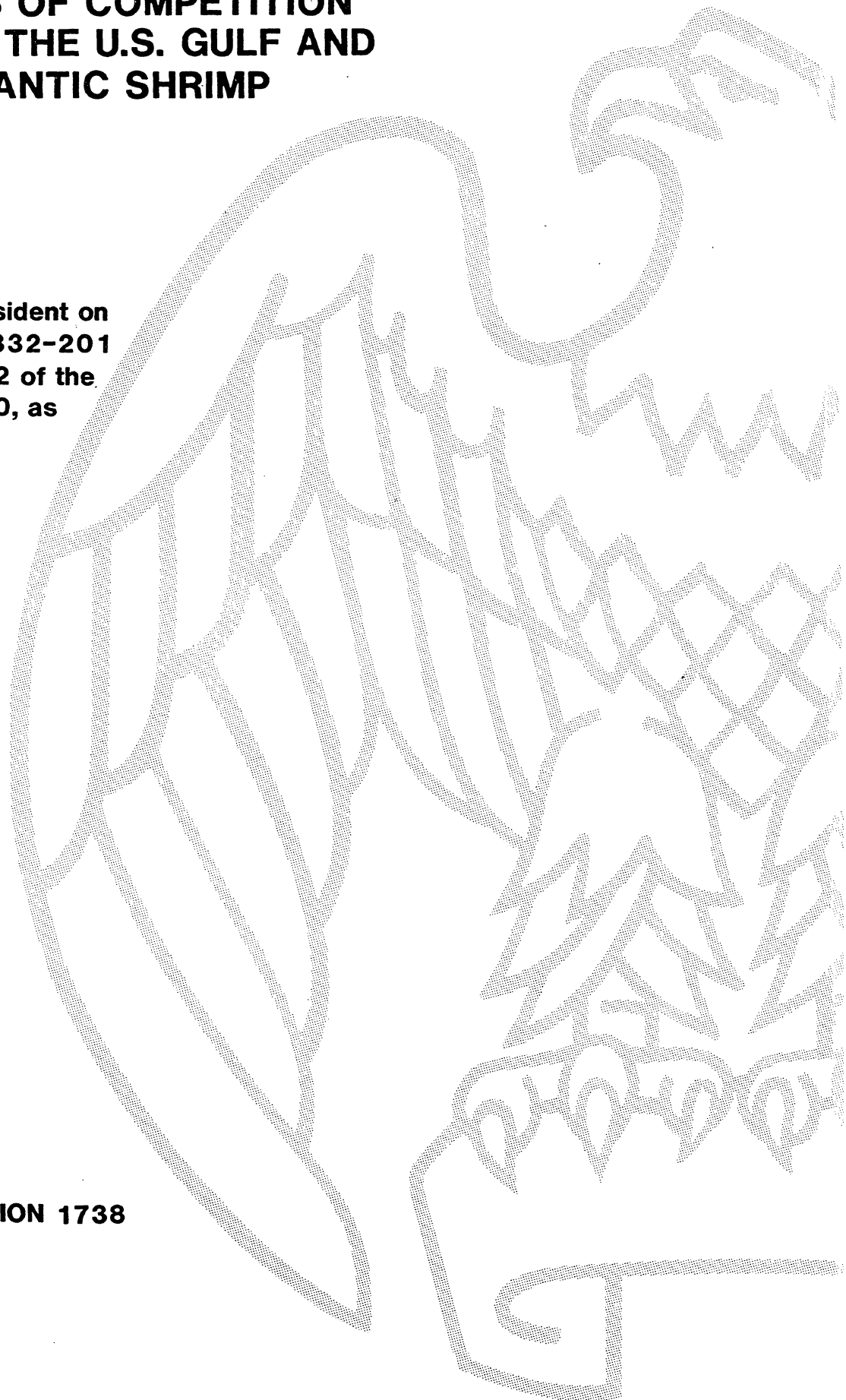


# **CONDITIONS OF COMPETITION AFFECTING THE U.S. GULF AND SOUTH ATLANTIC SHRIMP INDUSTRY**

**Report to the President on  
Investigation No. 332-201  
Under Section 332 of the  
Tariff Act of 1930, as  
Amended**

**USITC PUBLICATION 1738**

**AUGUST 1985**



UNITED STATES INTERNATIONAL TRADE COMMISSION

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## PREFACE

The Commission instituted the present investigation on November 8, 1984, following the receipt of a letter of request therefor on October 5, 1984, from Ambassador William E. Brock, the United States Trade Representative. The investigation was conducted under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)) for the purpose of gathering and presenting information on the competitive, technological, and economic factors affecting the performance of the U.S. Gulf and South Atlantic shrimp industry. On February 15, 1985, the Commission received a letter amending the scope and due date of the investigation. 1/ Specifically, the Commission was asked to develop the following information: government assistance of foreign shrimp-supplying countries; production levels in the harvesting and processing sectors; industry integration; employment levels; financial status of the harvesting and processing sector; production prices; tariff and nontariff barriers to trade; and, the development of shrimp aquaculture in the United States and foreign countries.

Public notices of the investigation, hearing, and amendment of scope of investigation and due date of the investigation, were given by posting copies of the notices at the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notices in the Federal Register of November 21, 1984, (49 F.R. 45936), February 21, 1985, (50 F.R. 7238) and March 20, 1985 (50 F.R. 11257). 2/ A public hearing in connection with this investigation was held on March 21, 1985, in New Orleans, Louisiana. 3/

The information in this report was obtained from fieldwork, questionnaires, the public hearing, private individuals and organizations, and State, Federal, and foreign government sources.

The information and analysis 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 other statutory authority covering the same or similar matter.

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1/ The requests from the United States Trade Representative are reproduced in app. A.

2/ A copy of the notices of the Commission's investigation, hearing, and amendment of scope of investigation and due date of the investigation are reproduced in app. B.

3/ A list of witnesses appearing at the hearing is presented in app. C.



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## EXECUTIVE SUMMARY

Shrimp is the most valuable fishery in the United States, as well as one of the most popular seafood items in the U.S. market. The U.S. Gulf and South Atlantic region shrimp industry provides the great bulk of domestically produced shrimp.

The U.S. Gulf and South Atlantic region shrimp industry is extremely competitive. The harvesting sector is dependent on an open-access resource that varies considerably in magnitude from year to year owing mainly to environmental factors beyond human control. In recent years, competition within the region has increased as the number of boats and vessels harvesting the resource has increased markedly. Also, because the supply of shrimp available to the domestic harvesting sector is limited by ecological factors, imports have gained a significant share of the market as the demand for shrimp has increased. These imports have limited price increases caused by increasing market demand.

Firms in the processing sector must compete with each other, not only in the markets for their products, but also for supplies of shrimp, both domestic and foreign, for their processing needs. Although shrimp processors in the Gulf and South Atlantic region use imported shrimp for further processing, they also face competition in the U.S. market from imports for most of the product forms they produce.

