PREFACE

In 1991 the United States International Trade Commission initiated its current *Industry and Trade Summary* series of informational reports on the thousands of products imported into and exported from the United States. Each summary addresses a different commodity/industry area and contains information on product uses, U.S. and foreign producers, and customs treatment. Also included is an analysis of the basic factors affecting trends in consumption, production, and trade of the commodity, as well as those bearing on the competitiveness of U.S. industries in domestic and foreign markets.[1]

This report on canned fish represents one of approximately 300 individual reports to be produced in this series during the 1990s. Listed below are the individual summary reports published to date on the agriculture and forest products sectors.

USITC publication number	*Publication date*	*Title*
2459	November 1991 . . .	Live Sheep and Meat of Sheep
2462	November 1991 . . .	Cigarettes
2477	January 1992	Dairy Produce
2478	January 1992	Oilseeds
2511	March 1992	Live Swine and Fresh, Chilled, or Frozen Pork
2520	June 1992	Poultry
2544	August 1992	Fresh or Frozen Fish
2545	November 1992 . . .	Natural Sweeteners
2551	November 1992 . . .	Newsprint
2612	March 1993	Wood Pulp and Waste Paper
2615	March 1993	Citrus Fruit
2625	April 1993	Live Cattle and Fresh, Chilled, or Frozen Beef and Veal
2631	May 1993	Animal and Vegetable Fats and Oils
2635	May 1993	Cocoa, Chocolate, and Confectionery
2636	May 1993	Olives
2639	June 1993	Wine and Certain Fermented Beverages
2693	November 1993 . . .	Printing and Writing Paper
2726	January 1994	Furskins
2737	March 1994	Cut Flowers
2749	March 1994	Paper Boxes and Bags
2762	April 1994	Coffee and Tea
2865	April 1995	Malt Beverages

[1] The information and analysis provided in this report are for the purpose of this report only. Nothing in this report should be construed to indicate how the Commission would find in an investigation conducted under statutory authority covering the same or similar subject matter.

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USITC publication number	*Publication date*	*Title*
2859	May 1995	Seeds
2875	May 1995	Certain Fresh Deciduous Fruits
2898	June 1995	Certain Miscellaneous Vegetable Substances and Products
2918	August 1995	Printed Matter
2917	October 1995	Lumber, Flooring, and Siding
2828	November 1995 . . .	Processed Vegetables
3022	April 1997	Industrial Papers and Paperboards

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ABSTRACT

This summary covers canned fish, a seafood consumed widely in the U.S. market. Information is provided on the structure of the U.S. industry, U.S. consumption, domestic and foreign trade and tariffs, and foreign production. The general period of study is 1992-96.

- The U.S. canned fish industry produces seafood from a variety of species, including tuna, salmon, herring, sardines, and mackerel. Also significant in the U.S. market are canned anchovies, minced fish, and caviar, mostly produced abroad and imported. The industry is divided into subsectors, depending on which species are processed, and in general, major producers in one subsector do not have a significant share of another subsector. Sectors are geographically distinct as well, because the economics of canned fish production dictate that canneries are located near the fish populations. Thus, the canned salmon industry is concentrated in Alaska and the Pacific Northwest, tuna canneries are situated on the Pacific coast and the tropical islands, and the canned sardine industry is found on the coast of Maine. Abundant low-cost raw material supplies influence national competitiveness, and thus the U.S. industry excels in product lines such as canned salmon and sardines, where rich resources are found in or near coastal waters. Competitive factors in favor of some sectors of the U.S. industry also include economies of scale, technological advances, and trusted brand names. Disadvantages include relatively high-cost labor vis-a-vis foreign rivals and, in some cases (notably tuna), migratory resources that force increased cannery reliance on imported raw fish.

- Total U.S. production of canned fish reached 414 million kilograms, valued at $1.3 billion, in 1996. Of that total, tuna accounted for the largest share (74 percent) of total quantity and value of production. Canned salmon made up another 22 percent of total production. U.S. exports of canned fish are small (less than one-sixth of production overall) except in the case of salmon, approximately 50 percent of total production of canned salmon was exported in 1996; Europe, particularly the United Kingdom, is the primary market for such exports.

- U.S. consumption of canned fish reached 526 million kilograms, valued at $1.6 billion, in 1996. This represents an increase of 7 percent in quantity and 10 percent in value from total consumption in 1992. However, on a per capita basis, canned fish consumption has declined in recent years, reaching 4.5 pounds per person in 1996, a 0.1-pound decline from 1992. Imports supply 34 percent of the total quantity of consumption, and 32 percent of total value, shares that have declined slightly from previous years. There are two main U.S. market channels for canned fish, the retail market (e.g., supermarkets) and the institutional trade (e.g., hospitals and schools). Competition in the retail trade is largely based on brand loyalty, whereas in the institutional trade price is the primary competitive tool; as a result, U.S. producers with well-known brand names have a competitive advantage over foreign suppliers in the retail trade, and low-cost foreign producers have a competitive advantage over domestic suppliers in the institutional trade.

INTRODUCTION

This Industry and Trade Summary covers canned fish, except shellfish.[1] Information is provided on the structure of the U.S. industry, importers and exporters, and distributors such as wholesalers and retailers. Additional information is provided on certain foreign industries, domestic and foreign tariff and nontariff trade measures, and the competitiveness of the U.S. industry in domestic and foreign markets. Canned fish accounts for the bulk of industry output under Standard Industrial Classification (SIC) Code 2091, Canned and Cured Fish and Seafoods. Imports and exports of canned fish are recorded under heading 1604 of the *Harmonized Tariff Schedule of the United States (HTS)*. The report generally covers the period 1992 through 1996, providing earlier historical data, when necessary, to show longer term trends. Appendix A contains an explanation of tariff and trade agreement terms.

Fish canning is an old industry. The canning of fish and other foods began when Napoleon sought a way to preserve food for his soldiers.[2] Nicholas Appert responded to the offer of a 12,000-franc bounty by, after several failures, discovering a successful way to heat and seal food in hermetically sealed containers. Among the first seafoods thus preserved in the United States were salmon, lobsters and oysters, first packed in 1834 by a firm in New York. Eventually canneries expanded to mackerel, clams, sardines, and shrimp, among others. Many North American canneries started out processing fish before expanding to fruits, vegetables, and other foods.

Some important segments of the U.S. canned fish industry started out by accident. Tuna is an example: in the early 1900's there was a sudden shortage of sardines in the California canning industry, and some canneries turned to albacore (then only a sportfish) as a substitute. The new product eventually caught on, and what is now a $1 billion U.S. canned tuna industry was born.

Canned fish are among the most valuable and widely consumed seafoods in the U.S. market, with total 1996 wholesale sales of $1.6 billion. The most popular canned fish products today are tuna and salmon. Sardines, herring and mackerel are also widely consumed.[3] Along with other seafood products, canned fish is an important source of inexpensive protein. But unlike fresh seafood, canned fish can be stored and transported long distances from its source, enabling consumption by a wide array of consumers. Consumption of canned fish in the U.S. market is geographically widespread; however, on a per-capita basis it has been fairly constant over several decades, at about 5 pounds per person annually, despite the growing popularity of seafood in general, particularly among health-conscious consumers.

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[1] Fresh or frozen fish, cured or otherwise prepared fish, and all shellfish products are covered in other Industry and Trade Summaries.

[2] John N. Cobb, The Canning of Fishery Products (Seattle: Miller Freeman, 1918).

[3] In addition to these common items, there are several minor products such as fish balls, pastes, and minced fish that are included in the data in this report.

The U.S. canned fish industry consists of numerous canneries, both large and small, scattered along the coasts and among the islands of the 50 States and territories. In some segments of the industry, such as tuna and salmon, canneries are directly integrated with the harvesting industry,[4] in many cases sharing the same ownership or having exclusive-delivery agreements or other contractual linkages.

Canned-fish processing is highly capital intensive, requiring significant investments in dockside space (for unloading raw material), plant and equipment such as conveyor belts, cookers, canning machines, and inventory space. Most of the nonmanagerial labor employed in a fish cannery consists of relatively unskilled workers who pick meat from fish bodies or operate pallet trucks and cookers.

There is also substantial investment required on the marketing side, for the canned-fish market is generally highly brand sensitive. The bulk of the sales of canned tuna, salmon, and other products are made under labels that are household names throughout North America and much of the rest of the industrialized world. Most such producers are decades old and have spent much of that time developing reputations among consumers for producing seafoods that are reliable both in taste and safety--the latter being particularly important for seafoods, which occasionally are the subject of "scares" among consumers.

Imports supply a large share of U.S. canned fish consumption, averaging between 29 and 35 percent of the total value of consumption during 1992-96. Such imports exceeded $400 million in 1996, consisting mostly of canned tuna from Asian suppliers, notably Thailand. Exports are also an important element of U.S. canned fish trade, reaching nearly $214 million in 1996, or more than a quarter of U.S. production. Most such exports consisted of salmon destined for the UK market. But U.S. canned fish exports do not match imports: the U.S. trade deficit in canned fish products reached $285 million in 1996, up from $206 million in 1992.

THE PRODUCTION PROCESS AND PRODUCTS

Production Process

In canned fish production, proximity to the raw material is of greater importance to cannery location than proximity to the market. This is because of the relatively higher cost of transporting raw versus finished product. Most fish canneries are located along the coastlines of continents or islands, and along rivers, near the habitat of the fish species they intend to process, usually with docks and unloading facilities for direct delivery by the fishing vessel.

A fish cannery typically operates in the following fashion. The raw fish, either fresh or frozen, usually in whole or gutted form, are unloaded from the vessel or truck that delivered them, and stored

[4] For a description of the fish harvesting industry, see *Industry and Trade Summary, Fresh or Frozen Fish*, USITC Publication 2544 (AG-7), August 1992.

in freezers or cold storage, to be used as needed. When needed, the fish, if frozen, are thawed in large containers of brine. They are then eviscerated by hand and in some cases the heads and tails are cut off by hand. They are then loaded on trays that are stacked on to movable shelf racks, and wheeled into the first cooker, to be cooked once before they are put into cans. An exception is sardines, the fish are sorted into open cans by hand, a skilled-labor process, before the first cooking. This cooking takes ½ hour to 3 hours, depending on the size of fish, the larger fish (e.g., yellowfin tuna) taking longer than the smaller fish (sardines or mackerel). Afterward, the fish are loaded onto conveyor belts and taken to production workers at processing tables. In tuna and salmon canneries, fish at this stage are skinned, filleted, or "loined" (the large sections of side meat are removed from the carcass), and mackerel and large herring are filleted or they are cut crosswise into thinner sections called steaks. Sardines (small herring) already in open cans skip this stage. At this stage, meat for human consumption is separated from meat for petfood, which, like the carcass, enters a separate production process.[5]

The pieces of meat for human consumption continue along the conveyor belt to be hand-packed in water or vegetable oil in hermetically sealed cans. (At this stage, sardines have vegetable oil, mustard, or tomato sauce or other medium added to their open cans, which are then hermetically sealed.) The sealed cans are then subjected to a second cooking, called retort cooking, for sterilization. This process takes 1 to 4 hours, depending on the size of can and type of fish. Afterward, the cans are cooled, then labeled and packed by an automated process, and stored in inventory in anticipation of shipment to market.

Products

The seafood industry produces dozens of canned-fish products. Canned fish are distinguished, either physically or in the marketplace, by fish type, species, packing medium, can size, brand name, and country of origin. Thus, a consumer has a choice between water-packed U.S. albacore tuna in a single-serving size can and sardines in mustard sauce in a larger can. Or the consumer might prefer light-meat tuna in oil over white-meat tuna in water, or instead of tuna or sardines, opt for red or pink salmon, packed bones and all in water. The consumer pressed for time might choose a "lunch kit" complete with a can of tuna, a pack of crackers, mayonnaise, and a wooden spoon--a ready-to-eat lunch marketed by more than one tuna canner. Other recent innovations include canned skinless and boneless salmon, designed to appeal to consumers who prefer not to pick through the bones (which are edible) in their traditional style canned salmon; and low sodium canned fish for people on restricted diets. Even the can itself has gone through innovations: the old, three-piece can, consisting of a cylinder fused on each end by disk-shaped lids, has been replaced by a two-piece can,

[5] Virtually all canneries produce significant amounts of petfood and fish meal and oil as byproducts of the human-food production process. In the case of tuna, for example, petfood is an essential economic activity of the cannery, contributing a large share of the overall gross profit according to industry questionnaires submitted in USITC investigation No. 332-224. For further information, see U.S. International Trade Commission, *Competitive Conditions in the U.S. Tuna Industry*, Investigation No. 332-224, USITC Publication 1912 (October 1986), pp. 32-33.

with only the top lid being a separate piece of metal; this new can style has found favor among retailers and consumers alike because it is easier to pack cans on top of one another without them sliding off.

Fish is typically packed in a liquid medium, such as water or vegetable oil, or sometimes tomato or other sauces. The type of medium the fish is packed in makes a considerable difference to the final consumer; for some consumers one fish species packed in water is a wholly different product from the same species packed in oil because of the higher caloric content and different taste of oil-packed tuna versus water-packed. This is particularly true of canned tuna; U.S. consumption is divided between tuna in water (75-80 percent of total canned tuna consumption) and tuna in oil (20-25 percent). Almost all canned salmon is packed in water, whereas almost all canned sardines are packed in oil or sauces. Other factors affecting demand for various canned-fish products are discussed in the U.S. market section of this report.

U.S. INDUSTRY PROFILE

In 1996, the U.S. seafood industry produced 913 million pounds of canned fish, valued at [redacted] from the 1992 production level of 802 million pounds, valued at $1.2 billion. By far the single largest canned fish product is tuna, which in 1996 accounted for nearly three-quarters of all canned-fish output. As discussed later in this report, there are two main types of tuna, whitemeat (albacore) and lightmeat (all other species), which differ not only by color but by flavor. In addition, tuna is canned in two types of solutions, water or oil, with water-packed tuna being preferred in the U.S. market mainly because of its lower caloric content. The remaining one-quarter of total canned fish production consists of salmon, especially pink and sockeye (red), and sardines.

