397
Subtotal	912	792	548	1,380	2,234	2,751	2,029	1,556
Shellfish								
Shrimp, fresh/frozen			44	176	162	134	97	281
Clams								
Fresh/frozen			27	2	3	26	16	1
Canned	15	46	142	239	190	49	47	63
(Clam total)	(15)	(46)	(169)	(241)	(193)	(75)	(73)	(64)
Crabs, fresh/frozen				14	8		13	12
Squid						2	10	4
Other shellfish	59	22	45	111	48	18	54	1
Subtotal	74	68	258	542	411	229	237	362
Other								
Antipastos			162	276	232	376	482	484
Soup preparations							17	16
Frogs							4	
Subtotal (edible)	986	860	968	2,198	2,877	3,356	2,769	2,418
Inedible								
Sponges	6	27	32	43	44	24	210	82
Fish oils					1	2	10	2
Shells	7	15	1	16	10		6	
Other inedible[1]	33	128	43	7	44	20	13	28
Subtotal (inedible)	46	170	76	66	99	46	239	112
Grand total	1,032	1,030	1,044	2,264	2,975	3,402	3,008	2,530

[1]Primarily coral.

year, the United States exported 17,000 t worth $25 million, or more than double the 1987 squid export level. Several factors (besides the improved exchange rate) favored increased exports to Italy. First, average prices of U.S. squid exports to Italy decreased from $2.30/kg in 1987 to $1.80/kg in 1988. Second, U.S. squid-fishing and processing has improved. There are now over 10 American freezer-trawlers fishing for squid off the Atlantic coast. The "Americanization" of the U.S. squid fishery phased out Italian fishermen who used to fish in U.S. waters under joint-venture agreements. Italy imports U.S. squid partly to make up this loss. Third, fishermen off the Falklands Islands, a prime squid fishery, reported difficulty catching longfin squid, *Loligo pealei*, in 1988. Low prices made fishing for shortfin squid, *Illex illecebrosus*, off the Falklands unprofitable, because of license and transportation costs. In short, increased U.S. supply, improved quality, and reduced price promoted U.S. squid exports to Italy.

U.S. salmon exports to Italy compete primarily with Canadian exports of frozen salmon. Canada has supplied over half of Italy's imports of salmon throughout the 1980's ($12 million out of $20 million in 1987, excluding canned). In 1987, competition increased when Norway became an important supplier of fresh salmon to Italy ($3.7 million). Norwegian exports of fresh farmed salmon to Italy will probably continue to increase, and may displace some of Italy's canned and frozen imports. Thus, although U.S. exports of frozen salmon to Italy recovered in 1988, Norway's increasing salmon exports may hinder further increases. Italian consumers strongly prefer fresh fish.

Other U.S. fishery exports to Italy have

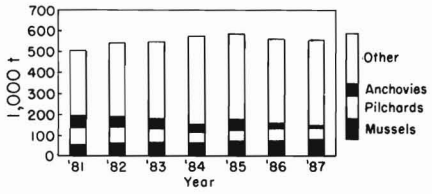

Figure 6.—U.S. imports of fishery products from Italy by commodity and value, 1981-88.

recently surged: Lobster exports multiplied from 1 t in 1987 to over 100 t worth $1.1 million in 1988; shrimp exports (both frozen and canned) increased from 6 t in 1987 to 40 t worth $0.24 million in 1988. Exports of mullet, cod, crabs, sea urchins, and clams, all negligible during most of the 1980's, increased appreciably in 1988, suggesting that the overall Italian market for U.S. fishery products is expanding.

An April 1988 report by the Irish Sea Fisheries Board identifies the following market opportunities for frozen fish in Italy: 1) Monkfish tails (1-4 pieces/kg), 2) shrimp, especially larger sizes (4-12 pieces/kg)[6].

U.S. Imports

U.S. imports of Italian fishery products increased to $3.0 million in 1985 (helped by the strength of the dollar), but decreased to $2.5 million in 1988 (Tables 7, 8; Fig. 6). Imports of canned fishery products, anchovies, sardines, and clams, have declined since 1987. Canned tuna imports have increased, but have not made up the loss in fresh and frozen tuna imports; the value of tuna imports decreased from over $1 million in 1986 to under $0.2 million in 1988. The only import which increased significantly in 1988 was shrimp, which doubled to $0.3 million. (Source: IFR-89/43.)

[6]About 2 to 6 pieces/pound.

Table 8.—U.S. fishery exports to Italy, by commodity and quantity, 1981-88. U.S. Census Bureau data.

	Imports (metric tons)							
Commodity	1981	1982	1983	1984	1985	1986	1987	1988
Edible								
Fish								
Anchovies, canned	259	252	129	144	145	219	217	172
Tuna								
Fresh/frozen	2			227	347	465	261	13
Canned	18	3	5	9	7	15	18	18
(Tuna total)	(20)	(3)	(5)	(236)	(354)	(480)	(279)	(32)
Sardines, canned	74	24	23	81	257	75	95	30
Surimi						15		1
Salmon	Negl.[1]			Negl.	1	1	2	1
Shark fins							1	1
Other fish	11	33	15	21	72	108	64	84
Subtotal	354	282	172	482	829	898	658	320
Shellfish								
Shrimp, fresh/frozen			31	29	23	18	17	35
Clams								
Fresh/frozen			14	1	1	1	3	Negl.
Canned	5	17	48	74	52	12	7	9
(Clam total)	(5)	(17)	(62)	(75)	(53)	(13)	(10)	(9)
Crabs, fresh/frozen				3	3		2	3
Squid						1	1	Negl.
Other shellfish	13	9	13	22	11	3	22	Negl.
Subtotal	18	26	106	129	90	35	52	47
Other								
Antipastos			45	71	75	95	116	87
Soup preparations							14	5
Frogs							1	
Subtotal (edible)	382	308	323	682	994	1,028	841	459
Inedible								
Sponges	Negl.	1	1	2	8	3	28	4
Fish oils					1	1	1	Negl.
Shells	2	10	1	2	4		1	
Other inedible[2]	4	18	3	1	1	1	1	21
Subtotal (inedible)	6	30	5	5	14	5	31	26
Grand total	388	338	328	687	1,008	1,033	872	485

[1]Negl. = Quantity less than 1 metric ton.
[2]Primarily coral.