The performance of the U.S. Gulf and South Atlantic region shrimp industry is affected, to a large degree, by the state of the U.S. economy. Shrimp is mainly consumed in restaurants and is a relatively high-priced, luxury food item, the demand for which is greatly influenced by the level of consumers' disposable income. The period 1980-84 saw an improvement in general economic conditions, with rising levels of consumer disposable income. This stimulated the demand for shrimp in the U.S. market. During 1980-84, below average levels of U.S. shrimp landings and a strengthening U.S. shrimp market contributed to record-high U.S. shrimp imports during the period.

A significant development affecting the U.S. shrimp market during the period under review was the emerging importance of shrimp produced by aquaculture. This development was mainly the result of increased aquaculture production in Ecuador and, to a lesser extent, in other Latin American and some Asian countries. As a result of an increase in U.S. imports of aquacultured shrimp, certain structural changes occurred in the U.S. shrimp market during 1980-84. First, shrimp supplies became less seasonal because aquaculture provided a relatively steady annual flow of shrimp. Also, price relationships changed as supplies within certain size categories were increased by a more consistent supply of imported aquacultured shrimp. In addition, inventories (which are also affected by interest rates) became less of a factor in the U.S. shrimp market owing, in part, to a lessening of the seasonality of supplies.

Members of the U.S. Gulf and South Atlantic region shrimp industry have expressed concerns about their competitive position in the U.S. market, largely in terms of competition from shrimp imports. The principal claims of the U.S. Gulf and South Atlantic region shrimp industry are as follows:

1. Shrimp harvesters in the Gulf and South Atlantic region are being injured as a result of imports;

2. Shrimp industries in foreign countries benefit from government assistance, which makes their products more competitive in the U.S. market; and

3. Access has been restricted to traditionally open foreign shrimping grounds, particularly off the coast of Mexico, thus limiting U.S. Gulf and South Atlantic region harvesters to U.S. waters and increasing the pressure on shrimping activities.

Foreign shrimp producers maintain that:

1. Imports have historically provided a large and necessary share of U.S. shrimp supplies since domestic supplies cannot fully meet demand in the U.S. market;

2. In many cases, imported shrimp commands a higher price than domestic shrimp in the U.S. market;

3. Tariffs or quotas on U.S. imports of shrimp would increase domestic shrimp prices to a point where the quantity of shrimp demanded and shrimp consumption would drop; and

4. There is a significant amount of U.S. investment in foreign shrimp operations, particularly in aquaculture, which export shrimp to the United States.

#### Highlights of the Commission's Investigation

1. Structure of the U.S. Gulf and South Atlantic region industry.

- o The U.S. Gulf and South Atlantic region shrimp industry comprises a large number of small-and medium-sized firms and operations with relatively low levels of concentration and integration.

The harvesting sector of the U.S. Gulf and South Atlantic region shrimp industry generally consists of independent, privately owned, single unit operations. This varies somewhat by State and area, with some multiunit fleet operations, for example, in Texas and Florida. Also, the South Atlantic area shrimp harvesting sector has fewer multiunit operations than the Gulf area. Crew size on shrimp boats and vessels generally ranges from 1-3 members. In 1984, there were about 13,000 commercial shrimp boats and vessels, with approximately 11,000 of these located in the Gulf area. Recent data are not available on employment in the U.S. Gulf and South Atlantic region harvesting sector; such employment was about 22,000 (18,000 in the Gulf area) in 1977, the latest year for which data are available. However, inasmuch as the number of shrimp harvesting craft in the region has since increased, current employment is believed to be significantly higher.

The U.S. Gulf and South Atlantic region shrimp processing sector generally comprises privately owned, small to medium-sized, single plant operations. As with the harvesting sector, this varies by area. For example, there are some relatively large-scale operations owned by corporations (some by large conglomerates) in various States, particularly Florida and Georgia. Concentration is also relatively limited in the Gulf and South Atlantic region shrimp processing sector, although this varies by product form. Since the bulk of U.S. shrimp production is channeled through institutional outlets, marketing activities by U.S. Gulf and South Atlantic region shrimp processors

generally is limited to wholesaling. In 1983, there were 157 shrimp processing plants in the U.S. Gulf and South Atlantic region, with employment in these plants totaling about 9,000 persons.

- o The U.S. Gulf and South Atlantic shrimp industry experienced a decline in financial health during 1982-84, according to respondents to Commission questionnaires.

Both the harvesting and processing sectors of the U.S. Gulf and South Atlantic shrimp industry reported declining and/or negative net incomes during 1982-84. Average net income for shrimp craft 50 feet and less declined from 15.9 percent of net revenue in 1982 to 7.2 percent of net revenue in 1984. Average net income for craft over 50 feet was negative each year during the period, ranging from a loss equal to 6.3 percent of net revenue in 1983 to a loss equal to 1.0 percent of net revenue in 1984.

Processors of heads-off, shell-on shrimp reported a decline in total net income from 1.5 percent of net sales in 1982 to losses equal to 0.3 percent of net sales in 1984. Processors of canned shrimp reported a decline in total net income from 4.4 percent of net sales in 1982 to losses equal to 1.7 percent of net sales in 1984.

The poor financial performance reported by questionnaire respondents was accounted for mainly by increasing operating costs and variable revenues caused by fluctuations in domestic shrimp landings and prices during 1982-84.

- o Operating costs generally rose in the U.S. Gulf and South Atlantic shrimp industry during 1980-84.

Increasing operating costs affected both the harvesting and processing sectors of the U.S. Gulf and South Atlantic shrimp industry during 1980-84. Several cost items, such as craft construction, insurance, labor, and utilities, increased significantly during the period. The cost of constructing a typical Gulf shrimp otter trawler rose 24 percent during 1980-84. Typical annual insurance premiums for shrimp craft in the Gulf and South Atlantic region rose 20 percent during the period. Labor rates (minimum wage) rose 8 percent and electricity costs in the South rose 44 percent during 1980-84. Other cost items, such as interest rates and diesel fuel, moderated during the period, but were at much higher levels than they were prior to 1980.

- o Harvesting capacity increased in the U.S. Gulf and South Atlantic region during 1980-84.

Harvesting capacity, as measured by the number of commercially licensed shrimp otter trawl craft, increased irregularly in the Gulf and South Atlantic region from 13,378 in 1980 to 13,495 in 1984. The number of such craft peaked in 1983 at 14,058. The number of boats (less than 5 gross register tons) ranged from 7,180 in 1982 to 7,653 in 1983 while the number of vessels (5 gross register tons and greater) increased from 5,951 in 1980 to 6,405 in 1983 before falling to 6,166 in 1984. According to some researchers who have studied the shrimp industry, this expanded capacity has reduced the catch per craft, raised the cost per pound harvested, and despite the rising value of the catch per craft, reduced net revenues per craft.

- o The number of plants and employment increased in the U.S. Gulf and South Atlantic shrimp processing sector during 1980-83.

The number of plants that processed shrimp in the U.S. Gulf and South Atlantic region and employment in such plants increased from 150 plants, employing 7,579 persons, in 1980 to 157 plants, employing 8,777 persons, in 1983 (the latest year for which data are available).