The U.S. canned and cured fish and seafoods industry, covered under Standard Industrial Classification (SIC) Category 2091, consisted in 1992 of approximately 142 companies

Table 1
Canned fish: U.S. production, 1992-96

Item	1992	1993	1994	1995	1996	Percent change, 1992-96
	Quantity (1,000) pounds					
Herring	4,741	7,293	6,313	6,837	6,232	31.4
Salmon:						
Chinook	133	148	147	169	115	-13.5
Chum	6,505	5,745	9,407	10,396	14,940	129.7
Pink	90,049	144,111	160,834	179,204	130,440	44.9
Coho	1,726	1,050	1,113	2,935	2,738	58.6
Sockeye	51,020	47,290	35,340	50,864	48,930	-4.1
Total salmon	149,433	198,344	206,841	243,568	197,163	31.9
Sardines	17,437	14,354	15,560	13,567	17,672	1.3
Tuna:						
Albacore	144,097	149,974	160,470	164,350	165,634	14.9
Lightmeat	464,888	468,769	449,044	502,231	510,182	9.7
Total tuna	608,985	618,743	609,514	666,581	675,816	11.0
Other	21,832	15,289	13,458	16,196	16,079	-26.3
Total	802,428	854,023	851,686	946,749	912,962	13.8
	Value *(1,000 dollars)*					
Herring	6,854	12,935	11,239	12,032	10,826	58.0
Salmon:						
Chinook	320	391	336	474	628	96.3
Chum	8,032	9,201	11,527	16,173	19,572	143.7
Pink	143,105	193,635	238,783	258,900	158,969	11.1
Coho	3,676	2,193	2,020	6,318	5,594	52.2
Sockeye	137,688	101,631	76,344	137,371	99,582	-27.7
Total salmon	292,821	307,051	329,010	419,236	284,345	-2.9
Sardines	24,508	25,054	27,587	23,669	29,857	21.8
Tuna:						
Albacore	364,575	373,547	401,161	380,937	362,690	-0.5
Lightmeat	523,127	530,471	562,080	557,604	594,234	13.6
Total tuna	887,702	904,018	963,241	938,541	956,924	7.8
Other	21,406	22,131	21,115	25,743	16,537	-22.7
Total	1,233,291	1,271,189	1,352,192	1,419,221	1,298,489	5.3

Source: National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, *Fisheries of the United States,* (annual), various issues.

which, collectively, operated 157 canning or curing establishments.[6] [7] The U.S. canned fish industry has become increasingly globalized. It is also increasingly capital intensive, and its labor force is highly productive. Canned fish is marketed through both retail and institutional outlets, a two-tier system requiring the presence of distributors. Consumption is largely a function of price, brand name, demographics, marketing, and health concerns about fat and cholesterol. U.S. production of canned fish, like other seafood production, is regulated on a voluntary basis at the Federal (U.S. Department of Commerce) level.

Pet food and other byproducts of the fish canning industry, although not the subject of this report, deserve mention because of their considerable economic importance, noted above. Much of the meat and organs from processed fish that is not suitable for human consumption is destined for petfood (usually catfood). Indeed, many of the popular brands of canned petfood are marketed by subsidiaries or parent companies of canned seafood firms. Petfood can be a highly profitable segment of a cannery's operation: in the example of tuna, petfood has contributed more than half of some canneries' gross profit.[8] And, although its supply is linked to the same inputs from which human-food canned fish is processed, its markets are distinct and not subject to the same demand fluctuations as the markets for human-food canned fish. The same is true of fish meal and oil, which are processed from fish carcasses. These byproducts go to industrial uses (oil) and animal feeds (meal), where they account for very small shares of the total meal and oil markets. Thus, demand for fish meal and oil is dependent on prices for meal and oil produced from soybeans and other oilseeds that account for most of the overall meal and oil supply.

Inputs and Production Costs

Approximately 66 percent of the value of industry shipments of canned fish can be attributed to material costs (raw fish, metal cans, etc.), while the other 34 percent represents value-added. Payroll

[6] A cannery is an establishment that produces canned fish, while a canner or canning company is a business entity owning one or more canneries.

[7] This SIC category of seafood firms includes curing operations, which are distinct establishments from canneries and produce such foods as smoked, salted, and/or dried fish. In the United States, the 1996 value of cured fish production reached $113 million, about 7 pecent of total canned-and cured-fish production of $1.5 billion. National Marine Fisheries Service, U.S. Department of Commerce, *Fisheries of the United States, 1996*, p. 89. Cured fish are the subject of another Industry and Trade Summary.

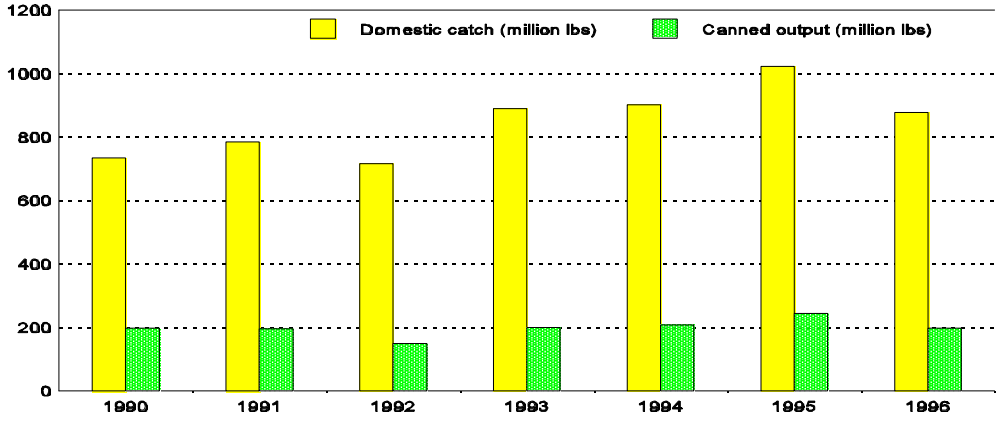
[8] U.S. International Trade Commission, *Competitive Conditions in the U.S. Tuna Industry*, Investigation No. 332-224, USITC Publication 1912 (October 1986), pp. 32-33. Such comparisons between human- and petfood must be made carefully, however, because of the accounting complexities involved in allocating a cannery's costs between different products that share much of the same production-line process. That is, by allocating a larger proportion of shared costs to petfood processing, the apparent profitability of petfood would diminish.

costs, which totaled $119 million in 1992, represented about 38 percent of value-added. The industry spent more than $21 million annually on capital expenditures during 1988-92.[9]

The principal input into the production of canned fish is unprocessed fish, which is brought to the cannery in whole or eviscerated form, usually frozen or chilled. As described earlier, the whole or eviscerated fish is further processed and cooked before its meat is separated and canned; between 50 and 90 percent of the fish is utilized as edible product, depending mainly on the species, and the rest of the fish is processed into petfood or fish meal and oil.

For some species, such as Pacific salmon, or albacore and tropical tunas, virtually the entire U.S. supply of unprocessed fish is utilized by canneries, and therefore trends in such supply should closely track trends in processed product. An example shown in figure 1 is salmon, which for all Pacific species is used mainly by canneries.[10] Changes in raw Pacific salmon supply closely match changes in canned-salmon output. For other products, such as canned sardines and herring, the raw material (herring) is used mostly in the fresh, frozen, and cured fish industries, and so the total harvest (and price) of the raw material is not as closely correlated with the output and price of the canned product.

Figure 1
U.S. salmon catch and canned output, 1990-96



Source: National Marine Fisheries Service, U.S. Department of Commerce, *Fisheries of the United States* (annual), various issues.

[9] Bureau of the Census, U.S. Department of Commerce, 1992 Census of Manufactures; includes cured fish processing operations.

[10] In figure 1, the large difference between the volume of canned fish versus the catch is due to the fact that the catch is measured in whole weight and canned fish is measured in processed weight.

In addition to whole fish, there are other raw materials in canned fish processing, including cans and labels, and packing media such as vegetable oil or spring water. Combined, these other materials account for a significant share of total costs: 12 percent in the case of canned tuna processing, for example.[11] Direct labor adds another significant cost element: 8 percent in the case of tuna. Other costs, much of which are shared with the production of petfood and other byproducts in the typical fish cannery, make up the remainder.

Employment

Fish canning is a cyclical business, dependant upon the fluctuating abundance of fish inputs. In some sectors, such as tuna, canneries have dealt with this problem by importing supplies from long distances when local supplies fall short. In other sectors, such as salmon, many canneries are closed for much of the year for lack of alternative uses for cannery capital when the salmon season is over. Therefore, actual employment in canneries also fluctuates, making it difficult to measure full-time year-round employment.

One way to measure employment is to estimate the equivalent full-time labor that is required to process the canneries' final output. An estimate of the number of full-time equivalent employees in canned-fish processing during 1992-96 is shown in table 2. By this measure, there was an overall gain in employment for the canned fish industry of 4 percent during 1992-96. However, this overall growth masks a significant decline in one sector, sardines, where employment declined sharply through 1995, before recovering partially in 1996. Significant growth occurred in salmon and herring, both up by 21 percent.

The estimation method adjusts for assumed growth in labor productivity, so that it is possible for estimated employment to decrease while industry output increases. This is the case for sardines, where output rose by about one percent in quantity during 1992-96 (table 2), but because of improved labor productivity the estimated full-time equivalent employment shown in the above table decreased by 9 percent from the 1992 base year.

[11] Source: Industry questionnaire submitted in USITC investigation No. 332-323. For further information, see United States International Trade Commission, *Tuna: Current Issues Affecting the U.S. Industry*, Report to the Committee on Finance, United States Senate, on investigation No. 332-313, USITC Publication 2547 (August 1992), p. D-23. Data are averages for 1979-91.

Table 2
Canned fish: Estimated full-time equivalent employment index,[1] 1992-96

Year	Salmon	Tuna	Herring	Sardines	Total
			(1992=100)		
1992	100	100	100	100	100
1993	130	99	151	80	105
1994	133	95	128	84	102
1995	155	101	136	70	111
1996	121	100	121	91	104

[1] The estimated full-time equivalent employment index is calculated by subtracting the average annual increase in labor productivity from the annual increase in the production level for each species, and indexing the result to the base year (1992). The average annual rate of increase in labor productivity is assumed to be 0.026 per year, which was the average annual rate of increase in canned tuna processing during 1986-91. United States International Trade Commission, *Tuna: Current Issues Affecting the U.S. Industry*, USITC Publication 2547 (August 1992), p. 2-8. The average annual rate of increase in U.S. production for each species is derived from table 1.

Source: Calculated by Commission staff.

Distribution and Marketing

Although U.S. canned fish producers are vertically integrated upstream into harvesting, they generally do not own or operate downstream marketing operations past the wholesale stage according to industry sources interviewed by Commission staff and industry financial reports. Rather, fish canners rely on brokers and other distributors to market their product to retailers, restaurants, schools, and other institutions. Such distributors usually handle a wide variety of food products in addition to canned fish, which eases the marketing of canned fish to large buyers such as supermarket chains.

Unlike fresh or frozen fish, which often is sold as a bulk commodity in a simple marketing process, the marketing of canned fish is quite complex. This, according to industry sources, is largely because of the strong brand identification many consumers have with the product, and also because of the high degree of concentration in the markets for the main products. As described by industry sources,[12] there are two major market channels for canned fish, the retail trade (e.g., supermarkets) and the institutional trade (schools, hospitals, etc.), and two types of brand labels, the canneries' own (e.g., Star-Kist) or the retailers' (e.g., Safeway's Sea Trader label). The marketing of these labels differs by marketing channel. In the retail trade, brand name and reputation are very important because the final consumer has a selection available and makes the final choice between the available brands. In the institutional trade, the final consumer has no idea what brand the product is and so

[12] Such industry descriptions of marketing issues are discussed more fully in United States International Trade Commission, *Competitive Conditions in the U.S. Tuna Industry*, Report to the President on Investigation No. 332-224, USITC Publication 1912 (October 1986).

other competitive elements -- such as price -- are relatively more important than brand reputation in marketing at the wholesale level.

Industry sources interviewed by Commission staff report that, by emphasizing brand identification and customer loyalty, the canned fish producer helps ensure a distribution of its product that is wider than if the product was marketed generically. National or regional advertising means that consumers everywhere will know a canner's name and many will seek it out, forcing retailers to carry a variety of brands of the same product on their shelves. Coupons reportedly are more effective than television or radio advertising in targeting consumers because a coupon will bring a consumer directly to the canner's brand. With broadcast advertising, in contrast, the consumer might forget the brand by the time he or she gets to the store, and simply remembers "to buy some canned salmon," perhaps choosing a competitor's brand.
Nevertheless, there are many consumers who simply want the least expensive product regardless of the brand name, and the "house" brands -- the stores' own brands -- serve that segment of the market. The product is virtually identical to the name-branded product, for most of it is produced by the nationally known canneries themselves on the same production lines as their own branded product. But it appeals to budget-conscious consumers who might otherwise not buy canned fish at all and so it complements more than competes with sales of the branded product.

The nature of competition between imported and domestically produced canned fish also depends on brands and on the marketing channel. Some foreign producers have nationally or regionally known brand names -- Mitsubishi's "3 Diamonds" brand is an example. Such producers market their products in the same manner as nationally known domestic producers. Others, who do not have well-known brands, often produce canned fish under contract with domestic canners, who thereby augment their domestically produced supplies, and/or with retailers, producing their own "house" brands.

In the institutional trade, foreign firms have a greater competitive advantage, especially if they enjoy lower costs than domestic firms. In the institutional trade, competition is mainly through price and in such a situation the producer with the lowest cost, not necessarily the best-known brand, is the most competitive. In the case of tuna, the institutional trade allowed some previously little-known foreign exporters to gain a foothold in the U.S. market. Later, as their production capacity grew, they acquired domestic firms (and their brand names) and expanded in the retail market as well.[13]

[13] See discussions of these issues, based on Commission staff interviews with industry sources, in United States International Trade Commission, *Competitive Conditions in the U.S. Tuna Industry*, Report to the President on Investigation No. 332-224, USITC Publication 1912 (October 1986).

Government Regulations Affecting the U.S. Canned Fish Industry

Unlike other U.S. meat products for human consumption, domestically produced seafood is not subject to mandatory Federal inspection. There is, however, a voluntary inspection program carried out by the U.S. Department of Commerce (USDC). This Federal inspection service, unlike mandatory inspection programs for other meats, is a fee-for-service program. In addition to the inspection service, USDC operates a fee-for-service grading program which distinguishes between products of differing levels of quality (e.g., "Grade A" versus "Lot Inspected").

All major U.S. fish canners participate in the inspection program. Services provided by the program include vessel and plant sanitation, product inspection and grading, label reviews, product specification reviews, laboratory analyses, training, education, and information. In addition, consultative services are provided in foreign countries, and inspection and certification services are provided for imported and exported products, in addition to mandatory Food and Drug Administration (FDA) programs. On December 18, 1997, FDA implemented its Hazard Analysis Critical Control Point (HACCP) rule[14] regarding "Procedures for the Safe and Sanitary Processing and Importing of Fish and Fishery Products. All seafood firms must be in compliance with this rule, and the USDC program provides to the seafood industry HAACP training, implementation assistance, and verification service to ensure such compliance.

The number of establishments and volume of product (all seafood, including canned fish) inspected by the USDC in 1995 and 1996 are shown in table 3.

Another set of government regulations that directly affect the canned fish industry, especially tuna and salmon, concerns marine mammals (such as whales and dolphins) and endangered species (such as sea turtles). The principal law concerning marine mammals is the Marine Mammal Protection Act of 1972)[15], as amended (MMPA), which Congress passed in response to public concern that marine mammals (including but not limited to porpoises) were being harvested or killed in excessive numbers or in harmful ways.[16] Regarding the tuna industry, the MMPA authorizes the Secretary of Commerce to set an annual maximum quota of porpoises that may be killed in the process of harvesting tropical tuna (the kind used to make "lightmeat" canned tuna) by purse seiners; if the quota is filled, which has happened rarely, the Secretary of Commerce may halt U.S. harvesting of porpoise-related tunas for the remainder of the year.

[14] 21 CFR Parts 123 and 1240.

[15] Public Law 92-522, 86 Stat. 1027 (1972), as amended by Public Law 100-711, 102 Stat. 4755 (1988), and Public Law 101-627, 104 Stat. 4467 (1990), codified in pertinent part at 16 U.S.C. 1361, et. seq.

[16] For more information on the MMPA, see United States International Trade Commission, *Tuna: Current Issues Affecting the U.S. Industry*, USITC Publication (August 1992), ch. 3.