The Coral Fishery and Trade of Japan

Japan harvested only 3 metric tons (t) of coral in 1988, down from 55 t in 1982. The decline in Japanese coral production has been due largely to a scarcity of new coral beds. Because of the destructive nature of coral fishing, coral beds are "mined out" in 4-5 years. Although domestic production has declined, the Japanese have imported an average of only 18 t of coral annually since 1983. Japan purchased nearly 18 t, valued at $4.4 million, in 1988.

Japanese coral fishermen are licensed by the Prefectural Governments of Tokyo, Kochi, Nagasaki, Kagoshima, and Okinawa, but are free from any national licensing system. In addition, there are no time, area, or vessel restrictions in force for coral fishing in Japanese waters. Because of this, no official Government records have been kept on the total amount of precious coral harvested in Japan.

There are three separate groups of coral fishermen in Japan: Coastal harvesters, submarine and robot harvesters, and the All Japan Coral Fisheries Association.

The coastal and shallow-sea coral fishermen operate out of Sukumo City, Kochi Prefecture. Although not officially organized, this group had about 100 small vessels ranging from 3 to 10 gross registered tons (GRT) in 1981. This number dropped to about 60 vessels in 1989. Each is usually manned by one fisherman for day-fishing off Tosa City, Kochi Prefecture (eastern Shikoku). The species of coral harvested (in the order of commercial value) are "red" or "oxblood" coral, *Corallium japonicum*, which is found at 200-300 m; "boke" or dark pink coral, *C. elatius*, which occurs at 250-400 m; "momo" or peach-pink coral, *C. nobile*, which is harvested at 150-300 m; and "shiro" or white coral, *C. konojo*, which is found at 100-200 m depths.

A small 2-man submarine and a robot operates out of Tokyo. They are owned by separate Japanese companies and have been harvesting coral since 1983 near the Amami Shoto Islands (lat. 28°N, long. 130°E). They harvest the same species as the Sukumo City coral fishermen.

Table 1.—Japan's coral harvest by fishing group, type of coral, and quantity, 1981-88, in kilograms.

	JCFA[1] harvest		Coastal harvest	Submarine robot	
Year	Midway deep sea	Red & pink	Red & pink	Red & pink	Total coral harvest
1981	30,484	0	4,084	0	34,568
1982	50,306	1,860	3,000	0	55,166
1983	49,312	1,775	2,947	153	54,187
1984	31,676	1,488	2,366	941	37,420
1985	7,890	1,432	2,366	1,065	12,753
1986	973	675	2,268	1,012	4,930
1987	0	585	1,968	423	2,976
1988	0	217	1,605	1,147	2,969

[1]All Japan Coral Fisheries Association.

Table 2.—Japanese coral imports by country and quantity, 1983-88, in metric tons.

	Coral imports (t)					
Country	1983	1984	1985	1986	1987	1988
Taiwan	9.8	0.5	12.6	23.0	26.2	13.3
France		1.4	1.0	0.6	1.3	1.5
Italy	0.4	0.2		0.2	0.4	0.5
Spain	0.9	3.8	0.8	0.2	0.1	0.4
Tunisia	2.3	1.4		0.3	0.1	0.2
Greece	0.1	0.3				
Others	2.5	Negl.[1]	0.5		0.1	1.8
Total[2]	16.0	7.4	14.9	24.3	28.3	17.7

[1]Negl. = Neglible.
[2]Columns may not sum to total due to rounding of numbers.

Table 3.—Japanese coral imports by country and value, 1983-88, in thousands of dollars.

	Coral imports ($1,000)					
Country	1983	1984	1985	1986	1987	1988
Taiwan	2,125	116	717	2,761	7,302	2,497
France		187	212	188	396	603
Italy	85	24		45	140	184
Spain	158	599	83	40	28	168
Tunisia	404	186		85	76	157
Greece	39	42				
Others	2	6	5		73	817
Total[1]	2,813	1,159	1,017	3,120	8,015	4,426

[1]Columns may not sum to total due to rounding of numbers.

The All Japan Coral Fisheries Association (JCFA) located in Kochi City, Kochi Prefecture, is comprised of "Midway Deep Sea Coral" fishermen. The "Midway Deep Sea Coral" is believed to be *Corallium* spp., and its color is light pink with darker spots. It has the lowest commercial value of all Japan's corals. The JCFA harvests the "Midway" coral in the area of about lat 36°N, long. 171°E, at depths of up to 1,000 m. The JCFA operated 17 vessels in 1981, each 100 GRT and with a crew of 10-15 fishermen.

Except for the coral bed located at the above coordinates, there have been no recent discoveries of new coral beds. The JCFA did not send any vessels to the "Midway" coral bed in 1987 and 1988, and only one vessel operated there in 1989. (A coral bed is reportedly fully exploited in 4-5 years.) Alternately, some Association vessels have been harvesting red and pink corals near the Bonin Islands off Tokyo. According to the JCFA, the depletion of the "Midway" coral beds may be the reason why Taiwan's coral fishing fleet in the same area decreased from 40 vessels (180-200 GRT) in 1965 to 35 vessels in 1988 and only 32 vessels in 1989.

The 100-GRT JCFA vessels harvest coral primarily by dredging. Dredges consist of concrete weights—about 20 kg each—with embedded rings attached to netting and hauling lines. These are towed over the coral beds breaking off and entangling coral pieces.