- o The U.S. Gulf and South Atlantic region shrimp industry accounts for the bulk of U.S. shrimp production.

Shrimp landings in the Gulf and South Atlantic region during 1980-84 (heads-on basis) ranged in quantity from 285 million pounds in 1981 to 225 million pounds in 1983; the value increased irregularly from \$359 million in 1980 to \$474 million in 1984. During 1980-84, the shrimp harvesting sector in the Gulf and South Atlantic region accounted for 82 percent of the quantity and 95 percent of the value of total U.S. shrimp landings.

The processing sector in the region accounted for 82 percent of the value of total U.S. processed-shrimp production during 1980-83. <sup>1/</sup> Processed-shrimp production in the Gulf and South Atlantic region increased from \$669 million in 1980 to \$933 million in 1983, or by 40 percent.

- o U.S. Gulf and South Atlantic shrimp landings are seasonal.

Shrimp landings in the U.S. Gulf and South Atlantic region are seasonal mainly because of environmental and biological factors that affect shrimp resource availability. Seasonality is also affected by State and Federal Government resource management restrictions. Shrimp landings in the region are highest during the third and fourth quarters and typically peak during the summer months.

- o Shrimp processors in the Gulf and South Atlantic region produce a variety of shrimp products.

The major shrimp products produced by the U.S. Gulf and South Atlantic shrimp processing sector include, in decreasing order of commercial importance: raw, heads-off, shell-on shrimp; breaded shrimp; peeled shrimp; and canned shrimp. Much smaller amounts of shrimp-specialty products are also produced. The great bulk of processed shrimp products are in frozen form, owing to factors such as high perishability of shrimp, distance of major markets from primary shrimp-producing areas, and seasonality in availability of shrimp supplies. Also, individual shrimp plants in the U.S. Gulf and South Atlantic region may produce several shrimp product forms.

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<sup>1/</sup> Data on specific product forms are not available for 1984.



- o Shrimp inventories are an important, but declining, part of the U.S. Gulf and South Atlantic region shrimp industry.

Traditionally, shrimp processors in the Gulf and South Atlantic region have relied on inventories to maximize their profits. Inventories were generally built-up during the second half of a year, when domestic landings were at their peak and prices for shrimp low, and drawn down during the first half of the year when landings were low and shrimp prices high. During 1980-84, both the absolute levels and the range in levels of annual shrimp inventories declined. This is due, in large part, to a combination of an increasing, year-round supply of aquacultured shrimp from foreign sources (mainly Ecuador) and to relatively high interest rates for inventories during most of the period.

- o Shrimp aquaculture activity in the U.S. Gulf and South Atlantic region is limited.

At present, the production of shrimp by aquaculture in the U.S. Gulf and South Atlantic region is limited. Industry sources estimate that annual shrimp production by aquaculture methods is less than a million pounds, a fraction of total domestic shrimp production. Aquaculture activities are limited mainly by climatic and technological constraints. However, some industry sources maintain that aquaculture production of shrimp will increase in the Gulf and South Atlantic region as these constraints are overcome in the future.

## 2. The U.S. market for shrimp.

- o U.S. consumption of shrimp increased markedly during 1980-84.

With a large, affluent, and relatively urban population, the United States is the world's leading consumer of shrimp. U.S. apparent consumption of shrimp in all forms increased from 423 million pounds in 1980 to 604 million pounds in 1984, or by 43 percent (converted to a heads-off basis). For specific shrimp products, apparent consumption of heads-off, shell-on shrimp, the leading product form, increased by 32 percent (product weight) during 1980-83, while peeled shrimp consumption increased by 31 percent. <sup>1/</sup> Consumption of breaded shrimp increased by 21 percent, and consumption of canned shrimp rose by 33 percent during 1980-83. The rise in shrimp consumption during the period was accounted for by a strong U.S. economy and the increasing popularity of shrimp among consumers.

- o Ex-vessel and wholesale prices of shrimp are determined in competitive markets and largely reflect conditions of supply and demand.

There are a large number of buyers and sellers in markets for shrimp in the United States. Prices for both domestic and imported shrimp products are determined in competitive markets in response to fluctuating supply and demand

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<sup>1/</sup> Data on specific product forms are not available for 1984.

conditions. Ex-vessel shrimp prices in the U.S. Gulf and South Atlantic region generally are set based on daily bids by shrimp buyers across the country to producers in Brownsville-Port Isabel, TX, while wholesale shrimp prices are usually based on a quotation published weekly for shrimp in the New York area.

o U.S. imports of shrimp reached record levels during 1980-84.

During 1980-84, U.S. shrimp imports increased from 219 million pounds, valued at \$719 million, in 1980 to 342 million pounds, valued at \$1.2 billion, in 1984 (all forms, product weight). This represents an increase of 56 percent in quantity and 69 percent in value during the period. Imports reached record-high levels in 1983 (in value) and 1984 (in quantity). Imports of shell-on shrimp, the principal product form, increased from 139 million pounds, valued at \$519 million, in 1980 to 226 million pounds, valued at \$914 million, in 1984, or by 63 percent in quantity and 76 percent in value. Increases generally were registered for imports of all other product forms except breaded shrimp, which is a minor shrimp import item.

The top five suppliers of U.S. shrimp imports in 1984 were, in decreasing order of value, Mexico (31 percent of the total), Ecuador (15 percent), Panama (5 percent), Brazil (5 percent), and Thailand (4 percent).

o Mexico was the leading supplier of U.S. shrimp imports during 1980-84.

Mexico accounted for 28 percent of the quantity and 36 percent of the value of total U.S. shrimp imports during 1980-84. The bulk of U.S. imports from Mexico are of shell-on shrimp.

Although Mexico traditionally has been the leading foreign supplier of U.S. shrimp imports, its share of the U.S. import market declined significantly during 1980-84. In 1980, Mexico accounted for 35 percent of the quantity and 44 percent of the value of total U.S. shrimp imports. By 1984, this share had declined to 24 percent of the quantity and 31 percent of the value of total U.S. shrimp imports, owing mainly to an expanding U.S. shrimp market, erratic Mexican shrimp landings, and increasing supplies of aquacultured shrimp from sources such as Ecuador.

o Ecuador significantly increased its share of U.S. imports during 1980-84.

Reflecting the growth in aquaculture production of shrimp during 1980-84, Ecuador strengthened its position as the second leading foreign supplier of shrimp to the U.S. market. U.S. shrimp imports from Ecuador increased from 20 million pounds, valued at \$68 million, in 1980 to 47 million pounds, valued at \$186 million, in 1984, or by 131 percent in quantity and 173 percent in value. As with Mexico, the bulk of such imports were of shell-on shrimp. The share of the U.S. import market held by Ecuador increased from 9 percent of the quantity and value in 1980 to 14 percent of the quantity and 15 percent of the value in 1984.

o Imports accounted for an increasing share of consumption during 1980-84.