Table 3

Seafood establishments and product inspections, 1995 and 1996[1]

	1995	1996
	Number	
Establishments:		
SIFE[2]	12	16
In-plant[3]	312	319
	Million pounds	
Quantity inspected:		
PUFI[4]	365.0	680.0
Grade A[4]	75.8	72.3
No mark[5]	188.4	185.6
Lot[6]	383.7	343.3
Total	1,012.9	1,281.2

[1] All seafood, including canned fish.
[2] Fish processing establishments approved for sanitation; products are not processed under inspection.
[3] Sanitarily inspected establishments, processing products under USDC inspection.
[4] Products processed under USDC inspection in inspected establishments and labeled with USDC inspection mark as "Processed Under Federal Inspection" (PUFI) and/or "U.S. Grade A."
[5] Products processed under inspection in inspected establishments but bearing no USDC inspection mark.
[6] Lot inspected products checked for quality and condition at the time of examination and located in processing plants, warehouses, cold storage facilities, or terminal markets anywhere in the United States.

Source: National Marine Fisheries Service, U.S. Department of Commerce, *Fisheries of the United States,* (Washington, DC: U.S. Government Printing Office, 1996), p. 136.

Albacore tuna (the kind used to make "whitemeat" canned tuna) and Pacific salmon do not swim with porpoises, but their harvest by certain foreign fishing fleets has interacted with marine mammals and so has been affected by the MMPA and other U.S. and UN actions. The harvesting of albacore tuna and Pacific salmon by foreign fishing fleets was in the past largely carried out using driftnets, which are large "walls" of netting supported at the top by buoys and held at the bottom by weights, which drift through the sea and catch anything large enough to get tangled in the mesh of the net, including but not limited to albacore, salmon, squid, seabirds, and whales and other marine mammals.[17] Because U.S. laws directly apply only to U.S. harvesters, which do not use large-scale driftnets, legislation such as the MMPA did not curtail the foreign driftnet fishing of albacore, and in the early 1990s the United Nations passed a series of resolutions calling for a global ban on the use of large-scale driftnets on the high seas, which has largely ended the use of large-scale driftnets.

U.S. MARKET

[17] High-seas (large) driftnets have never been employed by the U.S. fishing fleet, but were commonly used by the fleets of Japan, Korea, Taiwan, and others prior to the UN resolutions noted below.

Consumption

Information on U.S. consumption of canned fish is shown in table 4. Total consumption of canned fish during 1992-96 grew by 7 percent in quantity and 10 percent in value, from 492 million kilograms, valued at $1.44 billion, in 1992 to 526 million kilograms, valued at $1.58 billion, in 1996. Imports account for about 30 percent of the total value of the overall canned fish market and a slightly larger share of its volume. Thus, on a value basis, domestic production supplies about 70 percent of the U.S. market. U.S. exports account for a significant, although steadily declining, share of U.S. production. In 1996, about 16 percent of the volume and 17 percent of the value of total production was exported, down from 23 to 24 percent in 1992.

The following tabulation presents data on U.S. per-capita consumption of selected canned fish during 1992-96:[18]

Year	Salmon	Sardines	Tuna
	))))))))))) *Pounds* ((((((((((		
1992	0.5	0.2	3.5
1993	0.4	0.2	3.5
1994	0.4	0.2	3.5
1995	0.5	0.2	3.5
1996	0.5	0.2	3.5

In the U.S. market, the most important canned fish is tuna: in 1996, total canned tuna consumption reached 430 million kilograms, valued at $1.26 billion, about 80 percent of overall canned fish consumption. Consumption has been rising since 1993, due in part to declining prices (discussed below), although as noted above, on a per capita basis it is declining. Imports of canned tuna supply about 30 percent of the market by volume and 25 percent by value (the difference is due in part to the fact that much imported product is of lower unit value because it is in larger cans and/or packed under lesser known brand names); domestic production (including domestic product packed from imported raw fish) accounts for most of the supply on the U.S. market. A very small share of domestic production -- less than 2 percent -- is exported.

[18] National Marine Fisheries Service, U.S. Department of Commerce, *Fisheries of the United States, 1996*, p. 126.

Table 4
Canned fish: U.S. production, trade, and apparent consumption, 1992-96

Year	Production	Exports	Imports	Apparent consumption	Exports/ production	Imports/ consumption
		Metric tons			*Percent*	
Herring:						
1992	2,151	510	2,762	4,403	23.7	62.7
1993	3,308	932	2,730	5,106	28.2	53.5
1994	2,864	1,119	2,580	4,325	39.1	59.7
1995	3,101	911	2,595	4,784	29.4	54.2
1996	2,827	1,043	2,446	4,230	36.9	57.8
Salmon:						
1992	67,782	35,300	441	32,924	52.1	1.3
1993	89,968	38,334	193	51,827	42.6	0.4
1994	93,823	40,805	496	53,513	43.5	0.9
1995	110,482	43,282	545	67,745	39.2	0.8
1996	89,433	42,923	1,028	47,538	48.0	2.2
Sardines:						
1992	7,909	5,712	16,561	18,759	72.2	88.3
1993	6,511	5,391	17,741	18,861	82.8	94.1
1994	7,058	4,863	19,931	22,126	68.9	90.1
1995	6,154	5,249	19,178	20,083	85.3	95.5
1996	8,016	5,467	18,564	21,112	68.2	87.9
Tuna:						
1992	276,234	4,059	174,739	446,915	1.5	39.1
1993	280,660	3,349	129,656	406,967	1.2	31.9
1994	276,474	3,573	138,995	411,896	1.3	33.7
1995	302,359	3,130	133,401	432,630	1.0	30.8
1996	306,548	3,898	127,419	430,069	1.3	29.6
Other:						
1992	9,903	39,617	19,139	-10,574	(1)	(1)
1993	6,935	33,113	25,018	-1,160	(1)	(1)
1994	6,105	14,479	25,086	16,712	(1)	(1)
1995	7,347	16,064	22,395	13,678	(1)	(1)
1996	7,293	11,919	27,695	23,069	(1)	(1)
Total:						
1992	363,979	85,197	213,644	492,426	23.4	43.4
1993	387,382	81,118	175,337	481,601	20.9	36.4
1994	386,322	64,840	187,088	508,572	16.8	36.8
1995	429,443	68,636	178,113	538,920	16.0	33.1
1996	414,117	65,250	177,152	526,019	15.8	33.7

See footnote at end of table

Table 4--Continued
Canned fish: U.S. production, trade, and apparent consumption, 1992-96

Year	Production	Exports	Imports	Apparent consumption	Exports/ production	Imports/ consumption
		Value (*1,000 dollars*)			*Percent*	
Herring:						
1992	6,854	949	9,678	15,583	13.8	62.1
1993	12,935	1,692	9,840	21,082	13.1	46.7
1994	11,239	1,982	9,808	19,066	17.6	51.1
1995	12,032	1,671	8,498	19,359	13.9	47.8
1996	10,826	2,001	9,545	18,370	18.5	52.0
Salmon:						
1992	292,821	154,401	2,143	140,562	52.7	1.5
1993	307,051	160,416	1,540	148,174	52.2	1.0
1994	329,010	161,577	3,628	171,060	49.1	2.1
1995	419,236	174,946	5,628	249,918	41.7	2.3
1996	284,345	152,819	6,219	137,755	53.7	4.5
Sardines:						
1992	24,508	10,719	45,017	58,806	43.1	76.6
1993	25,054	10,077	48,340	63,318	40.2	76.3
1994	27,587	9,157	49,073	67,503	33.2	72.7
1995	23,669	8,719	48,923	63,873	36.8	76.6
1996	29,857	9,471	46,532	66,919	31.7	69.5
Tuna:						
1992	887,702	13,019	370,387	1,245,069	1.5	29.7
1993	904,018	10,544	291,379	1,184,853	1.2	24.6
1994	963,241	11,200	359,602	1,311,643	1.2	27.4
1995	938,541	10,424	315,551	1,243,667	1.1	25.4
1996	956,924	13,496	318,552	1,261,979	1.4	25.2
Other:						
1992	21,406	119,551	76,710	-21,435	([1])	([1])
1993	22,131	74,830	92,834	40,135	([1])	([1])
1994	21,115	39,313	87,798	69,600	([1])	([1])
1995	25,743	52,580	93,822	65,985	([1])	([1])
1996	16,537	36,546	118,397	98,388	([1])	([1])
Total:						
1992	1,233,291	298,640	503,935	1,438,586	24.2	35.0
1993	1,271,189	257,560	443,933	1,457,562	20.3	30.5
1994	1,352,192	223,228	509,908	1,638,872	16.5	31.1
1995	1,419,221	248,341	472,421	1,643,301	17.5	28.7
1996	1,298,489	214,323	499,245	1,583,411	16.5	31.5

[1] Undefined or percentage are over 100 points.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Canned lmon ranks a distant second to tuna in the U.S. market: total consumption of canned at $138 million, or about 9 percent of the total canned arket. Exports represent a much more important market for U.S. canned salmon than in the case of tuna, with about half of all domestic canned salmon productio destined abroad. Imports of canned salmon play a minor role in the U.S. market, accounting for only

Annual consumption of canned sardines in the United States averaged about 20.2 million kilograms, roximately $64 million, during 1992-96. The majority of canned sardines consumed in the U.S. market is imported; domestic production has accounted for about 10 percent of total

Prices

Average h
products for the 1992-96 period are shown
by domestic production, which accounts for almost all supply on the market; such production in turn on the quantity and price of the Alaskan salmon harvest, which is concentrated in a few ar and varies considerably by year because of environmental conditions. Thus, as can Tuna prices, on the other hand, are somewhat stable in part because the supply is more constant; however, imports are more rtant than in the case of salmon, and when import prices rise significantly, as they did during 1995-96, overa
a decline in prices received by domestic producers -- market prices rose during 1994-96, driven by

U.S. TRADE

U.S. orts of canned fish of all types totaled $214 million in 1996, down by $84 million (or percent) from the 1992 level of $299 million. U.S. canned fish imports declined more slowly, m $504 million in 1992 to $499 million in 1996, a decrease of one percent. As a result, the .S. trade deficit in canned fish widened during 1992-96, from $205 million in 1992 to

Table 5
Canned fish: Average unit values of U.S. production, trade, and consumption, 1992-96

Year	Production	Exports	Imports	Consumption
	Unit value *(dollars/kilogram)*			
Herring:				
1992	3.19	1.86	3.50	3.54
1993	3.91	1.82	3.60	4.13
1994	3.92	1.77	3.80	4.41
1995	3.88	1.83	3.66	4.05
1996	3.83	1.92	3.90	4.34
Salmon:				
1992	4.32	4.37	4.86	4.27
1993	3.41	4.18	7.98	2.86
1994	3.51	3.96	7.32	3.20
1995	3.79	4.04	10.32	3.69
1996	3.18	3.56	6.05	2.90
Sardines:				
1992	3.10	1.88	2.72	3.05
1993	3.85	1.87	2.72	3.36
1994	3.91	1.88	2.46	3.05
1995	3.85	1.66	2.55	3.18
1996	3.72	1.73	2.51	3.17
Tuna:				
1992	3.21	3.21	2.12	2.79
1993	3.22	3.15	2.25	2.91
1994	3.48	3.13	2.59	3.18
1995	3.10	3.33	2.37	2.87
1996	3.12	3.46	2.50	2.92

Source: Compiled form official statistics of the U.S. Department of Commerce.

U.S. Imports

U.S. imports of most types of canned fish have generally been declining in recent years. From a 1992 level of 214 million kilograms, valued at $504 million, imports of all species fell in 1996 to 177 million kilograms, valued at $499 million, a decline of 17 percent in quantity and 1 percent in value. The largest category, canned tuna, experienced the largest decline: during 1992-96, imports fell by 27 percent in volume and 14 percent in value, to 127 million kilograms, valued at $319 million. In part this decline was due to rising prices, brought on by scarcity of raw material as discussed earlier, including tunas not associated with dolphins and other marine mammals. The shift in harvesting techniques, and the almost complete elimination of large-scale driftnets in world fisheries during the 1990s, have reduced some of the traditional supplies of tropical and albacore tunas to canneries and raised their costs. In the case of herrings and sardines, whose import levels in the U.S. market have declined recently, the factors behind changes in imports, according to sources in the industry and the Food and Agriculture Organization, reflect not only environmental conditions but also conditions in other foreign markets for these products.

U.S. Trade Measures

Tariff measures

U.S. import tariffs on prepared or preserved fish products in 1997 are presented in table 6. Such tariffs are affected by several trade agreements, including the U.S.-Canada Free Trade Agreement (CFTA), the North American Free Trade Agreement (NAFTA) and the Uruguay Round Agreements (URA). The CFTA affects U.S.-Canada trade, NAFTA affects U.S. trade with Canada and Mexico, and the URA, which are multilateral in scope, concern trade among most of the world's trading nations. In addition, negotiations under the auspices of the Asia Pacific Economic Cooperation forum may also affect future U.S. canned-fish trade with Pacific Rim nations.

Under the North American Free Trade Agreements Act, which incorporated the earlier U.S.-Canada Free Trade Agreement, the United States will eliminate its duties on canned fish imports from Canada by 1998. In addition, U.S. duties on canned fish imports from Mexico are scheduled to be eliminated by the year 2003. The NAFTA provisions relating to Canada affected $230 million in two-way trade in canned-fish products in 1996, while those with Mexico affected $95 million in two-way trade in 1996.

Under the Uruguay Round Agreements Act, the United States agreed to bind its duties on canned fish against increases beyond certain specified levels (table 6).

Nontariff measures

The principal nontariff trade measures affecting the U.S. canned fish industry affect tuna and salmon, and include a tariff-rate quota on canned tuna and marine mammal-related restrictions on the tuna harvesting and canning industry relating to dolphins. There is a tariff-rate quota applied to imports of tuna canned in water: imports below a certain quota (within-quota imports) are dutiable at 6 percent ad valorem, and imports above the quota (above-quota imports) are dutiable at 12.5 percent ad valorem. The import quota, set annually by the USDC, is equal to 20 percentof the quantity of the previous calendar year's domestic pack of canned tuna of all types. Thus, if domestic production declines in one year, the tariff-rate quota on imports of water-packed tuna falls in the next year. If the quota is binding -- that is, if the imports exceed the quota -- the effect of a decline in the quota is to raise the average tariff rate paid by importers during the course of the year.