The JCFA estimates that the total Japanese harvest of precious corals has decreased from over 55,000 kg in 1982 to only 3,000 kg in 1988 (Table 1). Current average auction prices for corals are: Red coral, 2.5-3.0 million ¥/kg ($17,857-$21,428/kg); pink coral, 2.0 million ¥/kg ($14,285/kg); and Midway deep sea coral, 20,000 ¥/kg ($142/kg).

Despite the fact that Japan's harvest of coral has decreased, its annual imports of coral have averaged about 18 t since 1983 (Tables 2, 3). Japan imported 28 t in 1987, valued at over $8 million, up 77 percent by quantity and almost 200 percent by value over 1983 coral imports. Japan's 1988 coral imports, however, fell to 18 t, valued at $4.4 million—about half the value of the 1987 imports. Taiwan has historically been the major supplier of coral to the Japanese market, accounting for about 56 percent of the value of Japan's 1988 coral imports. France, Italy, Spain, and Tunisia also export coral to Japan. (Source: IFR-89/70, prepared by Paul E. Niemeier, Office of International Affairs, NMFS, NOAA, Department of Commerce, Silver Spring, MD 20910.)

Japanese Overseas Fisheries Aid Told

Japanese Government fisheries aid projects provide materials and technical assistance to promote economic and social development in, and maintain and enhance friendly relations with, recipient countries. In addition, Japan uses fisheries aid as a means of maintaining (or attaining) access to foreign waters for Japanese fishermen. For fiscal year 1989, Japan budgeted approximately $80 million for overseas fishery aid.

Background

Fisheries aid is only one category of economic development assistance within Japan's Overseas Development Assistance (ODA) program general budget account. (See Table 1 for a glossary of acronyms.) Although fisheries aid, like all ODA assistance, is administered by the Ministry of Foreign Affairs (MOFA), the Fisheries Agency of Japan (FAJ) plays a key role in the process. The FAJ effectively controls both fisheries aid policy and grants, because of its role in developing fisheries projects and its veto power over applications for fishery grants-in-aid.

To maximize benefits to its own people, the Japanese Government, usually provides fisheries assistance on a bilateral, year-by-year basis, rather than on a long term or multilateral development basis. In addition, the Government employs only Japanese consultants and contractors in administering aid projects.

Recent Aid Budgets

Japan's fisheries aid budget has steadily increased over the last 10 years (Fig. 1). In fiscal year 1989, the Japanese Government budgeted $3.2 billion for total foreign aid[1]. Of that amount, about $80 million was budgeted for fishery aid projects, nearly the same as the 1988 fishery aid budget of $79.4 million[2]. Japan's fisheries aid budgets for FY 1986 and 1987 were about $54 million and $67 million, respectively. In 1988, 52 percent of total fisheries aid went to Asian countries, 24 percent to Latin American countries, and 24 percent to African and Middle Eastern countries (Fig. 2). Some of Japan's biggest aid projects in 1988 were the $20 million Nakhon Si Thammarat port construction in Thailand, and the $8 million Puerto Deseado port extension in Argentina (Table 2).

Types of Projects

Fisheries Agency officials confirm that Government fisheries aid projects generally provide for such things as equipment necessary for fisheries development (fishing nets, small fishing boats, outboard motors, conventional freezing plants, icemaking equipment, refrigerated trucks, etc.), fishery training vessels, and the construction of fishery training/research facilities (laboratories, aquaculture facilities, and fishing ports). Because long-term regional development strategies do not adequately serve the fishing industry's need to respond quickly to changing resource availability and market conditions, Japanese Government fisheries aid projects typically provide help on a bilateral, year-by-year basis.

Administrative Procedures

Japanese Government grant assistance (including fisheries aid) is implemented by the Japan International Cooperation Agency (JICA). JICA provides the technical expertise for feasibility studies and planning of all aid projects.

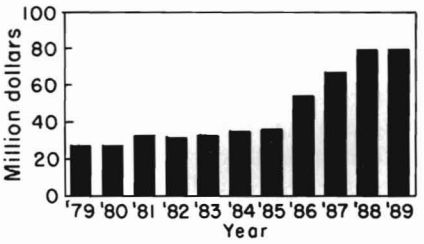

Figure 1.—Japan's overseas fisheries aid budgets by year, 1979-89, in millions of dollars.

Figure 2.—Japan's 1988 fisheries aid grants by region and amount in millions of dollars.

Table 1.—Glossary of acronyms and role in Japanese overseas fisheries aid.

Acronym	Full name and role
FAJ	Fisheries Agency of Japan: Agency of the Japanese Government which handles all fisheries-related issues. Develops aid projects and has veto power over all grant applications.
JICA	Japan International Cooperation Agency: Implements all Japanese Government grant assistance; provides technical expertise in project feasibility studies and project planning.
MOFA	Ministry of Foreign Affairs: Ministry of the Japanese Government which handles foreign relations. Administers all overseas development assistance.
ODA	Overseas Development Assistance: General budgetary account of all Government aid grants to developing nations.
OFCF	Overseas Fisheries Cooperation Foundation: A private foundation closely linked to the FAJ which provides technical expertise in fisheries-related project planning. President is often a former FAJ official.

Table 2.—Japanese fisheries aid grants (in millions of dollars), by recipient country, amount, and project, 1988.

Country	Grant	Project/purchase
Thailand	$20.10	Nakhon Si Thammarat port construction
Argentina	$7.78	Puerto Deseado port extension
Columbia	$6.30	Coastal fishery development
Ecuador	$6.12	Construction of marine aquaculture center
Ghana	$6.07	Tema harbor rehabilitation
Mauritius	$5.40	Fishing port expansion
Western Samoa	$5.25	Apia port development
Marshall Isl.	$5.18	Majuro dock repair
Morocco	$4.49	Fishery development and outboard motors
Micronesia	$3.32	Bottom-fishing boat and tuna longliner
Palau	$2.64	Fishing community development
Benin	$2.36	Fisheries modernization
Tonga	$2.16	Shoreline protection
Fiji	$1.96	Fisheries promotion
South Yemen	$1.56	Training vessel repair
Bangladesh	$1.23	Fisheries development
Kiribati	$1.04	Fishermen training
Total	$82.96	

[1]Japan's fiscal year runs from April 1 to March 31 of the next year.
[2]Japan apparently exceeded this budget, and disbursed $82.96 million in fisheries aid in 1988 (appendix B).