Imports historically have supplied a major share of the U.S. shrimp market. During 1980-83, the share of the quantity of total U.S. shrimp consumption supplied by imports increased from 61 percent in 1980 to 82 percent in 1983 (all forms, converted to heads-off weight). This share dropped to 70 percent in 1984, as domestic landings increased. During 1980-83, the share of the market held by imports increased for each product form except breaded shrimp. <sup>1/</sup> As a share of consumption, imports of shell-on shrimp increased from 64 percent in 1980 to 76 percent in 1983, while the share of imports of peeled shrimp increased irregularly from 61 percent in 1980 to 67 percent in 1983 (product weight basis). The share of canned shrimp imports increased the most of any product form, from 30 percent in 1980 to 71 percent in 1983 (product weight basis). The share of consumption supplied by imports of breaded shrimp, a minor import item, ranged from less than 0.5 percent in 1980 to 4 percent in 1982 (product weight basis).

o U.S. shrimp imports are seasonal, although seasonality lessened during 1980-84.

Imports historically enter the United States in greater volume during the fourth quarter of the year, as distributors build their inventories in anticipation of lower supplies the first half of the following year. However, during 1980-84, the ratio of the annual difference between the high and low quarters for U.S. shrimp imports of raw, shell-on shrimp (the principal product form) declined in terms of quantity from 101 percent in 1980 to 44 percent in 1984. This was caused, in large part, by a general tendency towards lower inventories and by a more constant year-round supply of imported shrimp supplied mainly by aquaculture production.

o U.S. exports of shrimp accounted for a small and declining share of production during 1980-84.

Although large foreign markets exist, such as Japan and Western Europe, U.S. exports of shrimp historically have been minor compared with domestic production due to factors such as the readily accessible U.S. market that is large and capable of absorbing all domestic supplies, market preferences in foreign markets, relative world prices, and exchange rate differences.

U.S. exports of domestic shrimp declined irregularly from 22 million pounds, valued at \$66 million, in 1980 to 16 million pounds, valued at \$52 million, in 1984. The share of U.S. shrimp production that was exported declined irregularly from 15 percent in 1980 to 11 percent in 1984 (heads-off basis).

The bulk of U.S. shrimp exports are of frozen shrimp to the major markets of Canada, Mexico, and Japan. Most U.S. shrimp exports to Mexico were for further processing and reexport to the United States. A significant amount of

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<sup>1/</sup> Data on specific product forms are not available for 1984.

shrimp of foreign origin is exported from the United States. Most of this is believed to be the result of speculation on world shrimp markets.

### 3. Factors of competition in the U.S. shrimp market.

- o Imports of shrimp from Mexico, Ecuador, and other Latin American or Asian sources compete directly, if imperfectly, with domestically harvested shrimp in some markets.

Competition between imported and domestic shrimp products is indirect at the dockside, or ex-vessel, level. Most imported shrimp enters the United States in semiprocessed or completely processed forms and, therefore, does not compete directly with the product of U.S. shrimp fishermen for the business of first-level buyers. However, the products of these first-level buyers (mainly frozen shell-on and peeled shrimp) are directly competitive with most U.S. imports of shrimp products, mainly at the wholesale level.

At the wholesale level of distribution, real or perceived quality differences between domestic and imported shrimp, or between shrimp of different foreign sources, sometimes lead to price premiums or discounts being applied. Depending on the size category and species, which in most markets are important distinctions, imported shrimp may sell at substantial premiums or discounts from domestic-shrimp prices. At the final-consumer level, however, the distinction between imported and domestic shrimp disappears. Processors are sometimes able to play one source against another when dealing with various sources of supply.

- o U.S.-harvested shrimp is often considered to be of lesser quality than imported aquacultured shrimp.

Control over the product at all stages of production is the key to generally superior quality of aquacultured shrimp, which accounts for an increasing share of U.S. imports of shrimp products. U.S. producers rely on the ocean harvesting of shrimp and have less control over the handling of the product. This makes quality control more difficult than for foreign aquaculture operations, which have a great degree of control over the handling of their shrimp. This advantage held by foreign aquaculture shrimp operations is partially offset by the proximity of U.S. producers to the U.S. market, allowing them to deliver "fresher" product than can most foreign suppliers in most instances.

Quality control is not consistent throughout the domestic industry. In the absence of Government-enforced regulations to maintain product quality, shrimp producers and processors are left to themselves to exert the degree of care in handling, processing, storage, and distribution which they see fit, with the predictable result that product quality varies from port to port, from vessel to vessel, and from processor to processor. Given the great extent to which the shrimp industry is dependent upon the institutional and prepared-food trade, there is limited incentive to maintain high levels of quality when the final consumer is often unable to discern any but significant differences in the quality of the final product.

- o The shrimp resource available to domestic producers is fixed in the long run, with increased yields from "wild" sources possible only for brief periods of time, and from aquaculture limited by environmental and technological constraints.

The shrimp resources of the Gulf and South Atlantic region have been fished to capacity for the last several years. Only in years where exceptional environmental conditions exist does shrimp production rise temporarily above a relatively stable long run maximum. The only likely source of additional supply in the future is the fledgling aquaculture sector, which currently contributes far less than one percent of domestically produced shrimp in the United States. Both technological problems (lack of seed shrimp supplies and limited availability of skilled labor), which can be overcome, and environmental constraints (relatively colder and variable weather), which likely cannot, currently prevent this sector of the industry from becoming a significant source of supply to supplement the ocean fisheries.

Foreign shrimp producers, which currently supply about 70 percent of the U.S. market, are in a less binding position. The primary sources of imported shrimp are Latin American and Asian countries which enjoy, in many cases, ideal conditions for aquaculture. In many of these countries, this sector is underdeveloped and has great potential for growth. Given sufficient investment capital, infrastructure development, seed shrimp resources, and marketing skills, these foreign suppliers can be expected to significantly increase their exports and share of the U.S. shrimp market in the next few years. They do not face the resource constraints placed upon the U.S. industry, and, given a reliable supply of seed shrimp, will likely be able to supply a greater share of the U.S. shrimp market in the future.

- o The domestic shrimp industry's ability to offer a wide range of product forms (sizes, species, etc.) is largely offset by its dependence upon a seasonal domestic supply of raw material.

U.S. harvesters produce a wide range of shrimp sizes and several major species for processing into a wide array of shrimp products. U.S. imports of shrimp, on the other hand, are concentrated in certain product forms and size counts, particularly on a country-by-country basis. For example, according to industry members and based on responses to Commission questionnaires, U.S. imports of shrimp from Mexico are concentrated in large sizes, while such imports from Ecuador are mainly of medium sized shrimp. Most imported shrimp are in the heads-off, shell-on and the peeled forms.

The advantage held by domestic producers to supply the U.S. market with a wide variety of products is largely offset by those producers' reliance on seasonal availability of wild shrimp to meet their raw material needs--a problem particularly in the small, but valuable, fresh shrimp market, where inventories cannot be kept. Foreign suppliers, on the other hand, particularly those with aquaculture facilities, can supply shrimp on a made-to-order basis year round, without seasonal fluctuations.