Table 6
Canned fish: Current U.S. tariff rates and bound rates agreed under the Uruguay Round Agreements Act

HTS item	Description	U.S. General tariff rate	
		Current (As of 1997)	Bound (As of 2004)
1604	Prepared or preserved fish; caviar and caviar substitutes		
	Fish, whole of in pieces, but not minced:		
1604.11	Salmon:		
1604.11.20	In oil, in airtight containers	8.6%	6%
1604.11.40	Other	1.2%	Free
1604.12	Herrings:		
1604.12.20	In oil, in airtight containers	5.6%	4%
	Other:		
1604.12.40	In tomato sauce, smoked, kippered, and in immediate containers weighing with their contents over 0.45 kg. each	1.6%	Free
1604.12.60	Other	Free	Free
1604.13	Sardines, sardinella, and brisling or sprats:		
	In oil, in airtight containers:		
1604.13.10	Smoked sardines, neither skinned nor boned, valued $1 or more per kg. in tin-plate containers, or $1.10 per kg. in other containers	1.6%	Free
	Other:		
1604.13.20	Neither skinned nor boned	15%	15%
1604.13.30	Skinned or boned	20%	20%
	Other:		
1604.13.40	In immediate containers weighing with their contents under 225 grams each	1%	Free
	Other:		
1604.13.90	Other	4.4%	3.1%
1604.14	Tunas, skipjack and Atlantic bonito:		
	Tunas and skipjack:		
	In airtight containers:		
1604.14.10	In oil	35%	35%
	Not in oil:		
1604.14.20	In containers weighing with their contents not over 7 kg. each, not the product of any insular possession of the United States, for an aggregate quantity entered in any calendar year not to exceed 20 percent of the United States pack of canned tuna during the immediately preceding year, as reported by the National Marine Fisheries Service	6%	6%
1604.14.30	Other	12.5%	12.5%
	Not in airtight containers:		
1604.14.40	In bulk or in immediate containers weighing with their contents over 6.8 kg. each, not in oil	1.1 cents per. kg.	1.1 cents per kg.
1604.14.50	Other	6%	6%
	Bonito:		
1604.14.70	In oil	4.9%	4.9%
1604.14.80	Not in oil	6%	6%
1604.15	Mackerel	4.2%	3%
1604.16	Anchovies:		
	In oil, in airtight containers:		

Table 6--Continued
Canned fish: Current U.S. tariff rates and bound rates agreed under the Uruguay Round Agreements Act

		U.S. General tariff rate	
HTS item	**Description**	**Current (As of 1997)**	**Bound (As of 2004)**
1604.16.10	For an aggregate quantity entered in any calendar year not to exceed 3,000 metric tons	1.2%	Free
1604.16.30	Other	2.4%	Free
	Other:		
1604.16.40	In immediate containers weighing with their contents 6.8 kg. or less each	5%	5%
1604.16.60	Other	Free	Free
1604.19	Other:		
	In airtight containers:		
	Not in oil:		
1604.19.10	Bonito, yellowtail and pollock	4.8%	4%
1604.19.20	Other	4.8%	4%
	In oil:		
1604.19.25	Bonito, yellowtail and pollock	6%	5
1604.19	Other:		
1604.19.30	Other	5%	4%
	Other:		
	Fish sticks and similar products of any size or shape, fillets or other portions of fish, if breaded, coated with batter or similarly prepared:		
1604.19.40	Neither cooked nor in oil	10%	10%
1604.19.50	Other	12.8%	7.5%
	Other:		
1604.19.60	In oil and in bulk or in immediate containers weighing with their contents over 7 kg. each	Free	Free
1604.19.80	Other	6%	6%
1604.20	Other prepared or preserved fish:		
1604.20.05	Products containing meat of crustaceans, molluscs or other aquatic invertebrates; prepared meals	10%	10%
	Other:		
1604.20.10	Pastes	Free	Free
	Balls, cakes and puddings:		
1604.20.15	In oil	2.6%	Free
	Not in oil:		
	In immediate containers weighing with their contents not over 6.8 kg. each:		
1604.20.20	In airtight containers	Free	Free
1604.20.25	Other	2.4%	Free
1604.20.30	Other	0.3%	Free
	Fish sticks and similar portions of any size or shape, if breaded, coated with batter or similarly prepared:		
1604.20.40	Neither cooked nor in oil	10%	10%
1604.20.50	Other	10.5%	7.5%
1604.20.60	Other	2.4%	Free
1604.30	Caviar and caviar substitutes:		
1604.30.20	Caviar	15%	15%
	Caviar substitutes:		
1604.30.30	Boiled and in airtight containers	1%	Free
1604.30.40	Other	Free	Free

Source: Harmonized Tariff Schedule of the United States; Uruguay Round Tariff Schedules of the United States, Volume II Industrial.

Import regulations relating to dolphins date from the early 1990s, when Congress passed the Dolphin Protection Consumer Information Act and related legislation, in response to concerns that dolphins, or porpoises, were suffering unnecessary harm at the hands of tuna harvesters. Dolphins tend to swim above schools of yellowfin tuna, and for many years tuna fishermen would look for dolphins as a means to find tuna. In the process of encircling the tuna with nets, some dolphins would get caught and drown. In 1990, in response to publicity surrounding this practice, U.S. tuna canners announced a "dolphin safe" policy in which they pledged not to buy raw tuna harvested by means that endangered dolphins. However, according to press reports, the canneries' initiatives were insufficient in the view of Congress, and since 1990, the DPCIA and related legislation has required the processing of canned tuna that is marked "dolphin safe" to undergo stringent inspection, including certification by canneries that their raw-tuna purchases are in fact "dolphin safe." Similar restrictions apply to imported raw and canned tuna. The economic effects of the "dolphin safe" policy have been in determinant: on the one hand, the policy put upward pressure on the price of "dolphin safe" tuna (because the restrictions on fishing practices raise the cost of harvesting tuna) and caused a relocation of U.S. canning and harvesting capacity from Puerto Rico and California, the sites most dependent upon tuna caught in ways that endangered dolphins, to American Samoa, where "dolphin safe" tuna is more plentiful. On the other hand, the large abundance of Western Pacific tuna meant that -- once the increased harvesting capacity was put in place -- the average cost of harvesting tuna was lower than for the less-abundant resources of the Eastern Pacific. There was no immediate measurable effect of the policy on the demand side of the market.[19] Additional information on U.S. laws relating to links between fisheries and marine mammals and endangered species is found in the section on U.S. Government regulations earlier in this report.

In addition to regulations directly affecting tuna, the canned fish industry generally is affected by the Jones Act, which prevents U.S.-flag registration of foreign-built and/or -owned vessels (hulls), and the Nicholson Act, which prohibits with few exceptions the direct landing in U.S. ports of fish caught by foreign-flag vessels without landing at a foreign port first. The effect of the Jones Act is to restrict the availability of fishing and processing vessels to the harvesting sector, which raises harvesting and processing costs because they cannot use foreign-built vessels that may be less expensive. The immediate effect of the Nicholson Act is to limit the availability of raw material to canneries, especially in cases where supplies from domestic harvesters are insufficient to meet canneries' raw material needs, and to put upward pressure on prices paid by processors to fishermen. Exceptions to the Nicholson Act prohibition exist, including the exclusion of American Samoa from restricted U.S. ports; thus, tuna canneries there can directly unload raw tuna delivered by foreign harvesters in the region. Also, East Coast Canadian herring harvesters can land directly in Maine ports, and vice versa. This accommodation reflects tradition, particularly the fact that the canned herring and sardine industries of Maine and Maritime Canada have relied jointly on the herring resources of the Gulf of Maine, which know no political boundary, for decades before the 1970s-era extension of national maritime boundaries to 200 miles from shore.

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[19] For more information on and economic analysis of this issue, see United States International Trade Commission, *Tuna: Current Issues Affecting the U.S. Industry*, Report on Investigation 332-313, USITC Publication 2547 (August 1992), ch. 3; and National Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, *Our Living Oceans: The Economic Status of U.S. Fisheries 1996*, NOAA Technical Memorandum NMFS-F/SPO-22 (December 1996), ch. 4.

There is a tariff-rate quota on anchovies canned in oil; the quota is equal to 3,000 metric tons annually. Imports below this quota (HTS subheading 1604.16.10) are dutiable at a rate of 1.2 percent ad valorem; above-quota imports (HTS subheading 1604.16.30) are dutiable at 2.4 percent ad valorem. Total U.S. imports of this product, mostly from Morocco, reached 2,819 metric tons in 1996.

U.S. Government Trade-Related Investigations

A number of U.S. Government investigations and trade-related actions have directly or indirectly concerned the canned fish industry in recent years. In 1984, U.S. tuna processors and fishermen filed a petition with the Commission. The petition alleged that increased imports of canned tuna were a substantial cause of serious injury, or the threat thereof, to the U.S. industry.[20] The Commission made a negative determination, finding that the increased imports were not a substantial cause of serious injury or threat thereof to the domestic industry. The Commission found that causes other than increased imports were a more important cause of injury, including high costs from overexpansion and the oceanographic phenomenon known as "El Nino." El Nino, by virtue of its negative, albeit temporary effect on the location and availability of raw tuna to tuna harvesters, raised the cost of domestically produced canned tuna vis-a-vis competing imports from exporters whose raw-tuna supplies were not as adversely affected by El Nino.[21]

The USITC has also conducted several section 332 fact-finding studies of the tuna industry. In 1986, the Commission instituted investigation No. 332-224, *Competitive Conditions in the U.S. Tuna Industry*, for the purpose of providing to the President information on the U.S. and foreign industries, market trade barriers, price and other competitive conditions affecting the U.S. industry and its foreign rivals.[22] In 1990, the Commission was requested by Congress to investigate and report on competitive conditions affecting the U.S. and European tuna industries in domestic and foreign markets.[23] Western Europe is the largest canned tuna market competing with the United States, and events in that market, such as demand growth that draws raw-tuna supplies off world markets, can affect economic conditions in the U.S. market. In addition, the Commission reported on its analysis of the likely competitive effects on U.S. and European production and trade of an

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[20] United States International Trade Commission, *Certain Canned Tuna Fish*, Report to the President on Investigation No. TA-201-53 Under Section 201 of the Trade Act of 1974, USITC Publication 1558 (August 1984).

[21] United States International Trade Commission, *Certain Canned Tuna Fish*, Report to the President on Investigation No. TA-201-53 Under Section 201 of the Trade Act of 1974, USITC Publication 1558 (August 1984), pp. 14-21.

[22] United States International Trade Commission, *Competitive Conditions Affecting the U.S. Tuna Industry*, Report to the President on Investigation No. 332-224 Under Section 332 of the Tariff Act of 1930, as amended, USITC Publication 1912 (October 1986).

[23] United States International Trade Commission, *Tuna: Competitive Conditions Affecting the U.S. and European Tuna Industries in Domestic and Foreign Markets*, Report to the Committee on Finance, U.S. Senate, and the Committee on Ways and Means, U.S. House of Representatives, Investigation No. 332-291 Under Section 332 of the Tariff Act of 1930, USITC Publication 2339 (December 1990).

equalization between U.S. and European tariffs in the markets for raw and canned tuna.[24] Most recently concerning tuna, the Commission reported to the U.S. Senate its findings in an investigation of current issues affecting the industry, including the "dolphin safe" policy and various coastal jurisdiction issues affecting harvesters' access to raw tuna supplies.[25]

U.S. Exports

Recent trends in U.S. exports of canned fish products are shown in table 7. Total exports in 1996 reached 65 million kilograms, valued at $214 million, a decrease of 23 percent in quantity and 28 percent in value from the 1992 export level of 85 million kilograms, valued at $299 million. The largest category by far is salmon, whose $153 million in exports represented over 70 percent of the 1996 total. The quantity of salmon exports has grown significantly in recent years, due in large part to high catches of Pacific salmon off Alaska; total exports rose by 22 percent in quantity, or by 8 million kilograms, during 1992-96. However, prices during this period declined sharply, falling by 19 percent from $4.37 per kilogram in 1992 to $3.56 per kilogram in 1996. The aforementioned weak UK canned fish market, plus low prices for raw salmon, have been factors in the decline in U.S. export value for canned salmon (appendix B). As a share of domestic production, salmon exports declined slightly from 52 percent in 1992 to 48 percent in 1996.

Tuna is the second largest U.S. canned fish export, measured by value, with total 1996 exports of 3.9 million kilograms, valued at $13.5 million. Exports dropped after 1990, to a low of 3.1 million kilograms in 1995, but have since largely recovered on the strength of rising prices abroad. Israel is the single largest market for U.S. exports; shipments to that market rose from $5 million in 1992 to $9.1 million in 1996. As a share of domestic production, canned tuna exports have always been quite small, less than 2 percent in recent years.

Sardines are, by value, the third largest U.S. canned fish export. In 1996, exports reached 5.5 million kilograms, valued at $9.5 million, compared with 1992 exports of 5.2 million kilograms, valued at $10.7 million. A sharp drop in prices during this period caused overall export value to decline despite an increase in quantity. The largest market for U.S. sardine exports is Canada, which is an anomalous market for this product.[26]

Table 7
Canned fish: U.S. exports, by product, 1992-96

[24] At the time, the average U.S. tariff on canned tuna was approximately 12.5 percent, compared with an EC tariff of 24 percent ad valorem.

[25] United States International Trade Commission, *Tuna: Current Issues Affecting the U.S. Industry*, Report to the Committee on Finance, U.S. Senate, on Investigation No. 332-313 Under Section 332(g) of the Tariff Act of 1930 as Amended, USITC Publication 2547 (August 1992).

[26] In the discussions of the salmon and sardine markets, U.S. exports to Canada are ignored because industry sources have indicated to Commission staff their belief that such "exports" are largely reimported as part of a highly fluid U.S.-Canada canned fish trade among salmon distributors in Alaska and British Columbia and among sardine distributors in New England and the Canadian Maritimes.

Item	1992	1993	1994	1995	1996	Percent change, 1992-96[1]
			Quantity (*metric tons*)			
Salmon	35.3	38.3	40.8	43.3	42.9	21.6
Tuna	4.1	3.3	3.6	3.1	3.9	-4.0
Sardines	5.2	5.4	4.9	5.2	5.5	5.7
Herring	0.5	0.9	1.1	0.9	1.0	104.5
Other	40.1	34.0	15.6	17.0	13.0	-67.6
Total	85.2	81.1	64.8	68.6	65.3	-23.4
			Value (*million dollars*)			
Salmon	154.4	160.4	161.6	174.9	152.8	-1.0
Tuna	13.0	10.5	11.2	10.4	13.5	3.70
Sardines	10.7	10.1	9.2	8.7	9.5	-11.6
Herring	0.9	1.7	2.0	1.7	2.0	110.9
Other	119.6	74.8	39.3	52.6	36.5	-69.4
Total	298.6	257.6	223.2	248.3	214.3	-28.2
			Unit value (*dollasr/kilograms*)			
Salmon	4.37	4.19	3.96	4.04	3.56	-18.5
Tuna	3.21	3.15	3.13	3.33	3.46	7.8
Sardines	2.64	1.87	1.88	1.66	1.73	-34.5
Herring	1.86	1.82	1.77	1.83	1.92	3.2
Other	2.98	2.20	2.52	3.10	2.82	-5.4
Total	3.51	3.18	3.44	3.62	3.28	-6.6

[1] Derived from unrounded data.

Source: Compiled from official statistics of the U.S. Department of Commerce..

Foreign market profile

Europe is by far the largest market for U.S. exports and is a large canned fish consuming region (table 8). Total consumption has increased almost steadily since 1990, reaching a peak of 1.3 million metric tons in both 1994 and 1995. Germany is the largest consuming nation, with 18 percent of the European total during 1990-95, followed by France, Italy and Spain, with about 12 to 14 percent each during the same period. The United Kingdom, the largest market for U.S. canned fish, ranks fifth in European consumption, with about 10 percent of the total.

Prices in the European canned fish market have generally increased in recent years, as evidenced by average Europe-wide unit values for imported canned fish products (table 9). The largest gain has been in the canned tuna market, where prices rose by 28 percent during between 1993 and 1995 and by 15 percent during the longer 1990-95 period. Sardines registered a more moderate 5-percent gain since 1990, with higher gains during 1994-95. Market and industry reports suggest that rising raw material costs are behind these canned-fish price increases.