According to FAJ officials, the FAJ is consulted and has veto power over all fisheries aid projects. This gives the FAJ effective control over fisheries aid, which is increasingly being used as a means to gain access to the Exclusive Economic Zones of recipient nations. The FAJ's ongoing relationship with those countries, in whose waters the Japanese fish, provides them with considerable opportunity to solicit applications and selectively approve fishery projects beneficial to Japanese interests.

JICA officials describe the procedures for obtaining Japanese Government fishery grants as follows:

1) MOFA and JICA must receive an official aid application from a foreign government (directly or through Japanese embassies abroad) before considering an aid request or beginning project planning.

2) The application is accepted by the Japanese Government.

3) A survey team is sent from JICA for preliminary project planning. The team usually includes FAJ, JICA, and Overseas Fisheries Cooperation Foundation (OFCF) staff and Japanese private consultants.

4) Consultations are then held between the Japanese Foreign Ministry, the Japanese Finance Ministry, and the foreign government involved.

5) Further Japanese Government interagency consultations are held.

6) There is a Japanese Government Cabinet decision and exchange of diplomatic notes.

7) Japanese contractors bid for the project, and a contract is signed with the successful bidder.

8) The contract is approved by the Foreign Ministry.

9) Japanese Government money is deposited in a Japanese foreign exchange bank with the account established under the name of the foreign government.

10) Finally, payment is made to the contractor in proportion to project completion.

Japan's Overseas Fisheries Cooperation Foundation (OFCF) is nominally a private foundation that contracts to assist in project development only after foreign countries have applied for aid assistance. Because of its extensive presence in the South Pacific and its close integral relationship with the FAJ, however, OFCF plays a key role in shaping both the Japanese Government's fisheries aid policy and the kinds of projects for which aid recipients apply. OFCF's funding comes from both fishing industry assessments and from the FAJ budget. OFCF's top management positions are usually held by former FAJ officials (OFCF's current president, for example, is former FAJ Director General Goroku Satake.) OFCF has a highly professional staff with field experience in distant water fisheries. (Source: IFR:89/53, prepared by Karen L. Kelsky and Paul E. Niemeier of Foreign Fisheries Analysis Branch (F/IA23), NMFS, NOAA, U.S. Department of Commerce, 1335 East West Highway, Silver Spring, MD 20910.

Salmon Culture in the Faroe Islands

The Faroe Islands, a group of 18 islands situated between Scotland and Iceland, is an ideal location for salmon culture. The islands are of volcanic origin, and Ice Age glaciers carved out deep valleys and narrow fjords where salmon can be raised undisturbed by human activities. The sea around the Faroes is influenced by the mixing of the warm Gulf Stream and the cold northern currents; this confluence generates large quantities of plankton and results in excellent feeding grounds for many species of fish. It also guarantees fairly stable ocean temperatures, between 5° and 10°C (40°-50°F) which produce healthy salmon. The basis of the Faroese economy is fishing, and fish farming is a welcome addition because the vegetation is sparse and only 6 percent of the land is cultivated. The economy is dependent upon fishery exports for nearly 97 percent of the nation's total foreign exchange earnings. In recent years, the catch of "traditional" species—cod, haddock, and whiting—has declined making fish farming a valuable source of future export earnings (every 10,000 metric tons (t) of exported farmed salmon yield nearly one quarter of the nation's gross national product).

Formative Years

Aquaculture began in the 1950's when a private individual began to breed rainbow trout. In 1973, the Faroese Government established a research station, P/f Fiskaaling, which took over the trout farming operations of the private firm, because of lagging production. P/f

Fiskaaling began experimenting with Atlantic salmon by raising smolts harvested from local rivers; the results were poor. In 1977, the research station obtained smolts from Iceland, but the results of these experiments were also poor. In 1978, P/f Fiskaaling biologists obatined smolts from Norway which grew quickly into healthy salmon. Most Faroese salmon originate from these Norwegian salmon smolts. In 1979, the first floating cages were installed in one of the many fjords that dot the shoreline. In 1982, when these pen-raised Atlantic salmon reached maturity, the first harvest of 60 t was reported. Progress in salmon farming was slow during the formative years, limited primarily by the lack of smolts.

Smolt Production

Despite the early experiments with Icelandic and Norwegian smolts, it was the policy of the Faroese Home-Rule Government to prohibit the importation of smolts (this policy is still in force) to prevent the exposure of local smolts to diseases; all smolts used for fish farming in the Faroe Islands in the early 1980's were delivered from the public-owned P/f Fiskaaling's three freshwater smolt farms, albeit from brood stock raised from the original smolts imported from Norway in 1978. Two private farms were allowed to produce smolts in 1983 and in 1984 a new socialist government adopted a policy aimed at encouraging small producers to operate both hatcheries and small-scale (7,500 to 10,000 m^3) fish farms. In 1984, the Government also established a raceway system and a smolt farm at Sundini (where it also grows sea trout). This action was especially important to help stimulate the growth of the Faroese salmon farming industry.

Government Support

The Faroese Home-Rule Government supported the start of the salmon farming industry by providing technical assistance and investment loans to fish farmers. These preferential loans provided by the Faroese Industrial Development Fund, were usually given for 10 years with a 2-year grace period, and covered up to 10 percent of the investment. Fish farms in the Faroes are privately owned, and the farmers operate them according to their individual wishes, using different methods and equipment. The Government, however, remains concerned about the effects of fish farming on the marine environment and strictly regulates salmon cage farming.