- o There is no clear competitive advantage held by domestic producers over foreign suppliers, or vice versa, with respect to transportation factors in shrimp marketing.

Shrimp is a relatively high-value product and transportation charges generally are a small share of the value. For imported shrimp from major sources, transportation charges ranged from 3 percent to 12 percent of customs value during 1983 (the latest year for which data are available). These charges likely are offset to a large extent by relatively low production costs in most of the foreign shrimp exporting countries and by exchange rate differentials vis-a-vis the U.S. dollar.

Representative transportation rates for domestically produced shrimp shipped from the Gulf area to major U.S. metropolitan areas ranged from 1 to 5 percent of the wholesale price in 1985. This is somewhat lower than, but comparable to, the transportation charges for imported shrimp.

Once imported shrimp arrives in the United States, there is no advantage held either by domestic or imported shrimp with respect to transportation. In the market for frozen shrimp, which constitutes the bulk of the total U.S. shrimp market, products processed from domestic shrimp and those imported from foreign sources lose their identity quite soon in the marketing chain; there is virtually no way to distinguish between (nor is there any substantial consumer preference for) shrimp from one source over another at the retail or other final-consumer level. Therefore, since both imported and domestic shrimp products travel through essentially identical distribution channels, neither type of product enjoys a transportation-related advantage over the other.

This is not the case, however, for the fresh shrimp market, where the proximity of domestic producers to the U.S. market relative to foreign suppliers in South America and Asia gives the former an advantage in more readily serving this market because of the high degree of perishability of fresh shrimp products. However, the fresh shrimp market in the United States is small compared with the frozen shrimp market, which diminishes the importance of this advantage to U.S. shrimp producers.

- o Government assistance in foreign countries is likely to result in increased production of shrimp in those countries, with resulting increases in exports to the U.S. market.

Public support of shrimp aquaculture in some countries, particularly in the development of shrimp hatcheries, is likely to stimulate further expansion of this sector of the world shrimp industry. Many of these countries already depend on the U.S. market for their shrimp sales and will likely continue to ship shrimp products to the United States.

Public support of the U.S. shrimp industry, on the other hand, is unable to alter the basic constraint underlying domestic production, the fixed resource base. Indeed, to the extent assistance such as Government loan guarantees for vessel and gear financing invites harvesting capacity expansion or new entry, it will result in reduced gross income to the average harvesting operation. Other forms of assistance, such as sponsorship of research and development activities, market information dissemination, and product promotion, is probably more beneficial to the domestic industry.

- o The U.S. dollar appreciated substantially relative to the currencies of most major foreign shrimp suppliers during 1980-84 and likely contributed to increased shrimp supplies in the U.S. market during the period.

Shrimp is a commodity that is a significant foreign exchange earner for many shrimp exporting countries. During 1980-84, the U.S. dollar appreciated vis-a-vis the currencies of most shrimp supplying countries, both in nominal and real terms. In the case of Mexico, the principal supplier of U.S. shrimp imports, the peso declined vis-a-vis the dollar 21 percent in real terms during January-March 1981 through July-September 1984. The currency of Ecuador (the second leading foreign supplier) declined 38 percent in real terms vis-a-vis the dollar during January-March 1981 through April-June 1984. Similar declines in the exchange rate vis-a-vis the dollar were registered for most major suppliers of U.S. shrimp imports.

These currency declines likely contributed to increased imports and, thus, shrimp supplies in the U.S. market. Although the supply of imports from traditional foreign sources may not have been affected greatly by the strong U.S. dollar (inasmuch as internal shrimp availability is the primary factor influencing their exports to the United States), imports of shrimp likely were also attracted from nontraditional foreign suppliers to the U.S. market, such as Taiwan, Peru, Pakistan, Norway, and Argentina.





## DESCRIPTION AND USES

This study covers shrimp, whether fresh, chilled, frozen, prepared, or preserved. Shrimp are crustaceans that inhabit waters throughout the world. Most shrimp are found in salt waters in the coastal regions of the tropics and subtropics, although several coldwater and freshwater species of shrimp exist. The species of shrimp of primary concern in this study are warmwater shrimp commonly referred to as white, brown, and pink. <sup>1/</sup> The great bulk of the shrimp harvested by the U.S. Gulf and South Atlantic shrimp industry is of these species.

Brown shrimp (Penaeus aztecus) comprise most of the U.S. Gulf and South Atlantic shrimp availability and catch. Brown shrimp are found along the Atlantic Coast and the Gulf of Mexico (hereinafter referred to as "Gulf") Coast. They range from Martha's Vineyard, Massachusetts to the northwestern coast of the Yucutan Peninsula in Mexico. Most brown shrimp harvested in U.S. waters are caught along the coasts of Texas, Louisiana, and Mississippi.

White shrimp (Penaeus setiferus) are second to brown shrimp in abundance in U.S. Gulf and South Atlantic waters and generally command the highest price for like sizes of the shrimp species of concern in this study. White shrimp range along the Atlantic Coast from Fire Island, New York, to Saint Lucie Inlet, Florida, and along the Gulf coast from the mouth of the Ochlockonee River, Florida, to Campeche, Mexico. Most white shrimp harvested in U.S. waters are caught off the north-central and western Gulf areas. White shrimp are generally found closer to shore than are brown shrimp.

Pink shrimp (Penaeus duorarum) are next in commercial importance after brown and white shrimp. Pink shrimp are found in the Atlantic Ocean along the coast from the lower Chesapeake Bay area to the Florida Keys and all along the Gulf coast to Isla Mujeres, Mexico. Most pink shrimp harvested in U.S. waters are caught off southwest Florida.

Other species of shrimp are harvested off the South Atlantic and Gulf coast areas, but are of relatively minor commercial importance compared with the three major species of white, brown, and pink. These include rock shrimp (Sicyonia brevirostris) and seabobs (Xiphopenaeus kroyeri), which generally are an incidental bycatch, and royal red shrimp (Hymenopenaeus robustus), which are a deepwater shrimp subject to a relatively small level of fishing effort.

Shrimp vary greatly in size, depending on age and species. The shrimp of primary concern in this study are a fast-growing, annual crop, inasmuch as they reach harvestable size within a year. Thus, the size of the shrimp depends, in large part, on the time of year they are harvested. Shrimp management regulations have been in place to protect the resource and to attempt to increase the size of the shrimp harvested since larger sized shrimp command a higher price than smaller sized ones and bring greater revenues to shrimp harvesters.

Shrimp sizes generally are referred to in terms of the number of shrimp (either "heads-on" or "heads off") contained in a pound. The heads-on count refers to the number of whole shrimp per pound, and the heads-off count refers to the number of tails, the edible portion, per pound. These counts usually

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<sup>1/</sup> These are common names for particular shrimp species. The common name may refer to different species depending upon geographic location.

include the shell of the shrimp, unless specified. The difference between the heads-on and heads-off count is usually substantial, as the head accounts for about one-third of the body length and as much as one-half of the body weight. Size counts for shrimp can range from as low as 5 per pound to over 200 per pound (heads-off, shell-on basis).