Table 8
Canned fish: European consumption,[1] 1990-95

Country	1990	1991	1992	1993	1994	1995	Percent change, 1990-95
	(*1,000 metric tons*)						
United Kingdom	124.6	138.1	133.7	124.1	130.5	129.7	4.1
Germany	242.3	257.6	244.6	205.0	213.4	225.6	-6.9
Italy	152.6	168.6	186.6	174.3	174.5	170.3	11.6
France	175.8	184.8	176.2	180.8	196.5	182.8	4.0
Spain	128.0	128.4	145.4	181.0	173.6	180.4	40.9
Other	424.2	397.7	413.8	407.1	428.0	419.7	-1.1
Total	1,247.5	1,275.2	1,300.3	1,272.3	1,316.5	1,308.5	4.9

[1] Consumption = Production +Imports - Exports. Imports and exports include intra-Europe trade.

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 9
Canned fish: Annual average import unit values in Europe,[1] by product, 1990-95

Item	1990	1991	1992	1993	1994	1995	Percent change, 1990-95
	Dollars (*per kilogram*)						
Salmon	5.94	5.22	4.98	4.90	4.39	5.38	-0.9
Tuna	2.89	2.80	2.72	2.59	2.86	3.32	14.9
Sardines	2.78	3.00	2.94	2.65	2.51	2.93	5.4
Herring	2.31	2.33	2.35	2.07	1.70	2.03	-12.3
Anchovies	7.04	6.82	7.29	6.94	7.17	5.10	-27.6
Mackerel	3.38	3.39	3.38	3.12	3.04	3.44	1.8

[1] Annual EU total import values divided by annual EU total import quantities.

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

The UK canned fish market is large, especially for U.S. salmon exports (discussed below), but it has been declining slightly in recent years (table 10). The UK market reached a peak in 1991 at 138,064 metric tons, before dropping by about 6 percent to 129,652 metric tons in 1995. Within that total, imports also declined, both in absolute amount and as a share of consumption. In part this is due to rising domestic production, which grew by 45 percent during 1990-95 to 16,938 metric tons, partially displacing import demand from the domestic market.

Table 10
United Kingdom: Canned fish production and trade, 1990-95

Year	Production	Net imports	Apparent consumption	Net imports/ consumption
		(*Metric tons*)		*Percent*
1990	11,669	112,908	124,577	90.6
1991	12,444	125,620	138,064	91.0
1992	12,685	121,041	133,726	90.5
1993	16,670	107,143	123,813	86.5
1994	17,001	113,461	130,462	87.0
1995	16,938	112,714	129,652	86.9

Source: Derived by Commission staff from official statistics of the Food and Agriculture Organization (FAO) of the United Nations. FAO data are available only through 1995.

Asia is another large canned fish consuming region; growth in this region is attributable to "Westernization" of Asian consumers, especially the young (table 11). Total consumption of canned fish reached 2.7 million metric tons in 1995, an increase of almost 20 percent since 1990. Japan is by far the largest consuming nation in the region, accounting for almost 60 percent of the total in 1995.

Table 11
Canned fish: Asian consumption,[1] 1990-95

Country	1990	1991	1992	1993	1994	1995	Percent change, 1990-95
			(*1,000 metric tons*)				
Japan	1,619.5	1,626.5	1,635.8	1,636.5	1,624.3	1,597.8	-1.3
Thailand	16.3	65.6	43.3	429.0	436.4	431.9	2,497.1
Vietnam	107.2	148.2	154.3	154.4	159.4	159.4	48.7
Korea	191.9	132.0	119.7	119.9	118.4	120.8	-37.1
Myanmar	114.9	113.6	114.0	120.5	123.4	123.4	7.4
Other	245.8	263.9	210.6	220.2	238.6	292.3	18.9
Total	2,295.6	2,349.5	2,277.7	2,680.2	2,700.5	2,725.6	18.7

[1] Consumption=production + Imports - Exports.

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Thailand follows with 16 percent, up from less than 1 percent in 1990; however, this significant growth is due in part to Thailand's imports of semi-processed tuna loins that are further processed for reexport as canned tuna.[27]

The Japanese market has been declining slightly in recent years, from a recent high of 1,636 thousand metric tons in 1993 to 1,598 thousand metric tons in 1995 (table 12). But despite this overall drop in consumption, imports have risen, both in absolute terms and as a share of consumption. From a deficit level in 1990, net imports grew to 22,000 metric tons in 1991 and continued to grow steadily thereafter, reaching 109,000 metric tons in 1995, a quintupling of the 1991 level. During this period, domestic production declined: output in 1995 totaled 1,489 thousand metric tons, an 8-percent drop from 1990. Japan's most popular seafood in this category is minced fish, such as the surimi-based products described earlier in this report. Consumption of such products totaled 869 thousand metric tons in 1995, or nearly 60 percent of total consumption. Other prepared seafoods, such as fish portions, are also popular but, with high levels of domestic production, the Japanese market for these products have thus far presented limited export opportunities for U.S. producers.

Table 12
Japan: Canned fish production and trade, 1990-95

Year	Production	Net imports	Apparent consumption	Net imports/ consumption
		(*1,000 metric tons*)		*Percent*
1990	1,625	-6	1,619	-1.3
1991	1,604	22	1,626	1.4
1992	1,595	41	1,636	2.5
1993	1,577	59	1,636	3.6
1994	1,545	79	1,624	4.9
1995	1,489	109	1,598	6.8

Source: Derived by Commission staff from official statistics of the Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

U.S. industry competitiveness in foreign markets

This section examines U.S. competitiveness in major world markets for canned fish. Competitiveness is defined here as the share held by U.S. producers or exporters in domestic or foreign markets: an increase in the U.S. share of a particular market signifies an increase in U.S.

[27] Tuna loins are large pieces of meat taken from the sides of whole tuna. In bulk form (i.e., the form utilized by canneries) they fall under HTS subheading 1604.14 and so are included in much of the "canned fish" analysis of this report.

competitiveness vis-a-vis competing suppliers in that market, and vice versa.[28] Thus, even a decrease in the absolute level of U.S. exports to a particular declining market could be consistent with an increase in U.S. competitiveness if the market itself is declining at a faster rate than U.S. exports.[29]

In world markets for canned salmon, the largest U.S. canned fish export, U.S. exporters have captured an increased share of world imports in recent years: as a share of world import value, U.S. exports grew from 32 percent in 1990 to 52 percent in 1995 (table 13). By constant market share (CMS) analysis, this resulted in a gain in U.S. competitiveness of more than 20 percentage points, equivalent to $69 million in increased exports. The largest gains by far were registered in Europe, mainly the United Kingdom, where increased market shares enabled U.S. exports to grow by $39 million from 1990 to 1995.

In the world market for canned sardines, the share held by U.S. exporters has traditionally been quite low, usually under one percent of world imports. However, in recent years that share has grown, reaching 1.7 percent in 1995 (table 13). If U.S. exporters had maintained the one-percent share they had in 1990, the value of 1995 exports would have been $924,000 lower -- a market-share gain of 42 percent of the actual level of $2.2 million. The largest regional market for U.S. sardine exports is Latin America, where the U.S. share of the market declined from 79 percent in 1990 to 73 percent in 1995, a decline that cost $114,000 in terms of lost export potential in 1995had the 1990 share been maintained. In contrast, the U.S. share in its second largest market, the Asia Pacific region, rose from 1.2 percent in 1990 to 68 percent in 1995, thanks in large part to growing markets in the Philippines and Malaysia. As a result of that gain in market share, U.S. exports in 1995 to that region grew by $500,000, or almost 25 percent of total 1995 exports.

U.S. canned tuna exports have traditionally been small compared with total production; in fact they have been large enough to warrant being regularly published as a separate export item since only 1989. The shares of foreign markets held by U.S. exporters have therefore been small in recent years, but have declined still further since 1990, when U.S. exporters' share of world canned tuna imports reached 1.7 percent by value (table 13). Since then, the U.S. share of the world market has declined, reaching 0.7 percent in 1995. This translates into a dollar-value loss of export potential of $16 million from 1990 to 1995. Thus, had the U.S. industry maintained its 1990 market share through 1995, total exports in 1995 would have been $16 million -- or more than 150 percent -- above actual 1995 exports.

[28] This approach, called Constant Market Share analysis, is described in detail in a paper, "Constant Market-Share Analysis of Export Growth," presented in Edward E. Leamer and Robert M. Stern, *Quantitative International Economics* (Chicago: Allyn and Bacon, 1970), ch. 7.

[29] In the following discussion, data on "world import markets" vis-a-vis U.S. exports exclude U.S. imports from the world total.

Table 13
Canned fish: Changes in U.S. export competitiveness, 1990-95

Item and market	U S. exports		U.S. share of foreign import market		U.S. export gain from increased market share	
	1990	1995	1990	1995	Value	As a share of 1995 exports
	Million dollars		*Percent*		*Thousand dollars*	*Percent*
Canned salmon:						
World	104.3	174.9	31.6	52.3	69,347	39.6
Europe	75.9	103.1	28.8	46.2	38,905	37.7
Oceania[1]	13.8	16.6	36.5	34.8	2,883	17.4
Latin America	0.3	0.4	36.0	37.0	-121	-33.6
Asia Pacific	0.4	1.5	20.1	20.4	514	33.4
Canned sardines:[2]						
World	1.2	2.2	1.0	1.7	924	42.3
Europe	([3])	([3])	([3])	([3])	([3])	([3])
Oceania[1]	([3])	0.4	([3])	([3])	([3])	([3])
Latin America[4]	1.1	1.3	79.3	72.8	-114	-9.0
Asia Pacific	([5])	0.5	1.2	68.1	500	98.3
Canned tuna:						
World	13.2	10.4	1.7	0.7	-16,012	-153.6
Europe	0.2	0.1	([5])	([5])	-281	-240.9
North America[6]	3.5	0.7	5.5	0.9	-3,5942	-497.8
Oceania[1]	0.1	0.1	0·5	0·2	-91	-125.7
Latin America	2.4	1.2	17.4	1.7	-11,505	-939.0
Asia Pacific	0.9	0.9	2.9	0.6	-3,403	-3,60.2

[1] Australia and New Zealand only.
[2] Excludes U.S. exports to Canada; see text for explanation.
[3] Not available.
[4] Includes Mexico.
[5] Less than 0.5 percent or $50,000.
[6] Canada and Mexico only.

Source: Derived by Commission staff from official statistics of the U.S. Department of Commerce and the Food and Agriculture Organization of the United Nations.

Foreign Trade Measures

Tariff measures

Prior to the implementation of the North American Free Trade Agreement (NAFTA), Mexico charged a straight 20-percent ad valorem duty on all imports of U.S. canned fish products. Under the NAFTA Mexico agreed to immediate (1994) elimination of its duties on imports from Canada and the United States of the following canned fish: salmon (HTS 1604.11); herrings (1604.12); mackerel (1604.15); anchovies (1604.16); and caviar and caviar substitutes (1604.30). Duties on imports of processed products such as fish sticks (1604.19) and prepared meals containing fish (1604.20) are to be phased out in 5 equal annual stages by 1998. Duties on imports of sardines, sardinella, and brisling or sprats (1604.13) are to be phased out in 10 equal annual stages by

Table 14
Canned fish: Canadian tariff rates on imports from the Mexico, pre-NAFTA and reduction schedule

HTS subheading	Description	Pre-NAFTA base rate	Staging category[1]
1604	Prepared or preserved fish; caviar and caviar substitutes:		
	Fish, whole or in pieces, but not minced		
1604.11	Salmon	3.0%	A
	Herrings:		
1604.12.10	Pickled	Free	D
1604.12.91	In oil in airtight containers	8.0%	A
1604.12.92	Kippered, in airtight containers	6.0%	A
1604.12.99	Other	8.0%	A
	Sardines, sardinella, and brisling or sprats:		
1604.13.10	In airtight containers	1.3 cents/kg.	C
1604.13.90	Other	7.0%	C
	Tunas, skipjack and Atlantic bonitos:		
1604.14.11	Tunas and skipjack	14.0%	B
1604.14.12	Altantic bonito	7.0%	B
1604.14.90	Other	11.0%	B
1604.15	Mackerel	12.7%	A
	Anchovies:		
1604.16.10	In airtight containers	Free	D
1604.16.90	Other	7.0%	A
	Other		
1604.19.10	Fishsticks and similar products	7.0%	B
1604.19.90	Other	7.0%	B
	Other prepared or preserved fish:		
1604.20.10	Prepared meals	11.5%	B
1604.20.90	Other	7.0%	B
1604.30	Caviar and caviar substitutes	Free	D

[1] Staging categories:
A = immediate elimination on January 1, 1994.
B = removal in five equal annual stages, duty-free on January 1, 1998.
C = removal in ten equal annual stages, duty-free on January 1, 2003.
D = duty-free treatment to continue.

Source: North American Free Trade Agreement, Annex 302.2, Tariff Schedule of Canada.

2003, and duties on imports of tunas (1604.14) are also to be phased out in 10 annual stages by 2003, on a modified schedule.[30]

Under the NAFTA Canada agreed to eliminate by 1998 its duties on canned fish imports from the United States. For Canadian imports of canned fish from Mexico, table 14 presents pre-NAFTA rates and staged reduction schedules for Canadian imports.

Other major markets for U.S. canned fish exports include Japan and the European Union. Their tariffs on imports from the United States are shown in table 15.

[30] North American Free Trade Agreement, Annex 302.2, Tariff Schedule of Mexico (Washington, DC: Government Printing Office).

Table 15
Canned fish: Tariff rates in Japan and the European Union, 1997

HTS subheading	Description	1997 import tariff[1] Japan		European Union
			Percent	
1604.11	Salmon	9.6		20.0
1604.12	Herring	9.6		23.0
1604.13	Sardines, sardinella, brisling and sprats	9.6		25.0
1604.14	Tuna	9.6		25.0
1604.15	Mackerel	9.6		25.0
1604.16	Anchovies	9.6		25.0
1604.19	Other	9.6		25.0
1604.20	Minced fish	9.6		25.0
	Of salmonidae	9.6		20.0
	Other	9.6		25.0
1604.30	Caviar and caviar substitutes	6.4		30.0

[1] Most Favored Nation rate applicable to imports from the United States.

Source: *The International Customs Journal*, International Customs Tariffs Bureau.

As part of the Uruguay Round Agreements major importing countries agreed to bind their existing tariffs on canned fish against future increase. These bindings are significant to U.S. exporters because previous tariff reductions negotiated with foreign countries under previous rounds of negotiations under the General Agreement on Tariffs and Trade (GATT) have thereby been locked into place under the World Trade Organization. Other significant results of the Uruguay Round for canned fish exporters concern nontariff barriers, which are discussed in the following section.

Nontariff measures

For purposes of this section, nontariff measures are considered to include government regulations and policies other than tariffs, which either protect domestic producers from foreign competition or artificially increase exports of domestic products. Nontariff measures (and tariffs) in foreign countries may hinder U.S. exports to the markets where the barriers are in place and/or may depress world prices, and thus also reduce prices received by U.S. exporters in other markets. The Office of the U.S. Trade Representative (USTR), in its most recent report on foreign trade barriers, identified a variety of quotas and other nontariff measures in foreign markets areas of sanitary and phytosanitary measures (in the cases of Australia, New Zealand, Ecuador, and Italy, affecting trade in canned fish in recent years. U.S. industry complaints against foreign nations and Korea), investment restrictions (Ecuador, Japan, and Poland), and export subsidies which depress world

prices for third-country exporters (Venezuela).[31]

To date, no complaints regarding canned fish products have been filed with the WTO by the U.S. Government against another country. However, in 1995 Mexico filed a complaint with the WTO against the U.S. Government concerning U.S. restrictions on imports of canned tuna processed from tuna harvested in a manner that threatens dolphins. The complaint led to a draft report (preliminary decision) by a WTO dispute settlement panel, which was not adopted in final form, however, because the issue subsequently was resolved by the two parties when Mexico improved its fishing practices to reduce dolphin mortality and the United States relaxed its import restrictions.