Farmed Salmon Production

The result of the efforts by private businessmen and the Home-Rule Government was a rapid expansion in the number of smolts available to local salmon farmers. By 1987, smolt production was estimated at 3 million and was expected to yield approximately 9,000 t of mature salmon by 1989. With a growing supply of healthy smolts, salmon harvests went from 470 t in 1985 to an estimated 4,800 t in 1987 (Table 1).

Table 1.—Faroe Islands salmon smolt hatcheries, production of salmon smolts, production of farmed salmon, number of salmon farms, and exports of salmon and trout, 1980-86, with projections for 1987-90.

	Salmon smolts		Farm-raised Atl. salmon		Export Salmon and trout	
Year	Hatcheries No.	Production (×1,000)	Production (t[1])	Farms (No.)	Quantity (t)	Value (US$1,000)
1980	3	30		6	83	0
1981	3	40		6	101	0
1982	3	85	60	12	200	0
1983	5	169	105	22	410	NA
1984	5	345	116	30	550	NA
1985	5	1,255	470	50	1,350	623
1986	6	1,165	1,370	53	3,650	2,997
1987	NA	3,000	2,500 (E)	51	7,310	NA
1988	NA	NA	4,800 (E)	NA	NA	NA
1989	NA	NA	7,000 (E)	65	NA	NA
1990	NA	NA	9,000 (E)	NA	NA	NA

[1]Live weight; may invlude farmed trout. E = estimate.

Fish Farm Board

In 1985, an 8-member Fish Farm Board was established, replacing an earlier 4-member committee formed in 1981. The new Fish Farm Board was given the following responsibilities: Reserve suitable areas for future fish farming, expand smolt production to keep pace with salmon farming, limit marine farming in areas vulnerable to environmental effects of fish farming, and produce a general plan for the use of limited freshwater resources. The Fish Farm Board was also made responsible for reviewing applications for new licenses and applications to expand existing facilities. Its responsibility includes salmon, rainbow/steelhead trout, and other species being raised in Faroese waters, including mussels.

Recent Developments

Despite the increase in production in 1986-87, unexpected problems have surfaced in several dramatic instances. In the summer of 1988, an algae bloom and reports of disease occurred in some fjords. In December 1988 and January 1989, storms raged through the Faroe Islands with winds recorded at 150 mph, causing immense damage to the islands and offshore fish cages. Many offshore farmers lost all of their fish and equipmenht to the storms, the worst in over 100 years. The recently elected conservative government responded by offering additional licenses and financial aid to fish farmers willing to develop offshore sites using large-capacity units. Prior to the storms, Faroese fishermen operated 17 offshore cages. Data on the number of cages damaged or destroyed by the storm were not available.

Salmon Exports

The Faroe Islands, a self-governing province of the Kingdom of Denmark, is not a member of the European Economic Community, even though Denmark is an EC Member State. This has restricted the Faroe's ability to market processed fishery products in the EC. Nevertheless, most of the Faroe's farmed salmon exports go to the Federal Republic of Germany, France, Denmark, the United Kingdom, Japan, and the United States. (Source: IFR-89/62.)

Japan's Sea Cucumber Harvest and Market

Japan purchased 78 metric tons (t), valued at about $1.4 million, of sea cucumber or beche-de-mer commodities in 1988 and lands about 7,100 t (Table 1). The United States, the second largest supplier to Japan's sea cucumber market, exported 22 t, valued at about $285,000 (Tables 2, 3). Japan's major source of sea cucumbers is Korea (28 t, worth $890,000).

Consumption

Fresh sea cucumber, known as "namako," is consumed cured with vinegar in Japan. Boiled and dried sea cucumber or "iriko" is an essential ingredient for Chinese cuisine. Fermented viscera of sea cucumber, known as "konowata," is considered a delicacy in Japan. Although the consumption of fresh sea cucumber at the Tsukiji Fish Market in Tokyo appears to be stable at about 700-800 t per year, dried sea cucumber for the Chinese food market is said to have decreased drastically in the recent years. According to a major Chinese food wholesaler in Tokyo, the firm's sales of dried sea cucumber decreased two-thirds in 5 years to about 3 t a year. The decrease has been attributed to the unattractive appearance of live sea cucumbers to Japan's younger generations.

Table 1.—Japan's total sea cucumber landings by quantity (t) and price (¥/kg), 1976-87.

Year	Quant.	Price	Year	Quant.	Price
1976	10,579	479	1982	8,437	618
1977	9,793	444	1983	8,295	648
1978	10,143	441	1984	7,624	692
1979	9,381	551	1985	7,862	670
1980	8,970	569	1986	7,248	676
1981	8,098	630	1987	7,132	N/A[1]

[1]N/A = Not available.

Species

Common Japanese sea cucumber species are "manamako," *Stichopus japonicus*; "baika-namako," *Thelenota ananas*; "oki-namako," *Parastichopus nigripunctatus*, and "kinko," *Cucumaria frondosa japonica*. "Ma-namako" is the most common species and is found in shallow waters surrounding Japan. It grows up to 30 m long and 8 cm wide. "Ma-namako" is excellent for raw consumption, as well as for "iriko" and "konowata". Baika-namako" is Japan's largest sea cucumber species, reaching lengths of 70-80 cm. It is found in waters from Okinawa to Micronesia. "Iriko" made from "baika-namako" is considered a high-valued product and is known as "gajimaru" in Okinawa and "haishen" in China. "Oki-namako" is found in the western coastal waters of Japan in depths up to 160 m. It grows to 40 cm and is good for "iriko." "Kinko" is oval shaped and is found along the coast of the Sea of Japan and north of Ibaragi Prefecture (northeastern Honshu) to Hokkaido. Japan's total annual production of sea cucumber is about 7,100 t, most of which is "ma-namako" (Table 1).