Shrimp are used primarily for human food, although a relatively small amount is used as fish bait. Shrimp are processed and marketed in a variety of product forms. As the tail section is the edible portion, most shrimp are marketed with the heads off. Another reason for this is that shrimp spoil much more rapidly if the heads are left on. The bulk of the shrimp marketed in the United States are in the raw, frozen, heads-off, shell-on form. Peeled shrimp is another major product form. In this form, the shrimp may or may not be cooked, and the dark "vein" that runs down the back of the shrimp may be removed. Peeled shrimp are usually frozen.

Breaded shrimp is also a major product form. In this form, the shrimp are peeled and deveined and coated with a breading or batter mixture. The shrimp may be cooked, although most breaded shrimp are not. Breaded shrimp are also almost always frozen. Shrimp may also be chopped and extruded to form a breaded product. Frozen raw breaded shrimp must contain at least 50 percent shrimp to be labeled as such (21 C.F.R. 161.175); frozen raw breaded shrimp containing at least 65 percent shrimp may be labeled as "lightly breaded" (21 C.F.R. 161.176). Any frozen raw breaded shrimp product containing less than 50 percent shrimp must be labeled as "imitation" breaded shrimp.

Shrimp are also canned, with smaller size shrimp generally used for this product form. Canned shrimp may be packed with or without the vein removed. Canned shrimp may be labeled as "extra large" or "jumbo," "large," "medium," "small," or "tiny," depending on the size of the shrimp (21 C.F.R. 161.173).

Other product forms include dried and cured shrimp. Shrimp are also included in specialties such as pastes, sauces, soups, cocktails, burgers, creole, chow mein, and frozen dinners.

The size of the shrimp generally determines the product form it will be processed into for marketing. Generally, large shrimp (under 36 per pound, heads-off, shell-on basis) are sold in the raw, frozen, heads-off, shell-on form. Such shrimp are used mostly by restaurants, hotels, and other food institutions. Shrimp in the medium and small sizes (36 to 60 per pound) are used in the breading and canning trade and are also marketed in retail outlets. Extra small shrimp (61 to 70 per pound) and tiny shrimp (over 70 per pound) generally are used by canners, driers, and producers of specialties. These uses of shrimp by size should be considered general tendencies only, since shrimp may be marketed in any combination of sizes and product forms.

There are also some consumer preferences for particular shrimp species to be used for certain product forms. For example, pink shrimp are preferred for the peeled form owing to color. Canners generally utilize white and brown shrimp, because pink shrimp are not readily available to them due to geographic factors. Frozen shrimp and breaded shrimp are generally produced from all species.

Imported shrimp are utilized in the same manner as domestic shrimp. Most imports of shrimp are in the raw, frozen, shell-on, heads-off form (included in TSUSA item 114.4545). Such shrimp are marketed directly in that form or are further processed by peelers, breaders, or canners. Raw, frozen peeled shrimp (included in TSUSA item 114.4557) is the next most important form of imported shrimp. These are also marketed directly or are further processed. Small amounts of canned (TSUSA item 114.4550), breaded (TSUSA item 114.4572), and dried (included in TSUSA item 114.4562) and of shrimp and shrimp specialties (included in TSUSA items 114.4550, and 114.4562) are also imported into the United States.

## CUSTOMS TREATMENT

### U.S. Customs Treatment

#### Tariff treatment

Shrimp imported into the United States has historically been free of duty. Shrimp is provided for in part 3, schedule 1, of the 1985 Tariff Schedules of the United States, Annotated (TSUSA), under TSUS item 114.45(pt.). Appendix D contains a copy of pertinent portions of the TSUSA, including the rates of duty applicable to U.S. imports of shrimp, relevant headnotes, and an explanation of the rates of duty. The duty-free status of peeled shrimp in airtight containers (item 114.4550) and other peeled shrimp if dried or cooked, but not breaded (item 114.4562 pt.), is bound as a result of concessions granted by the United States in the sixth round of trade negotiations (Kennedy round) under the General Agreement on Tariffs and Trade. The duty-free status of shrimp in other forms is not bound. Imports that enter in the forms for which the duty-free treatment is bound account for only a small part of the U.S. imports of shrimp.

Shrimp caught by U.S.-flag vessels and landed in the United States by those vessels are considered to be domestic production, whether the shrimp were caught in U.S. waters, on the high seas, or in foreign waters where such vessels have the right to fish. Foreign fishing vessels are not permitted to land their catch of shrimp in the United States (46 U.S.C. 251). Shrimp caught by U.S.-flag vessels in international waters, whether landed directly in the United States or landed in a foreign port for transshipment to the United States, are eligible for free entry under item 180.00, which provides in part as follows:

Products of American fisheries (including . . . shellfish . . .), which have not been landed in a foreign country, or which, if so landed, have been landed solely for transshipment without change in condition.

The term "American fishery" is defined in headnote 1 of part 15A of schedule 1 of the TSUS as "a fishing enterprise conducted under the American flag by vessels of the United States on the high seas or in foreign waters in which such vessels have the right, by treaty or otherwise, to take fish or other marine products and may include a shore station operated in conjunction with such vessels by the owner or master thereof."

As a practical matter, most of the shrimp caught by U.S. vessels in international waters are landed directly in the United States as domestic

production and are not entered under item 180.00. Significant quantities of shrimp caught by U.S. vessels, however, are landed in foreign ports, where they may be washed, graded, and frozen and then shipped to the United States. Such shrimp are commonly entered free of duty under item 114.45 as foreign merchandise because it is uncertain, in some cases, whether the shrimp are eligible for entry under item 180.00 and because it is simpler to clear them through Customs under item 114.45 than under item 180.00. However, should duties or quotas be imposed at some future time on imports under item 114.45, the question of the requirements for free entry of shrimp under item 180.00 would become important. Whether or not shrimp could be entered under item 180.00 as "products of American fisheries" would depend on a number of factors including the registry of the catching vessels, the ownership of the shore stations in foreign ports, and whether or not the shrimp were "changed in condition" at the shore stations abroad.

### Embargoes

**Cuba.**--The United States for many years has maintained an embargo on the importation of all goods from or through Cuba. The embargo was effective pursuant to Presidential Proclamation 3447, dated February 3, 1962, under authority of section 620 (a) of the Foreign Assistance Act of 1961 (75 Stat. 445), as amended. The embargo pertains to all goods of Cuban origin and all goods imported from or through Cuba, subject to such exceptions as the Secretary of the Treasury determines to be consistent with the effective operation of the embargo.

Shrimp industry members have claimed that Cuban vessels are harvesting shrimp in Mexican waters and landing the shrimp in Mexico. The shrimp are then processed and, according to shrimp industry members, exported to the United States. Officials of the U.S. Department of Treasury are investigating these charges.