FOREIGN INDUSTRY PROFILE

Overview

In 1995, according to the FAO, world production of canned fish totaled 5.8 million metric tons, which was approximately the average annual production level during earlier years (table 16). About 85 countries produce canned fish. In 1995, more than half of world production of canned fish was concentrated in the Asian Pacific Rim, with Japan and Thailand alone accounting for 40 percent of world production (table 16). Another 8 percent of world production comes from Western Europe, mainly Spain, Germany, Italy, and France. Against its competitors, the United States ranks third, accounting for 7 percent of world production.

The location, structure and productivity of canned fish industries throughout the world, and therefore the nature of international trade in canned fish, varies by species because of the economic desirability to locate canneries near the raw material, raw fish. In addition, there are inherent differences between the various species, making the canned product from one species distinct from another in the consumer's viewpoint, as discussed further in the market section below. The principal species and products processed by the world's canned fish industries are listed in table 17. Tuna is the largest in volume, with 21 percent of the total, followed closely by minced fish (of several species). Sardines, mackerel and salmon together make up an additional 9 percent of total world production.

Tuna

[31] United States Trade Representative, *1997 National Trade Estimate Report on Foreign Trade Barriers* (Washington, DC: Office of the United States Trade Representative, 1997).

Canned tuna is the most important canned fish product in the world, in terms of both the value and volume of world production. Nearly 50 nations produced a combined total of 1,232 thousand metric tons in 1995, about the same as the record 1,238 thousand metric tons produced in 1994 (figure 2).[32] The total value of canned tuna production reached a record $3.6 billion in 1995, more than 25 percent above the aggregate value two years earlier.

[32] Data in this section on world production and trade in "canned" tuna also include production and trade in frozen tuna loins, which are an input into canned tuna production.

Table 16
World production of canned fish,[1] by largest producers, 1991-96

Source	1991	1992	1993	1994	1995	1996	Percent change, 1991-96
	(Thousand metric tons)						
Japan	1,624.4	1,603.9	1,594.8	1,577.3	1,544.8	1,488.9	-8.4
Thailand	322.2	435.6	388.7	775.6	837.4	785.9	143.9
United States	366.3	363.1	361.5	387.4	386.3	428.6	17.0
Russia	1,308.5[2]	1,125.2[2]	744.8	487.2	372.6	376.1	-71.3
Spain	127.0	125.7	132.9	176.8	173.8	184.6	45.4
Germany	210.0	213.4	198.6	177.1	167.7	181.5	-13.6
Korea, Rep	243.9	173.7	156.2	156.8	165.6	171.4	-29.7
Vietnam	107.1	148.3	154.7	155.0	160.0	160.0	49.4
Myanmar	114.9	113.6	114.0	120.5	123.4	123.4	7.4
Italy	119.3	121.5	125.6	116.5	113.1	108.7	-8.9
Other	1,410.6	1,527.1	1,132.6	1,636.7	1,668.8	1,763.2	25.0
Total	5,955.2	5,951.1	5,104.4	5,766.9	5,713.5	5,772.3	-3.1

[1] Includes small amounts of fish cakes, puddings, pastes, and other noncanned seafoods.
[2] Includes entire former USSR.

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

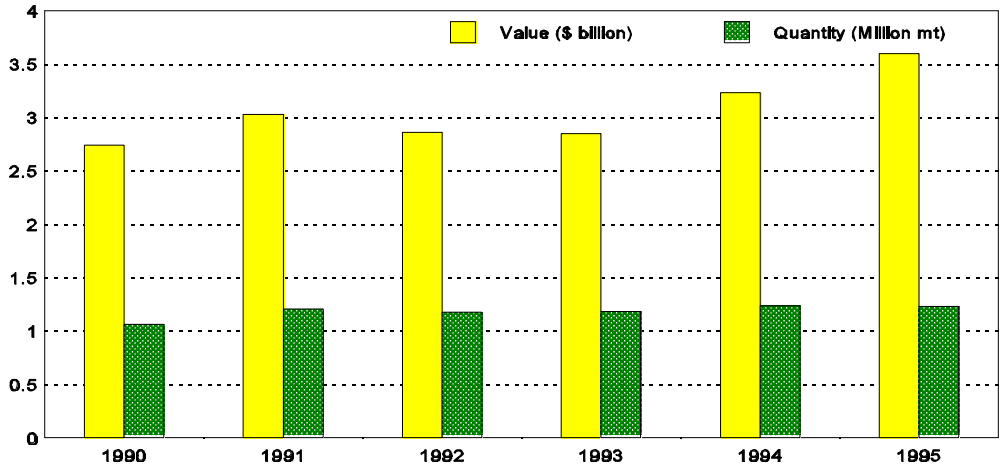
Table 17
Canned fish: World production by product, 1991-96

Product	1991	1992	1993	1994	1995	1996	Percent change, 1991-96
	(Thousand metric tons)						
Tunas	1,603.2	1,206.0	1,176.7	1,182.7	1,238.3	1,232.3	-15.9
Minced fish	1,414.7	1,360.3	1,226.9	1,223.1	1,219.2	1,191.5	-15.8
Sardines	278.1	258.2	168.0	164.2	166.8	222.6	-20.0
Mackerel	185.5	164.1	138.2	184.4	173.7	154.6	-16.7
Salmon	158.2	188.1	120.9	158.0	123.5	136.3	-13.8
Herrings	84.6	81.8	78.2	105.2	118.1	129.7	53.3
Caviar[1]	15.4	15.7	33.1	45.0	46.7	58.8	281.8
Anchovies	35.2	38.8	36.9	32.1	32.4	31.8	-9.7
Other	2,720.4	2,638.0	2,559.7	2,672.3	2,594.7	2,614.8	-3.9
Total	6,495.3	5,951.1	5,538.6	5,766.9	5,713.5	5,772.3	-3.1

[1] Includes caviar substitutes.

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Figure 2
World production of canned tuna



Source: Food and Agriculture Organization.

With the principal exception of the temperate-water albacore, or "whitemeat" tuna, the major species of tuna are found in tropical waters around the world, and for the most part, tuna canneries likewise are mainly found along coastlines near or adjacent to the tropical Pacific, Indian, and Atlantic oceans and the Mediterranean Sea. Thus, Mexico, Cote d'Ivoire, Spain, and Italy are among the world's largest producers. Other large canned-tuna producers that are not as close to abundant tuna resources, such as the United States,Thailand, and Japan, depend in large part on imported raw-tuna supplies and/or operate distant-water fleets of harvesting vessels to supply their canneries.

The largest canned-tuna producers are the United States and Thailand, which respectively accounted for about 25 and 20 percent of world output in 1995 (table 18). Another 20 percent was accounted for by Spain, Italy, and France, and 7 percent by Japan. Almost half of world production is destined for export markets (table 19). In 1995, exports reached nearly 590 thousand metric tons, a one-third increase over 1990 export levels. Several countries have increased their exports (table 20), including traditionally large exporters such as Cote d'Ivoire (up by 38 percent during 1990-95) and the Philippines (up by 30 percent during 1990-94 before dropping in 1995), and historically small exporters such as Spain and France (up in 1990-95 by 360 percent and 900 percent, respectively). In addition, tuna exports have recently appeared from new producers located near rich fishing grounds, including Madagascar and the Solomon Islands.

Table 18
Canned tuna: Leading producing nations, 1992 and 1995

	1992	1995
	Metric tons	
Producer:		
USA	273,876	302,366
Thailand	243,600	221,243
Spain	82,942	120,000
Italy	93,100	83,000
France	31,972	34,336
Japan	98,113	77,047
Cote d'Ivoire	41,378	57,062
Mexico	58,251	54,073
Philippines	47,043	46,738
Other	206,378	236,456
Total	1,176,653	1,232,321

Source: Food and Agriculture Organization of the United Nations.

Table 19
Canned tuna: World production, exports, and exports as a share of production, 1990-95

Year	Production	Exports	Exports/production
		Metric tons	
1990	1,063,236	442,476	41.6
1991	1,205,983	549,272	45.5
1992	1,176,653	489,881	41.6
1993	1,182,727	508,015	43.0
1994	1,238,309	578,561	46.7
1995	1,232,321	587,990	47.7

Source: Food and Agriculture Organization of the United Nations.

Table 20
Canned tuna: World exports, by country, 1990-95

Year	1990	1991	1992	1993	1994	1995
			1,000 metric tons			
Thailand	233.0	272.8	243.6	229.9	269.0	221.2
Cote d'Ivoire	41.4	47.2	41.4	49.9	43.6	57.1
Spain	6.9	12.5	10.4	13.9	19.3	31.6
France	2.2	1.7	4.1	7.9	11.1	22.4
Philippines	44.7	46.1	47.0	55.5	58.0	46.7
Colombia	0.1	1.6	4.4	5.5	17.4	19.5
Ecuador	5.6	5.1	10.0	11.2	16.6	16.3
Madagascar	0.0	0 .0	7.7	8.8	11.1	14.0
Mauritius	3.6	6.6	7.4	7.8	8.9	12.3
Solomon Island	2.8	5.1	5.4	5.8	6.0	8.3
Costa Rica	0.0	0.0	0.0	0.0	6.5	8.1
Other	102.2	150.6	108.5	111.8	109.1	131.3
Total	442.5	549.3	489.9	508.0	576.6	588.8
			Millions dollars			
Thailand	537	632	529	516	621	547
Cote d'Ivoire	112	98	94	110	128	228
Spain	41	62	56	63	84	142
France	9	6	12	23	34	65
Philippines	95	105	94	122	139	111
Colombia	([1])	4	10	14	49	60
Ecuador	14	13	25	27	45	48
Madagascar	0	0	15	17	28	28
Mauritius	9	19	19	22	27	35
Solomon Island	8	13	13	15	16	22
Costa Rica	0	0	0	0	21	28
Other	319	426	324	295	114	404
Total	1,144	1,378	1,191	1,224	1,306	1,723

[1] Less than $500,000.

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Canned tuna prices, as measured by average export prices on world markets, have risen in recent years, following a decline in the early 1990s (table 21). Average export prices reached $2.92 per kilogram in 1995, a 21-percent increase over 1993 levels but less than levels prevailing during much of the 1980s.

Table 21
Canned tuna: Average world export prices, 1992-96

Year	Dollars per kilogram	Prices received by U.S. exports
1992	2.43	3.21
1993	2.41	3.15
1994	2.61	3.13
1995	2.92	3.33
1996	([1])	3.46

[1] Not available.

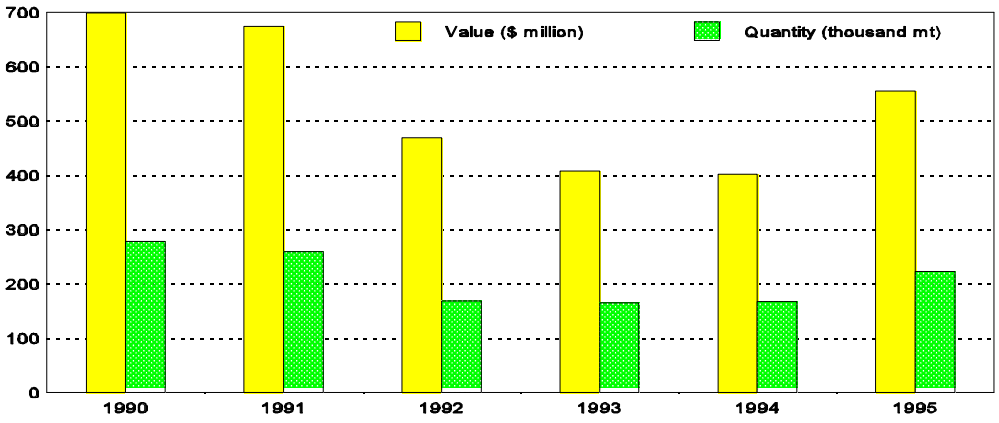
Source: Derived from official statistics of the Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Sardines

Sardines are among the most popular canned seafoods in the United States and other Western markets. World production declined somewhat in the early 1990s but has recovered, reaching 222,577 metric tons in 1995 (figure 3). Sluggish prices led also to a downward trend in total value through 1994, before recovering somewhat to $554 million in 1995.

The richest sardine resources are found in the temperate waters off the Iberian peninsula and

Figure 3
World production of canned sardines



Source: Food and Agriculture Organization.

Northwestern Africa. Consequently, the world's largest producers of canned sardines include Morocco, Spain, and Portugal (table 22). Morocco alone supplies nearly 60 percent of the world's production; Spain and Portugal together provide an additional 23 percent. About 40 percent of the world's canned sardine production is destined for export markets (table 23). In 1995, exports reached 90,099 metric tons, an increase of 23 percent over the 1990-94 average of 73,192 metric tons. This export growth was fueled by rising production, which in turn was reportedly generated by an increase in abundance of fish harvests.

Table 22
Canned sardines: Leading producing nations, 1992 and 1995

Producer	1992	1995
	Metric tons	
Morocco	85,218	129,328
Spain	22,442	25,000
Portugal	22,086	27,053
Poland	4,000	9,100
Tunisia	5,400	5,000
Other	28,902	27,096
Total	168,048	222,577

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 23
Canned sardines: Production, exports, and exports as a share of production, 1990-95

Year	Production	Exports	Exports/production
		Metric tons	
1990	185,463	78,094	28.1
1991	258,197	75,737	29.3
1992	168,048	68,404	40.7
1993	164,216	70,538	43.0
1994	166,803	73,185	43.9
1995	222,577	90,099	40.5

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

The largest producing nations, not surprisingly, are also the largest exporting nations (table 24). Morocco leads the list with 1995 exports of 56,818 metric tons, valued at $124 million, or about 63 percent of the world's export volume and 55 percent of value; the increase in Morocco's exports during 1990-95 accounts for almost the entire increase in world exports. Other major exporters' performances have been lackluster and, in fact, Italy's exports declined by nearly 80 percent during 1990-95, in part because of price premiums of as much as 50 percent over world prices for its products.

On average, canned sardine prices on world markets have fluctuated in recent years (table 25) between a 1992 high of $2.79 per kilogram to a 1994 low of $2.41 per kilogram; the rise in prices in 1990-92 occurred during a period of falling exports and the low prices of later years coincided with relatively high export volumes.