Marketing

Fresh

All species are treated equally in the fresh market, but color, size, and origin are important. According to one specialist at a Tsukiji Central Wholesale Market (TCWM) auction house in Tokyo, brown or green-colored live sea cucumbers in the 200-500 g range are the most acceptable for fresh consumption. Large sea cucumbers and sea cucumbers found in warm waters are said to be too tough to eat. Fresh or live Japanese sea

Table 2.—Japanese frozen sea cucumber imports by month, country, quantity, and average price[1], 1988.

	Imports									
	Korea		Canada		United States		China		Fiji	
Month	kg	¥/kg	kg	¥/kg	kg	¥/kg	kg	¥/kg	kg	¥/kg
Jan.			1,000	534						
Feb.			1,080	1,402						
Mar.	90	3,867	9,040	1,263						
Apr.	1,964	1,480			543	618				
May	1,445	1,594			1,020	2,063				
June	5,618	1,402	6,000	1,108	2,000	1,977	169	7,485		
July	711	6,752			4,950	1,829				
Aug.					6,830	1,887				
Sept.										
Oct.									6,128	682
Nov.					1,556	1,872				
Dec.	250	6,998			3,559	3,700				
Total	10,078	1,983	17,120	1,175	20,458	1,604	169	7,485	6,128	682

[1]Prices are quoted CIF.

Table 3.—Japanese imports of dried, salted, or brined sea cucumber by month, country, quantity, and average price[1], 1988.

	Imports									
	Korea		Canada		United States		Singapore		Maldives	
Month	kg	¥/kg	kg	¥/kg	kg	¥/kg	kg	¥/kg	kg	¥/kg
Jan.	224	3,085			88	2,386				
Feb.	348	4,026			443	1,926				
Mar.	1,013	4,247					212	1,037		
Apr.	2,387	4,809							250	2,212
May	3,848	7,981								
June	3,905	5,850			365	1,432	1,000	1,041	2,000	2,027
July	1,633	5,933								
Aug.	627	5,282	175	8,011						
Sept.	1,220	5,373								
Oct.					907	2,002				
Nov.	792	5,784								
Dec.	2,213	8,559	140	2,922						
Total	18,210	5,159	315	5,749	1,803	1,887	1,212	1,040	2,250	2,047

[1]Prices are quoted CIF.

cucumbers are usually sold for 500-1,500 ¥/kg (Table 4). The price depends on the supply and is the highest from August to November. Fresh sea cucumbers are packed in 10 kg (net) flat cartons with 3 blue-ice packs per carton. After depuration in holding tanks, over 12 kg of sea cucumbers are packed to meet the net weight of about 10 kg upon arrival at market. About 20 percent of the original weight is lost during shipment through water loss. Specialists do not recommend freezing fresh sea cucumbers because they reportedly disintegrate when thawed.

Dried

Dried sea cucumber is produced by repeated boiling and drying. The Japanese market for dried sea cucumber seems to be limited because the dried product is used only by Chinese restaurants. However, the potential market for imported dried sea cucumber may be around 50 t a year, according to a Tokyo wholesaler specializing in Chinese food. Dried sea cucumber (10 percent moisture content) for the Japanese market is sorted to 1) no more than 30 pieces/600 g and 2) 31-70 pieces/600 g. One carton contains 20 kg and 2 cartons comprise a 40 kg master carton. Some Carlifornia exporters, however, use gunny sacks. Dried sea cucumbers are usually distributed by wholesalers specializing in Chinese foods. The wholesale price is about 13,000-23,000 ¥/kg, depending on quality. The quality of dried sea cucumbers is judged by the state of the cucumber after reconstitution with water. The texture of the sea cucumber's gelatinous meat must be like pudding and the reconstituted weight should be 4-5 times the dry weight. Sea cucumbers harvested off San Francisco and Los Angeles are of good quality and most are exported to Taiwan. The Japanese claim that Alaskan sea cucumber, however, is of inferior quality with little meat. Some dressed sea cucumbers, which are frozen in nitrogen after reconstitution from the dried state, are imported to Japan. However, thawing this type of frozen sea cucumber is reportedly difficult. No published statistics on dried sea cucumbers are available.

According to *INFOFISH* magazine, Hong Kong is the largest distribution center for dried sea cucumber in Asia. Japan also exports dried sea cucumber to Taiwan and Hong Kong. Taiwan imports high quality products only, whereas Hong Kong imports all grades and reexports low quality products to China.

Fermented

"Konowata" is considered a delicacy in Japan. It is eaten mainly when drinking sake or whiskey. About 8-10 t are sold at TCWM per year. Wholesale prices at TCWM are about 4,000-8,000 ¥/kg (Table 5). It is difficult to determine the current total market size for "konowata" in Japan. The publication "Marine products in Japan by E. Tanikawa (cited at the end of this report) describes the production process in detail: Sea cucumber viscera (alimentary canal and reproductive organs) are first thoroughly cleaned. Salt, equivalent to 10-15 percent of the total wet weight of the visceral mass, is then added. The mixture is stirred frequently for about 5 hours, drained, and then put in barrels for about a week to age. The "konowata" is packaged for restaurants in 1 kg units in flat wooden barrels, or for retail in small glass jars or wooden barrels containing about 100 g. The retail price of a glass jar containing about 100-120 g is about ¥3,000 each. Regular supermarket or department stores do not usually carry "konowata." It is only found at specialty stores. (Source: IFR-89/69R, prepared Paul E. Niemeier, Office of International Affairs, NMFS, NOAA, Department of Commerce, Silver Spring, Maryland 20910.) Publications which describe the sea cucumber drying process include:

Tanikawa, E. "Marine products in Japan," Koseisha-Koseikaku Company, 8 Sanei-cho, Shinjuku-ku, Tokyo.

Sachithananthan, K. 1986. "Artisanal handling and processing of sea cucumbers (sand fish)." *INFOFISH Digest*, No. 2/86:35-36.