**Nicaragua.**--On May 7, 1985, pursuant to Executive Order 12513, the President prohibited the importation of all goods from Nicaragua. This embargo was enacted under authority of the International Emergency Economic Powers Act (50 U.S.C. 1701 et seq.), the National Emergencies Act (50 U.S.C. 1601 et seq.), chapter 12 of title 50 of the United States Code (50 U.S.C. 191 et seq.) and section 301 of title 3 of the United States Code. The embargo applies to all imports into the United States of goods and services of Nicaraguan origin and to all exports from the United States of goods to or destined for Nicaragua, except those destined for the organized democratic resistance, and transactions relating thereto.

During 1980-84, U.S. imports for consumption of shrimp from Nicaragua decreased from 6 million pounds, valued at \$21 million, in 1980 to 1 million pounds, valued at \$5 million, in 1984, and represented a small portion of total U.S. shrimp imports.

### Other import requirements

U.S. imports of shrimp are subject to inspection by the Food and Drug Administration (FDA) to ensure wholesomeness and proper labeling. In general, U.S. imports of shrimp must meet the same requirements and standards imposed

on domestically-produced shrimp (Federal Food, Drug, and Cosmetic Act; 21 U.S.C. 381).

During 1980-84, some U.S. imports of shrimp were detained and some were rejected for health and sanitary reasons. The detentions and rejections were due to factors such as: decomposition and filth, salmonella, and high levels of sodium bisulfite. The following tabulation presents the quantity and origin of imported shrimp that was detained by the FDA during 1980-84 (in thousands of pounds):

<u>Country</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
India-----	484	230	112	517	10,596
Thailand-----	3,532	1,294	629	877	2,858
Taiwan-----	263	123	249	512	1,673
Panama-----	12	21	103	-	1,217
Hong Kong----	23	88	42	93	550
Indonesia----	513	43	-	338	497
Brazil-----	48	65	13	229	395
Bangladesh---	6	-	9	41	222
Pakistan-----	301	643	127	177	127
Singapore----	154	48	73	18	88
China-----	49	41	-	38	47
Malaysia-----	273	126	14	170	43
Argentina----	-	-	13	469	43
Ecuador-----	59	339	194	57	37
Macao-----	-	-	-	-	37
Subtotal----	5,716	3,061	1,578	3,536	18,432
All other----	429	201	3,086 1/	134	175
Total-----	6,145	3,261	4,664	3,670	18,607

1/ Detentions from Burma totaled 2,751 thousand pounds.

In 1984, 18.6 million pounds of imported shrimp were detained by the FDA. India, Thailand, Taiwan, and Panama accounted for 88 percent of the total. Salmonella was the main factor in these detentions. Data are not collected on rejections of imported shrimp.

Sodium bisulfite is a preservative used by shrimp industries worldwide (including the United States) to retard the development of melanosis, or "black spot" on the shells of shrimp. Melanosis does not affect the wholesomeness of shrimp but is undesirable from the standpoint of appearance. In 1984, the FDA announced that the maximum permissible concentration of sodium bisulfite was 40 parts per million (ppm) in shrimp meats. As a result, several shipments of imported shrimp were detained and rejected. The FDA has since revised the standard to 100 ppm (50 F.R. 2957). Shrimp containing sulfites must also be labeled as such. This standard applies both to imported and domestic shrimp.

U.S. imports of shrimp are subject to restrictions under the Lacey Act (31 Stat. 187 chap. 553). The Lacey Act was enacted in 1900 to regulate trade and commerce in wild animals and birds. In 1981, the Lacey Act was amended (95 Stat. 1073) to include any "fish and wildlife" without limitation (including shrimp). Section 3(a)(2) of the amendment stated that "it is unlawful for any

person to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any fish or wildlife taken, possessed, transported, or sold in violation of any law or regulation of any state or in violation of any foreign law." Members of the U.S. shrimp aquaculture industry have claimed that live shrimp for breeding purposes has been illegally imported from Mexico in violation of Mexican law, and thus, the Lacey Act. Officials of the U.S. Customs Service are investigating these charges.

U.S. imports of shrimp from Mexico must be accompanied by a "Guia de Pesca" (Guia). A Guia is a document that is required by the Government of Mexico to accompany shipments of fishery products (in this case shrimp) whether destined for domestic or foreign markets. 1/ The Guia specifies the origin and destination for a particular shipment. In a directive dated December 7, 1973, the U.S. Customs Service notified its ports that the documentation for all U.S. imports of shrimp from Mexico must include a Guia. As a practical matter, for a number of years, the Guia was merely collected and returned to Mexican authorities. The origin and particularly the destination on the Guia was not a concern, because once the shrimp arrived at U.S. Customs, the shrimp was assumed to be exported in accordance with Mexican regulations. However, there has been a recent rise in activity in shrimp being exported from Mexico outside of officially approved marketing channels. 2/ As a result, officials of the U.S. Customs Service are investigating the situation and may issue a more specific directive concerning the entry of Mexican shrimp accompanied by a proper Guia. This situation may also involve a violation of the Lacey Act, as it may involve a violation of Mexican Law.

#### Previous Commission investigations

In response to a resolution adopted February 9, 1960, by the Committee on Ways and Means of the U.S. House of Representatives, the Commission (then known as the U.S. Tariff Commission), under the provisions of section 332 of the Tariff Act of 1930, instituted investigation No. 332-38. The Commission was requested by the Committee to determine whether shrimp, as a result of the existing customs treatment thereof as provided for by paragraph 1761 of such act, are being imported into the United States in such increased quantity, either actual or relative to domestic production, as to cause or threaten serious injury to the domestic shrimp industry. 3/ A report was issued by the Commission on May 9, 1960. 4/ In that investigation the Commission was unable, within the 3 months prescribed by the resolution, to make a thorough

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1/ The Mexican Government strictly controls the marketing of shrimp, mainly because of foreign exchange considerations.

2/ According to U.S. shrimp industry members and officials of the Governments of both the United States and Mexico. U.S. shrimp industry members brought the matter to the attention of the U.S. Customs Service on May 21, 1985.

3/ The request was worded as such although section 332 investigations do not address the question of injury to a domestic industry caused by imports.

4/ See U.S. Tariff Commission, Shrimp: Report on Investigation No. 332-38 Under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution of the Committee on Ways and Means of the United States House of Representatives Adopted Feb. 9, 1960, May 1960.

analysis of the domestic industry or industries engaged in the production and processing of shrimp and of the conditions of competition in the U.S. market.

On September 6, 1960, the Commission received a resolution from the Senate Finance Committee directing the Commission, pursuant to section 332 of the Tariff Act of 1930, to investigate the domestic shrimp industry (including fishing, processing, and other related operations) and of imports of shrimp and shrimp products provided for in paragraph 1761 of the Tariff Act of 1930. The Commission instituted investigation No. 332-40 on September 12, 1960. In its investigation, the Commission analyzed the possible results of an imposition of a duty of 35 percent on all imports of shrimp and shrimp products, as provided for in paragraph 1761 of the Tariff Act of 1930, and also analyzed the possible results of a tariff-rate quota under which all imports not in excess of the imports in the calendar year 1960 would enter free of duty, and all imports in excess of those in 1960 would be dutiable at 50 percent ad valorem. In a report issued March 30, 1961, 1/ the Commission concluded that the imposition of either of the import restrictions on shrimp and shrimp products suggested in the resolution of the Senate Finance Committee would limit the supply of shrimp available in the U.S. market and thereby arrest the long-run expansion of shrimp consumption in the United States.