Table 24
Canned sardines: World exports, by country, 1990-95

Year	1990	1991	1992	1993	1994	1995
			Metric tons			
Morocco	45,094	47,678	44,730	44,922	47,522	56,818
Portugal	22,863	20,077	16,686	14,433	15,618	20,887
Spain	3,368	2,102	1,950	5,051	4,141	3,515
Italy	4,613	3,728	2,688	2,748	1,312	1,004
Other	2,156	2,152	2,350	3,384	4,592	7,875
Total	78,094	75,737	68,404	70,538	73,185	90,099
			Million dollars			
Morocco	102,673	112,744	110,718	96,950	100,925	124,013
Portugal	59,984	57,357	52,315	42,698	43,804	60,865
Spain	10,360	7,609	8,631	14,872	12,833	13,035
Italy	15,334	12,584	10,112	8,498	4,718	3,314
Other	7,507	7,540	8,770	11,858	14,253	23,496
Total	195,858	197,834	190,546	174,876	176,533	224,723

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 25
Canned sardines: Average world export prices, 1990-95

Year	Dollars per kilogram
1990	2.51
1991	2.61
1992	2.79
1993	2.48
1994	2.41
1995	2.49

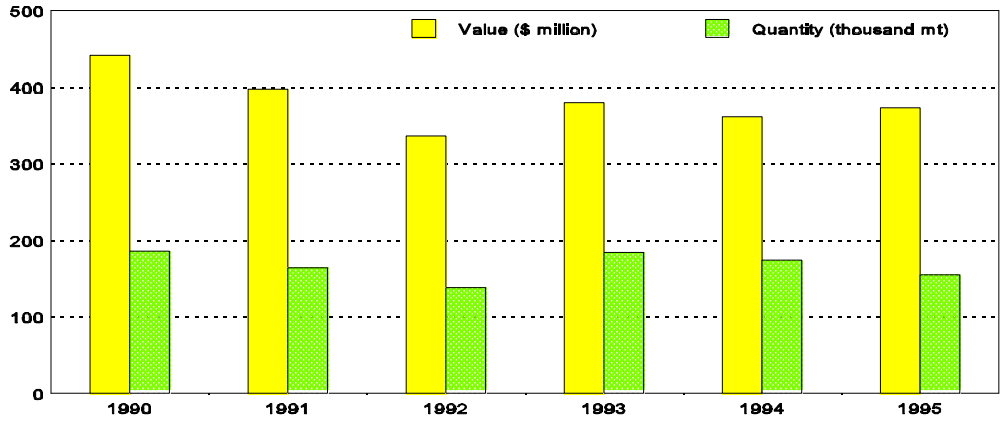
Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Mackerel

Mackerel are found around the world, in warm and cold waters, and are consumed in many forms, fresh, frozen, cured or canned, as well as in petfood and as bait. World production of mackerel in canned form is on the decline: total production in 1995 reached 154,626 metric tons, a decrease of 17 percent from the 1990 level of 185,460 metric tons (figure 4). On a value basis, world production declined by a similar proportion, from $441 million in 1990 to $373 million in 1995.

Production of canned mackerel is carried out by a variety of countries around the world, including several European countries and a number of Asia Pacific nations (table 26). Japan, the largest producer, Taiwan and Thailand together account for 35 percent of the total; the European nations of Denmark, France and Spain make up an additional 34 percent. The United States is a minor

Figure 4
World production of canned mackerel



Source: Food and Agriculture Organization.

Table 26
Canned mackerel: Leading producing nations, 1992 and 1995

Producer	1992	1995
	Metric tons	
Japan	26,309	24,888
Denmark	19,465	20,421
France	17,432	19,342
Spain	10,137	10,000
Morocco	8,725	13,724
Thailand	15,000	21,000
Taiwan	9,666	8,691
Other	31,453	36,560
Total	138,187	154,626

Source : Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

producer of canned mackerel; in fact, U.S. production is limited mainly to "jack mackerel" (*Trachurus symmetricus*), a Pacific member of the jack family, not the mackerel family.[33]

About two-fifths of world production of canned mackerel is destined for export markets (table 27). In 1995, exports totaled 62,098 metric tons, or 40 percent of world production, about the same as in 1990 but sharply down from the recent peak of 82,344 metric tons exported in 1993, perhaps due to a significant increase in export prices, described below.

[33] United States International Trade Commission, *Mackerel: Competitiveness of the U.S. Industry in Domestic and Foreign Markets*, USITC Publication 2649 (June 1993).

Table 27
Canned mackerel: World production, exports and exports as a share of production, 1990-95

Year	Production	Exports	Exports/production
	)))))))))))))))))))))))))))))	*Metric tons*	)))))))))))))))))))))))))))))
1990	185,460	62,947	33.9
1991	164,078	65,911	40.2
1992	138,187	65,926	47.7
1993	184,403	82,344	44.7
1994	173,741	74,288	42.8
1995	154,626	62,098	40.2

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

The world's largest exporters of canned mackerel are Denmark and Thailand, which account for 32 percent and 15 percent of total exports (value basis), respectively (table 28). The European Union is Denmark's largest market, while the United States and the EU are the primary destinations for Thailand's exports. Japan, long the world's second largest exporter, has been eclipsed by growing supplies from Thailand and Norway; Japan relied in large part on access for its fishing fleets to distant water mackerel resources, which have become limited in recent years. In addition, as is the case in other segments of the canned fish industry, Japanese marketers have taken advantage of low-cost locations outside of Japan to produce their products.

Table 28
Canned mackerel: World exports, by country, 1990-95

Year	1990	1991	1992	1993	1994	1995
			Metric tons			
Denmark	12,874	13,988	13,988	15,767	14,636	13,630
Thailand	8,638	14,715	15,006	20,275	19,493	17,384
Norway	3,260	4,490	6,833	5,793	5,526	7,316
Japan	19,099	13,968	12,131	11,198	8,903	4,734
Portugal	4,159	4,473	3,783	2,810	2,857	2,583
Morocco	3,928	3,506	3,015	3,443	3,125	3,491
Other	10,989	10,771	11,170	23,058	19,743	12,960
Total	62,947	65,911	65,926	82,344	74,288	62,098
			Million dollars			
Denmark	41,434	43,973	46,970	48,934	45,672	48,330
Thailand	9,968	18,707	18,155	23,212	21,752	22,373
Norway	6,325	8,081	11,393	9,337	8,889	13,522
Japan	34,371	32,418	29,347	29,213	22,566	13,206
Portugal	18,423	20,309	17,628	11,290	12,073	12,597
Morocco	11,688	11,245	9,244	8,941	9,311	11,115
Other	27,716	24,711	27,418	39,002	34,231	28,257
Total	149,925	159,444	160,155	169,929	154,494	149,400

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Canned mackerel prices on world export markets have shown no particular trend in recent years (table 29). Recent average prices have fluctuated between a high of $2.43 per kilogram (1992) to a low of $2.06 per kilogram (1993), a high rate of volatility in short periods, which adds to market instability caused by swings in production and export volumes (see table 27 above).

Table 29
Canned mackerel: Average world export prices, 1990-95

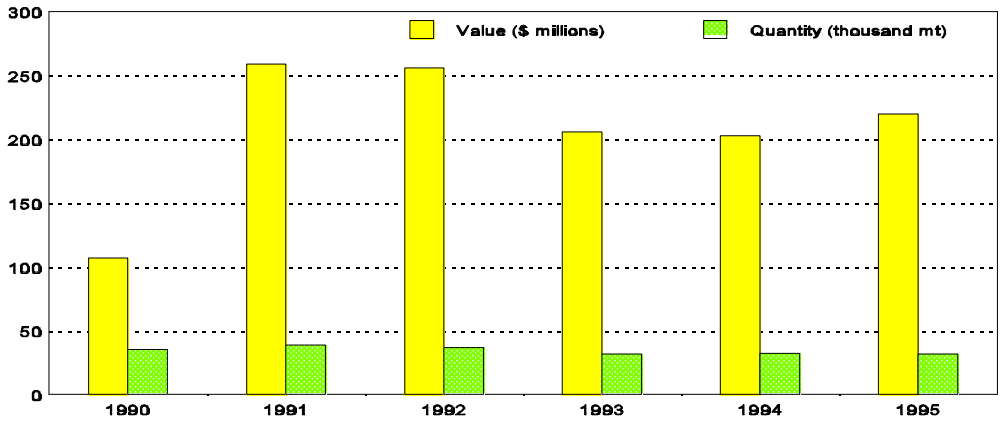
Year	Dollars per kilogram
1990	2.38
1991	2.42
1992	2.43
1993	2.06
1994	2.08
1995	2.41

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Anchovies

Anchovies make up the smallest segment of the world canned fish industry. World production totaled 31,765 metric tons in 1995, down slightly from the volumes produced in earlier years (figure 5). On a value basis, world canned anchovy production peaked in the early 1990s, before declining to the $200-220 million range more recently. The United States is not a significant producer of canned anchovies.

Figure 5
World production of canned anchovies



Source: Food and Agriculture Organization.

The Mediterranean Sea region is the heart of the world's canned anchovy industry. Italy, Spain, and Morocco are the largest producers (table 30); their access to the rich anchovy resources of the Mediterranean has allowed them to capture a combined 85-percent share of global production. Italy is the world's largest producer of canned anchovies, and, with a large domestic market, the largest consumer. Morocco, in contrast, is a moderately large producer but is the world's largest exporter. Spain, the world's second largest producer and exporter, enjoys a strong demand for its canned anchovies, which have commanded premium prices of as much as 50 percent above world market prices in recent years.

Table 30
Canned anchovies: Leading producing nations, 1992 and 1995

Producer	1992	1995
	Metric tons	
Spain	9,396	9,000
Morocco	6,758	5,155
Italy	15,500	13,000
Other	5,234	4,610
Total	36,888	31,765

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

A growing share of the world's production of canned anchovies (43 percent in 1995) is destined for export markets (table 31). Global exports of canned anchovies reached a record 14,316 metric tons in 1994, before declining slightly to 13,690 in 1995 (table 32). A 10-percent gain in average prices helped sustain export value, which reached a record $94.8 million in 1995.

Table 31
Canned anchovies: World production, exports, and exports as a share of production, 1990-95

Year	Production	Exports	Exports/production
	Metric tons		*Percent*
1990	35,165	11,490	32.7
1991	38,834	10,651	27.4
1992	36,888	11,276	30.6
1993	32,062	12,591	39.3
1994	32,395	14,316	44.2
1995	31,765	13,690	43.1

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 32
Canned anchovies: Exports by country, 1990-95

Year	1990	1991	1992	1993	1994	1995
			Metric tons			
Spain	2,516	2,226	1,880	1,971	2,122	2,394
Morocco	4,678	5,682	6,362	6,605	7,408	6,492
Turkey	676	518	487	204	703	725
Italy	996	883	868	996	1,024	1,089
Greece	162	180	346	769	918	879
Other	2,462	1,162	1,333	2,046	2,141	2,111
Total	11,490	10,651	11,276	12,591	14,316	13,690
			Million dollars			
Spain	22,841	23,762	20,355	18,319	19,531	22,956
Morocco	26,300	29,844	37,118	36,897	43,463	42,210
Turkey	2,621	1,295	1,572	559	1,618	3,422
Italy	7,107	6,945	7,027	8,701	8,489	8,612
Greece	1,451	1,654	2,757	5,010	5,245	6,689
Other	9,150	7,536	9,471	11,352	11,268	10,956
Total	16,471	71,036	78,300	80,838	89,614	94,845

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

World prices for canned anchovies, as measured by export unit values, have ranged between a low $6.05 per kilogram and a high of $6.94 per kilogram (table 33).

Table 33
Canned anchovies: Average world export prices, 1990-95

Year	Dollars per kilogram
1990	6.05
1991	6.67
1992	6.94
1993	6.42
1994	6.26
1995	6.93

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Minced Fish

The category "minced fish" covers an array of canned fish products, some of which are obscure or confined to regional or ethnic markets. Examples include fish pastes, balls, cakes and puddings, and breaded fish sticks and portions.[34] However, the principal products are food analogs, or imitation food products, processed from low-cost whitefish such as Alaska pollock. Such fish is minced and blended with crabmeat or other foods or flavor extracts, and other ingredients such as binders. Then the paste is formed into products resembling other foods, including but not limited to other seafoods.

As a group, minced fish products are a large but shrinking segment of the canned-fish industry: global production in 1995 reached 1,191 thousand metric tons, about 16 percent less than world production in the peak year, 1990 (figure 6). The total value of minced fish production reached a peak at $4.7 billion in 1991, before declining irregularly to $4.3 billion in 1995.

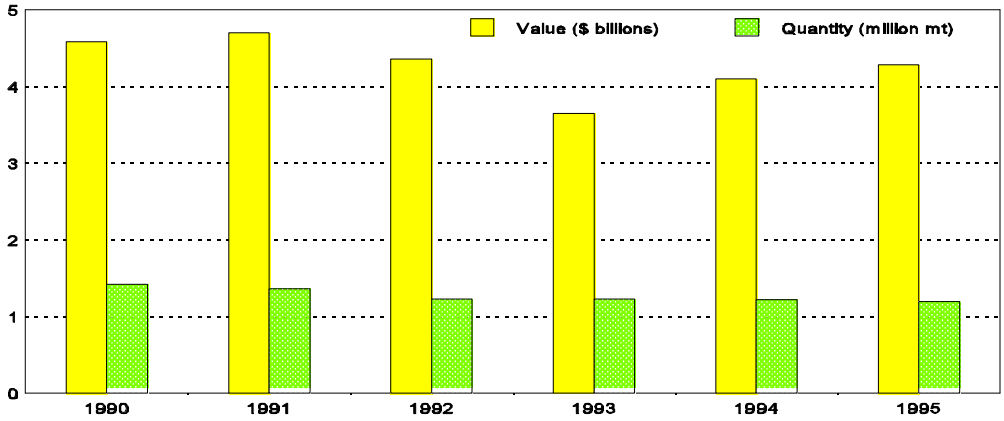
The largest minced-fish producer in the world is Japan, with 70 to 75 percent of global production. Japan is more than 6 to 7 times the size of its closest competitors, Korea and Myanmar, which each account for just over 10 percent of world output (table 34). The United States is a small but growing producer of canned minced-fish products.

Very little domestic production of minced fish is available for surplus: in recent years, less than 5 percent of total output has been exported (table 35). In 1995, world exports of minced fish totaled only 44,127 metric tons, reflecting a 37-percent decline from just three years earlier, and an even greater decline from the peak levels of the late 1980s. Korea, the world's second largest producer, is the largest exporter, accounting for two-thirds of the total quantity of world exports; Japan is second, with about one-sixth of the total quantity (table 36). On a value basis, however, the relatively high prices commanded by Japanese products on world markets boost its share of total export value to nearly 30 percent, compared with Korea's 56 percent

Prices of minced fish on world markets have risen in recent years, following a decline in the early 1990s (table 37). Average export prices reached $3.59 per kilogram in 1995, up 20 percent from the low levels of 1993 and more than twice the levels prevailing a decade earlier.

[34] This category also includes some processed seafood products that are not canned, such as prepared meals that contain fish.

Figure 6
World production of minced fish



Source: Food and Agriculture Organization.