Nearshore Magazine. 1987. "Preparing beche-de-mer for export." Fisheries, Inc., P.O. Box 783, Wakefield, Rhode Island 02882. June:13-15.

Table 4.—Fresh or live sea cucumber at Tokyo's Tsukiji Central Wholesale Market (TCWM) by month, quantity, and average price, 1984-87.

	Sales							
	1984		1985		1986		1987	
Month	kg	¥/kg	kg	¥/kg	kg	¥/kg	kg	¥/kg
Jan.	136,493	650	147,826	564	143,224	677	138,305	648
Feb.	102,017	847	111,584	613	130,112	602	124,983	550
Mar.	105,373	739	109,714	520	132,483	512	117,600	491
Apr.	46,874	779	46,218	524	52,771	495	43,164	487
May	25,457	496	19,575	611	19,456	623	21,251	603
June	14,600	498	14,521	639	13,349	543	10,447	698
July	12,088	501	12,055	651	13,725	665	10,618	767
Aug.	7,105	599	7,298	623	7,000	761	4,577	1,165
Sept.	11,146	834	7,271	999	7,171	1,071	6,399	1,567
Oct.	20,257	1,455	12,307	1,619	16,752	1,525	12,235	1,839
Nov.	95,061	848	64,119	1,373	65,517	1,124	55,082	1,245
Dec.	196,265	791	173,579	941	182,499	878	160,290	994
Total	772,736	769	726,067	804	784,064	727	704,951	753

Table 5.—Japanese fermented sea cucumber (konowata) sales at TCWM by month, quantity, and average price, 1984-87.

	Sales							
	1984		1985		1986		1987	
Month	kg	¥/kg	kg	¥/kg	kg	¥/kg	kg	¥/kg
Jan.	2,130	8,254	1,922	8,368	1,300	8,065	1,272	7,889
Feb.	2,068	6,445	1,575	6,126	1,473	8,882	1,308	10,180
Mar.	1,386	6,862	1,155	5,875	1,996	8,134	1,160	8,338
Apr.	291	7,136	1,027	5,618	999	5,167	487	6,917
May	381	5,695	215	5,200	376	4,983	494	5,170
June	227	7,548	411	4,529	486	4,506	780	4,154
July	392	6,134	400	3,663	214	4,004	270	4,917
Aug.	337	7,277	261	6,454	313	5,453	293	4,391
Sept.	208	6,731	225	5,299	391	4,994	349	6,511
Oct.	374	6,444	834	5,922	429	5,611	438	5,979
Nov.	475	7,271	555	4,751	646	5,249	371	5,537
Dec.	1,027	6,390	1,661	5,588	1,228	3,301	822	8,375
Total	9,296	6,999	10,241	6,099	9,851	6,435	8,044	7,289

Japan's Sablefish Supply and Market

The current Japanese demand for sablefish, *Anoplopoma fimbria* (also known as black cod), is estimated to be around 30,000 metric tons (t) per year, and is growing steadily. It is supplied almost entirely by imports. Japan's 1988 sablefish imports totaled 30,500 t, valued at about $158 million, an increase of 7 percent by quantity and 33 percent by value over 1987 imports (Table 1).

The United States is the primary supplier, shipping about 90 percent (27,200 t valued at $140 million) of the 1988 total. Canada, Mexico, Morocco, and the Republic of Korea also supplied small amounts. Japan's purchases of sablefish have increased by over 450 percent since 1983, when the United States began to cut Japanese sablefish catch allocations within the U.S. Exclusive Economic Zone (EEZ). The outlook for 1989 U.S. sablefish exports to Japan is favorable. During the first 6 months of 1989, the United States shipped nearly 16,000 t, valued at $72 million—up 7 percent by quantity but down 10 percent by value, over 1987 imports of 15,000 t, worth $80 million. The lower value may be a result of market oversupply.

Consumption

Sablefish is a popular and relatively inexpensive fish that is primarily consumed during the winter months in northeastern Japan, especially in Tokyo and Kanagawa Prefectures. The southwestern part of Japan is also a potential market. Sablefish competes with species such as rockfish and turbot, which have similar seasons and prices, and it is sometimes substituted for salmon when salmon prices are high.

Supply

Nearly the entire U.S. and Canadian sablefish catch is used to supply the Japanese market. The combined catch of the two countries totaled 52,500 t in 1988 (Table 2), with the United States accounting for 48,000 t (91 percent) and Canada 4,500 t (9 percent. The dressed weight[1] of the combined catch was approximately 34,000 tons. The value of the 1988 U.S. sablefish catch was about $92 million. Cold storage holdings in the United States and Canada at the end of 1988 reportedly totaled only 1,000-1,500 tons.

The U.S. sablefish catch has more than doubled since 1984. U.S. domestic annual harvest (DAH) allocations within the EEZ have inceased steadily since the early 1980's, reflecting the increased growth and efficiency of the U.S. sablefish industry. The United States, however, cut the 1989 DAH by about 5 percent because of concern over potential sablefish stock depletion in the Bering Sea, Aleutian Islands, and Gulf of Alaska. Within the Bering Sea, the sablefish allocation was reduced to such an extent that directed fishing was prohibited, and the quota of 2,380 t was to caught only as a by-catch. In the Gulf of Alaska, the Secretary of Commerce implemented a total allowable catch of 26,000 t for 1989, of which 3,600 t was assigned as by-catch for trawlers in other directed groundfish fisheries. The remainder of the quota was for the sablefish hook-and-line fishery. There was no directed trawl fishery for sablefish in the Gulf of Alaska in 1989. As a result of these actions, the 1989 sablefish supply was expected to decrease.

Prices

The dramatic fall of the U.S. dollar

Table 1.—Japanese imports[1] of frozen sablefish by country, quantity (t), and value ($1,000), 1987-89.