Table 34
Minced fish: Leading producing nations, 1992 and 1995

Producer	1992	1995
	Metric tons	
Japan	929,312	868,973
Korea, Rep	123,803	135,400
Myanmar	114,000	123,425
Other	59,770	63,697
Total	1,226,885	1,191,495

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 35
Minced fish: World production, exports, and exports as a share of production, 1990-95

Year	Production	Exports	Exports/production
	Metric tons		Percent
1990	1,414,696	59,520	4.2
1991	1,360,308	63,038	4.6
1992	1,226,885	69,500	5.7
1993	1,223,068	58,702	4.8
1994	1,219,244	46,873	3.8
1995	1,191,495	44,127	3.7

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 36
Minced fish exports, by country, 1990-95

Year	1990	1991	1992	1993	1994	1995
			Metric tons			
Korea	27,948	24,032	23,484	20,586	26,789	28,991
Japan	24,821	18,226	13,046	9,833	10,136	7,271
New Zealand	681	2,564	3,951	5,033	4,258	4,894
Other	6,070	18,216	29,019	23,250	5,690	2,971
Total	59,520	63,038	69,500	58,702	46,873	44,127
			Million dollars			
Korea	84.9	83.6	85.5	59.2	73.4	89.6
Japan	94.8	82.6	71.7	57.0	55.9	45.5
New Zealand	1.7	7.6	14.0	15.8	14.7	17.0
Other	11.6	56.3	75.2	42.7	13.6	6.3
Total	193.0	230.1	246.4	174.7	157.6	158.4

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

Table 37
Minced fish: Average world export prices, 1990-95

Year	Dollars per kilogram
1990	3.24
1991	3.65
1992	3.55
1993	2.98
1994	3.36
1995	3.59

Source: Food and Agriculture Organization of the United Nations.
FAO data are available only through 1995.

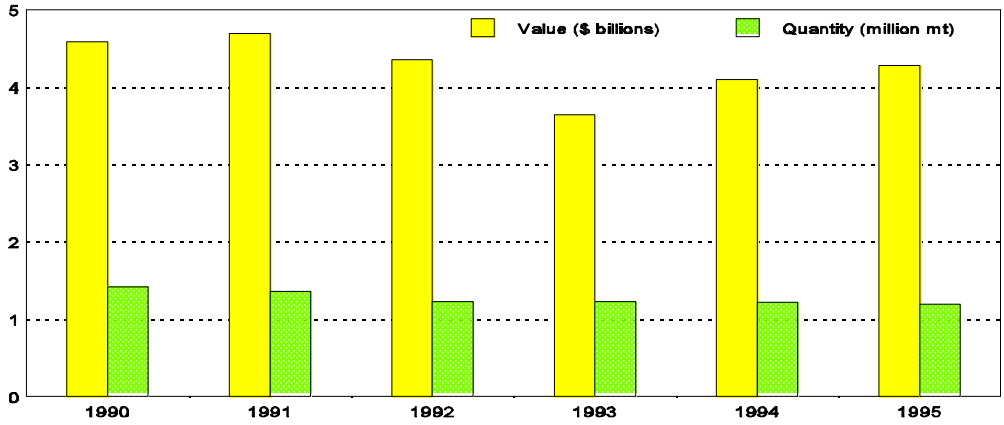
Salmon

Salmon is the fourth largest segment of the world canned fish industry and is the one segment of the industry completely dominated by the United States. World production, shown in figure 7, totaled 136,250 metric tons in 1995, of which the United States accounted for more than 80 percent (table 38). On a value basis, world production peaked in 1991 at $931 million, before declining to $620 million in 1995.

The North Pacific is the home of most of the world's salmon resources and its coastline is where most salmon canneries are located. The United States, Canada, Japan, and Russia together account for 98 percent of world production (table 38).

World prices for canned salmon, as measured by average unit values of world exports, have declined almost steadily in recent years (table 39). From the 1990 peak of $5.65 per kilogram, export prices dropped to $4.55 per kilogram by 1995, a decline of nearly 20 percent.

Figure 7
World production of salmon



Source: Food and Agriculture Organization.

Table 38
Major producers of canned salmon, 1990-96

Year	United States	Canada	Japan	Russia	Other	Total
			Metric tons			
1990	75,166	37,406	7,731	33,223[1]	4,676	158,202
1991	73,865	33,250	6,859	70,593[1]	3,565	188,132
1992	67,893	18,050	6,873	25,000	3,058	120,874
1993	90,093	27,050	7,269	30,000	3,545	([2])
1994	94,028	18,280	7,455	([2])	3,764	([2])
1995	110,282	14,582	6,549	([2])	4,837	([2])
1996	89,433	16,302	([2])	([2])	([2])	([2])

[1] Includes all of the former USSR.
[2] Not available.

Source: Food and Agriculture Organization of the United Nations; U.S. Department of Commerce; and British Columbia Salmon Producers Association.

Table 39
Canned salmon: Average world export prices, 1990-95

Year	Dollars per kilogram
1990	5.65
1991	4.95
1992	4.87
1993	4.74
1994	4.52
1995	4.55

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

A generally growing share of the world's production of canned salmon (47 percent in 1995) is destined for export markets (table 40). Global exports of canned salmon reached a record 64,426 metric tons in 1995, an increase of more than 20 percent over the 1990 level of 53,068 metric tons. The United States is the world's largest exporter, with almost 60 percent of the total value of world exports, followed by Canada (20 to 30 percent) and, in recent years, Norway, which captured 4 percent of the 1995 world total.

Table 40
Canned salmon: Production, exports, and world exports as a share of production, 1990-95

Year	Production	Exports	Exports/production
	))))))))))) *Metric tons*))))))))))		*Percent*
1990	158,202	53,068	33.5
1991	188,132	54,852	29.2
1992	120,874	58,920	48.7
1993	157,957	60,375	38.2
1994	123,527	64,069	51.9
1995	136,250	64,426	47.3

Source: Food and Agriculture Organization of the United Nations. FAO data are available only through 1995.

APPENDIX A
EXPLANATION OF TARIFF AND TRADE AGREEMENT TERMS

TARIFF AND TRADE AGREEMENT TERMS

In the *Harmonized Tariff Schedule of the United States* (HTS), chapters 1 through 97 cover all goods in trade and incorporate in the tariff nomenclature the internationally adopted Harmonized Commodity Description and Coding System through the 6-digit level of product description. Subordinate 8-digit product subdivisions, either enacted by Congress or proclaimed by the President, allow more narrowly applicable duty rates; 10-digit administrative statistical reporting numbers provide data of national interest. Chapters 98 and 99 contain special U.S. classifications and temporary rate provisions, respectively. The HTS replaced the Tariff Schedules of the United States (TSUS) effective January 1, 1989.

Duty rates in the **general** subcolumn of HTS column 1 are most-favored-nation (MFN) rates, many of which have been eliminated or are being reduced as concessions resulting from the Uruguay Round of Multilateral Trade Negotiations. Column 1-general duty rates apply to all countries except those enumerated in HTS general note 3(b) (Afghanistan, Cuba, Laos, North Korea, and Vietnam), which are subject to the statutory rates set forth in **column 2**. Specified goods from designated MFN-eligible countries may be eligible for reduced rates of duty or for duty-free entry under one or more preferential tariff programs. Such tariff treatment is set forth in the **special** subcolumn of HTS rate of duty column 1 or in the general notes. If eligibility for special tariff rates is not claimed or established, goods are dutiable at column 1-general rates. The HTS does not enumerate those countries as to which a total or partial embargo has been declared.

The *Generalized System of Preferences* (GSP) affords nonreciprocal tariff preferences to developing countries to aid their economic development and to diversify and expand their production and exports. The U.S. GSP, enacted in title V of the Trade Act of 1974 for 10 years and extended several times thereafter, applies to merchandise imported on or after January 1, 1976 and before the close of June 30, 1998. Indicated by the symbol "A", "A*", or "A+" in the special subcolumn, the GSP provides duty-free entry to eligible articles the product of and imported directly from designated beneficiary developing countries, as set forth in general note 4 to the HTS.

The *Caribbean Basin Economic Recovery Act* (CBERA) affords nonreciprocal tariff preferences to developing countries in the Caribbean Basin area to aid their economic development and to diversify and expand their production and exports. The CBERA, enacted in title II of Public Law 98-67, implemented by Presidential Proclamation 5133 of November 30, 1983, and amended by the Customs and Trade Act of 1990, applies to merchandise entered, or withdrawn from warehouse for consumption, on or after January 1, 1984. Indicated by the symbol "E" or "E*" in the special subcolumn, the CBERA provides duty-free entry to eligible articles, and reduced-duty treatment to certain other articles, which are the product of and imported directly from designated countries, as set forth in general note 7 to the HTS.
Free rates of duty in the special subcolumn followed by the symbol "IL" are applicable to products of Israel under the *United States-Israel Free Trade Area Implementation Act* of 1985 (IFTA), as provided in general note 8 to the HTS.

Preferential nonreciprocal duty-free or reduced-duty treatment in the special subcolumn followed by the symbol "J" or "J*" in parentheses is afforded to eligible articles the product of designated

beneficiary countries under the *Andean Trade Preference Act* (ATPA), enacted as title II of Public Law 102-182 and implemented by Presidential Proclamation 6455 of July 2, 1992 (effective July 22, 1992), as set forth in general note 11 to the HTS.

Preferential or free rates of duty in the special subcolumn followed by the symbol "CA" are applicable to eligible goods of Canada, and rates followed by the symbol "MX" are applicable to eligible goods of Mexico, under the *North American Free Trade Agreement*, as provided in general note 12 to the HTS and implemented effective January 1, 1994 by Presidential Proclamation 6641 of December 15, 1993. Goods must originate in the NAFTA region under rules set forth in general note 12(t) and meet other requirements of the note and applicable regulations.

Other special tariff treatment applies to particular *products of insular possessions* (general note 3(a)(iv)), *products of the West Bank and Gaza Strip* (general note 3(a)(v)), goods covered by the *Automotive Products Trade Act* (APTA) (general note 5) and the *Agreement on Trade in Civil Aircraft* (ATCA) (general note 6), *articles imported from freely associated states* (general note 10), *pharmaceutical products* (general note 13), and *intermediate chemicals for dyes* (general note 14).

The *General Agreement on Tariffs and Trade 1994* (GATT 1994), pursuant to the Agreement Establishing the World Trade Organization, is based upon the earlier GATT 1947 (61 Stat. (pt. 5) A58; 8 UST (pt. 2) 1786) as the primary multilateral system of disciplines and principles governing international trade. Signatories' obligations under both the 1994 and 1947 agreements focus upon most-favored-nation treatment, the maintenance of scheduled concession rates of duty, and national treatment for imported products; the GATT also provides the legal framework for customs valuation standards, "escape clause" (emergency) actions, antidumping and countervailing duties, dispute settlement, and other measures. The results of the Uruguay Round of multilateral tariff negotiations are set forth by way of separate schedules of concessions for each participating contracting party, with the U.S. schedule designated as Schedule XX.

Pursuant to the **Agreement on Textiles and Clothing** (ATC) of the GATT 1994, member countries are phasing out restrictions on imports under the prior "Arrangement Regarding International Trade in Textiles" (known as the **Multifiber Arrangement** (MFA)). Under the MFA, which was a departure from GATT 1947 provisions, importing and exporting countries negotiated bilateral agreements limiting textile and apparel shipments, and importing countries could take unilateral action in the absence or violation of an agreement. Quantitative limits had been established on imported textiles and apparel of cotton, other vegetable fibers, wool, man-made fibers or silk blends in an effort to prevent or limit market disruption in the importing countries. The ATC establishes notification and safeguard procedures, along with other rules concerning the customs treatment of textile and apparel shipments, and calls for the eventual complete integration of this sector into the GATT 1994 over a ten-year period, or by Jan. 1, 2005.

APPENDIX B
EXPORTS, IMPORTS, AND TRADE BALANCE TABLE

Canned fish: U.S. exports of domestic merchandise, imports for consumption, and merchandise trade balance, by selected countries and country groups, 1992-1996

(1,000 dollars)

Item	1992	1993	1994	1995	1996
U.S. exports of domestic merchandise :					
Thailand	1,633	1,901	1,404	152	217
Canada	38,787	63,617	72,224	80,637	70,864
United kingdom	105,932	90,445	78,523	86,658	70,605
Ecuador	0	0	0	25	7
Philippines	125	86	231	442	512
Indonesia	17	97	107	156	514
Japan	80,827	39,631	13,953	23,831	4,993
Norway	13	0	0	0	3
Taiwan	2,290	1,531	858	588	185
United kingdom	105,932	90,445	78,523	86,658	70,605
Hong Kong	207	231	443	800	486
All other	68,807	60,019	55,485	55,052	62,937
Total	298,640	257,560	223,228	248,341	214,323
EU-15	133,494	110,324	96,961	105,890	92,944
OPEC	345	228	296	419	877
Latin America	8,819	7,136	8,985	6,285	9,001
CBERA	4,642	3,174	2,914	3,139	4,793
Asian Pacific Rim	110,786	69,347	38,150	45,786	29,410
ASEAN	2,498	2,463	2,284	2,035	1,943
Central and Eastern Europe	113	6	0	0	0
U.S. imports for consumption :					
Thailand	285,988	197,802	251,035	168,441	160,478
Canada	24,138	24,624	28,031	35,202	51,063
United kingdom	1,448	4,027	2,221	2,888	2,285
Ecuador	4,316	20,717	25,974	43,453	62,142
Philippines	30,902	33,217	38,740	51,808	61,246
Indonesia	26,467	23,637	33,059	41,029	35,150
Japan	14,782	15,085	13,980	12,675	13,136
Norway	13,135	12,790	12,232	14,047	13,511
Taiwan	25,736	23,111	17,117	8,921	11,853
Hong Kong	402	491	621	590	614
All other	76,621	88,432	86,898	93,368	87,766
Total	503,935	443,933	509,908	472,421	499,245
EU-15	17,591	19,149	16,302	19,371	17,061
OPEC	27,177	25,612	35,704	41,711	35,330
Latin America	14,316	41,888	5,260,845	74,728	84,465
CBERA	179	217	98	23	77
Asian Pacific Rim	405,736	312,603	374,333	303,370	303,170
ASEAN	349,309	260,270	329,266	266,177	261,283
Central and Eastern Europe	542	909	575	322	734
U.S. merchandise trade balance:					
Thailand	-284,355	-195,901	-249,631	-168,289	-160,261
Canada	14,649	38,993	44,193	45,434	19,801
United kingdom	104,484	86,418	76,302	83,770	71,320
Ecuador	-4,316	-201,717	-25,974	-43,428	-62,135
Philippines	-30,777	-33,131	-38,509	-51,366	-60,734
Indonesia	-26,449	23,540	32,951	-40,873	-34,635
Japan	-66,045	24,545	-27	11,156	-8,143
Norway	-13,121	-12,790	-12,232	-14,046	-13,507
Taiwan	-23,446	-21,580	-16,259	-8,333	-11,668
Hong Kong	-195	-260	-178	210	-128
All other	-7,813	28,412	31,413	-38,314	-24,830
Total	-205,295	-186,373	-286,680	-224,080	-284,922
EU-15	115,903	91,175	80,658	86,519	75,883
OPEC	-26,832	-25,384	-35,408	-41,292	-34,453
Latin America	-5,498	-34,752	-43,661	-68,443	-75,464
CBERA	4,463	2,957	2,816	3,116	4,717
Asian Pacific Rim	-294,950	-243,256	-336,183	-257,583	-273,760
ASEAN	-346,811	-257,807	-326,982	-264,142	-259,340
Central and Eastern Europe	-429	-903	-575	-322	-734

Import values are based on Customs value; export values are based on f.a.s. value, U.S. port of export.

Note:-Because of rounding, figures may not add to totals shown. The countries shown are those with the largest total U.S. trade. (U.S. imports plus exports) in these products in 1996.

Source: Compiled from official statistics of the U.S. Department of Commerce.