	1987		1988		Jan-June 1989	
Country	Quantity	Value	Quantity	Value	Quantity	Value
U.S.A.	25,770	105,215	27,186	139,610	15,997	72,053
Canada	2,765	13,007	3,162	17,758	1,093	5,294
Mexico			188	551		
Morocco			17	17		
Korea, N.					18	61
Korea, S.	21	75	4	24	10	35
Hong Kong	28	67				
Total	28,584	118,364	30,557	157,960	17,118	77,443

[1]Note: Japan did not begin to report separate import statistics for sablefish until 1987. Prior to that time, sable fish import statistics were lumped together with those of cod and cod-related species.

Table 2.—U.S. and Canadian sablefish catches by year, 1984-89[1].

	U.S. catch (t)		Canadian catch (t)		Total catch (t)	
Year	Round wt.	Dress[2]	Round wt.	Dressed[2]	Round wt.	Dressed[2]
1984	22,720	14,768	3,852	2,503	26,572	17,272
1985	28,843	18,748	4,282	2,783	33,125	21,531
1986	38,930	25,305	4,500	2,990	43,530	28,295
1987	46,707	30,360	3,726	2,422	50,433	32,782
1988	47,996	31,197	4,517	2,933	52,513	34,130
1989[1]	41,670	27,086	4,015	2,610	45,685	29,696

[1]1989 U.S. and Canada domestic catch allocations.
[2]Estimated using a conversion rate of 65 percent.

[1]The preferred sablefish product form is headed and gutted. The conversion rate from round weight to headed and gutted weight is about 65 percent.

against the yen in recent years has made U.S. sablefish very attractive to Japanese buyers. Consequently, they have imported large quantities at relatively low prices. Tokyo Central Wholesale Market prices for frozen sablefish at the end of August 1989 were $2.67-2.73/lb. for 5-7 and 7-plus lb. fish, $2.42-2.48/lb. for 4-5 lb. fish, $2.13-2.24/lb. for 3-4 lb. fish, and $2.00-2.03/lb. for 2-3 lb. fish. These prices were $0.25 to $0.45 below prices for the same period in 1988. The reasons for the lower market prices were not well understood, but may have been a result of oversupply. Japanese sablefish market prices generally depend on the results of the spring and fall fishing seasons off Alaska. Prices usually peak in April, when Japanese inventories are lowest, and fall substantially during the fall chum salmon season. According to the *Suisan Keizai Shimbun*, a Japanese fishing industry paper, 1988 imports were controlled by a few leading importers who supported the market to prevent prices from falling to the low levels of 1986 and 1987. Because of the market's dependence on imports, there was concern that further fluctuation in the yen/dollar exchange rate would continue to adversely affect sablefish prices in 1989.

Outlook

The condition of sablefish stocks was in question in mid 1989. Although the results of the 1988 Japanese-United States cooperative longline survey indicated that the sablefish biomass remained stable, the condition of the 1984 year class was uncertain. (Sablefish enter the commercial fishery when they are 4-5 years old.) Consequently, beginning in 1989 overall supply was expected to decline slightly, with higher prices. As the catch ceiling necessary to ensure sablefish stock preservation is not likely to exceed 50,000 t in the near future, the growth potential of Japan's sablefish market is limited. (Source: IFR-89/90, prepared by Paul E. Niemeier, Foreign Fisheries Analysis Branch (F/IA23), NMFS, NOAA Department of Commerce, Silver Spring, Maryland 20910.)

Iceland's 1988 Fish Catch Sets Record

Iceland's fisheries catch reached a record 1.7 million metric tons (t) worth $315 million in 1988, vs. 1.6 million t worth $287 million in 1987. Cod again proved slightly less plentiful in 1988 (376,000 t vs. 390,000 t in 1987), but this was offset by the increase in the value of these landings; $315 million vs. $289 million in 1987. The catch of all other finfish, however, increased both by quantity and value in 1988. The capelin catch (used mostly for reduction), reached 909,200 t in 1988 (vs. 803,000 t in 1987), helping to increase the overall catch. The shellfish harvest, however, declined in both quantity and value when compared with 1987. The shrimp harvest declined from 38,600 t worth $79 million to 29,700 t worth $73 million. The drop in the catch of high-value species (cod, Norway lobster, shrimp, and scallops) together with lower demand in the United States market, produced some problems in the fish processing sector.

The Government of Iceland imposed both a quota and an export tax in an attempt to keep fresh fish available to processors, but despite this action, exports of fresh fish increased by over 22 percent in 1988. The U.S. market declined to 15 percent of the value of total fishery exports in 1988 (38,100 t worth $167 million), while the continued growth in Icelandic sales to the United Kingdom have made it Iceland's most important market. Reductions in Iceland's cod quotas from 315,000 t in 1988 to 285,000 t in 1989, and uncertainty about shellfish stocks suggest that 1989 would be a poorer year for Icelandic fishermen and the Icelandic economy which depends on fishery exports for over three-fourths of its total export earnings. The small fish farming sector, however, remains a bright spot. Farmed salmon harvests were 900 t in 1988 and was projected to be 4,000 t in 1989 and more than 15,000 t in 1990.

The U.S. Embassy in Reykjavik has prepared a 13-page report reviewing Icelandic fisheries during 1988. The report includes sections on Iceland's fisheries catch, fish processing, overseas marketing, fish farming, and the 1989 outlook. The report also includes statistical tables on Iceland's fisheries catch and how it is utilized, exports of fishery products by destination, exports by product form, exports to the United States, and Iceland's fishing fleet and number of fishermen. U.S. companies can obtain a copy of "Icelandic Fisheries, 1988" for $13.95 and a $3.00 handling fee (total of $16.95, personal checks or money orders only) by ordering report PB89-197230/GBA from NTIS, 5285 Port Royal Road, Springfield, Virginia 22161. (The handling fee is per order, regardless of how may reports are ordered.) (Source: IFR-89/72N.)