On August 8, 1975, the United States International Trade Commission instituted, on its own motion, investigation No. 332-77 concerning conditions of competition between domestic and imported shrimp, under section 332(g) of the Tariff Act of 1930. This investigation was terminated December 18, 1975, following the receipt on November 17, 1975, of a petition for import relief pursuant to section 201 of the Trade Act of 1974, by the National Shrimp Congress, and the subsequent institution of investigation No. TA-201-12 on December 11, 1975, by the Commission.

The Commission instituted investigation TA-201-12 to determine whether shrimp were being imported into the United States in such increased quantities as to be a substantial cause of serious injury, or the threat thereof, to the domestic industry producing articles like or directly competitive with the imported article. The Commission, on May 11, 1976, determined by a vote of 3 to 2 that shrimp, fresh, chilled, frozen, prepared, or preserved (including pastes and sauces), provided for in item 114.45 of the TSUSA, were being imported into the United States in such increased quantities as to be a substantial cause of serious injury to the domestic industry catching and landing shrimp. The Commission determined that adjustment assistance under chapters 2, 3, and 4 of title II of the Trade Act would effectively remedy such serious injury to the domestic industry catching and landing shrimp and recommended the provision of such assistance. The President, as required by law, ordered expedited consideration be given to petitions for adjustment assistance filed by firms, workers, and communities.

There is no information available to the Commission that would permit the tabulation of the amount of adjustment assistance, if any, which was awarded as a direct result of the Commission's determination in the 1976 investigation. According to the Department of Commerce, one company applied

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1/ Shrimp: Report on Investigation No. 332-40 Under Section 332 of the Tariff Act of 1930 Pursuant to a Resolution of the Committee on Finance of the United States Senate Adopted in August 1960, March 1961.

for adjustment assistance in 1979, but later withdrew its application. Two or three boat owners applied for "firm" assistance but their applications were rejected by Commerce. As far as can be determined, no actual cash outlays were made to this industry by Commerce. According to the Department of Labor, during the period April 1975-September 1981, 85 petitions for "worker" adjustment assistance were received from shrimp fishermen. These petitions resulted in 47 cases, covering 117 individuals, being certified as eligible for assistance, and 36 cases, covering 408 individuals being denied certification. Also, 17 certified cases, covering 257 workers, resulted in trade adjustment assistance expenditures of \$279,658 (as of August 1981). However, the petitions, certifications and expenditures of trade adjustment assistance funds cannot be directly attributed to the Commission's determination in the 1976 case since they could have been initiated independently of any Commission action.

### Foreign Customs Treatment

With the exception of the United States and Canada, the Customs Cooperation Council Nomenclature (CCCN) is used as the basis for tariff classification by most countries. The CCCN classifies shrimp in chapters 3 and 16. A more detailed discussion of Customs treatment for Japan, the European Community, Canada, and Mexico follows below.

#### Japan

Japan is the world's largest market for shrimp. Japanese rates of duty applicable to imports of shrimp are shown in appendix E. The rates of duty applicable to imports from the United States are those in the column labeled "GATT." The rates of duty for shrimp imports from the United States range from 3.4 percent ad valorem for fresh, chilled, or frozen shrimp to 15 percent ad valorem for cooked, salted, or dried shrimp. There are no quantitative restrictions on imports of shrimp as there are on imports of other seafood items.

Imports of shrimp into Japan, including those from the United States, are subject to mandatory inspection by the Ministry of Health and Welfare (MHW) under the Japanese Food Sanitation Law. A permit must be issued by the MHW in order for such imports to pass through customs. The imported shrimp is generally sampled and inspected for compliance with Government regulations on food sanitation, additives, and labeling. The requirements are the same for domestic and imported shrimp. In addition, industry groups may voluntarily request inspection of imported shrimp on a fee basis to assure that the quality of the imported shrimp is comparable with the Japanese industry quality standards. The import procedures and inspection, both mandated and voluntary, generally have not prevented U.S. exports of shrimp to Japan.

#### European Community

The European Community (EC) is another major world market for shrimp. The rates of duty applicable to imports of shrimp into the EC are shown in appendix F. The rates of duty applicable to shrimp imports from the United



States are those in the column labeled "Conventional." They range from 12 percent ad valorem to 20 percent ad valorem.

The Common Organization of the Market for Fishery Products (CFP) is the principal policy instrument that regulates fisheries trade for the EC. The CFP provides for a reference price system that sets minimum import prices. A reference price is in effect for the importation of the shrimp species Crangon crangon; however, this is a European species and the regulation does not affect shrimp exports from the United States. The shrimp species commonly marketed by U.S. exporters are not now subject to the reference price system.

### Canada

Canada is the principal U.S. export market for shrimp. Canadian rates of duty applicable to shrimp are shown in appendix G. The rates of duty applicable to Canadian imports from the United States are those in the column labeled "MFN." Shrimp enter Canada under tariff items 12700-1 and 13000-1. Prepared or preserved shrimp is dutiable at 8 percent ad valorem and fresh or frozen shrimp enter duty free. Imports of shrimp into Canada are subject to inspection by the Department of Fisheries and Oceans. Such imports are inspected to insure safety, minimum quality, and proper labeling. In general, Canadian imports of shrimp must conform to the same requirements as domestic products.

### Mexico

Imported fresh and frozen shrimp is classified in Mexico under item 03.03 A 999 and is dutiable at 100 percent ad valorem. 1/ In addition, a minimum dutiable value is set at 1,145 pesos per kilogram (about \$2.05 per pound). 2/ Also, an import permit must be obtained prior to importation. Such permits usually are granted only if there is no substitute available in Mexico for the import item. In the case of shrimp, such permits reportedly are difficult to obtain because Mexico is a net exporter of shrimp. Mexican imports of prepared shrimp (such as canned shrimp) are classified under item 16.05 A 999 and are dutiable at 100 percent ad valorem. At this time, any import permit for such imports will automatically be denied.

Certain Mexican imports of shrimp from the United States enter duty free under bond to be processed and then exported back to the United States. Such shrimp is processed in so-called "Maquila" operations, most of which are located in the border city of Matamoras close to the major U.S. shrimp ports of Brownsville and Port Isabel, Texas.

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1/ In a concession to Ecuador, shrimp may enter duty free from that country during May 10, 1983-April 30, 1993.

2/ Based on the May 28, 1985 exchange rate of 254 pesos to the U.S. dollar.

## U.S. INDUSTRY

The U.S. Gulf and South Atlantic shrimp industry comprises vessels and shoreside facilities in the Atlantic Ocean coastal States, from North Carolina to the east coast of Florida, and the Gulf Coast States, from the west coast of Florida to Texas. Shrimp landings in the Gulf and South Atlantic region account for the bulk of total U.S. shrimp landings. During 1980-84, 82 percent of the total quantity and 95 percent of the total value of U.S. shrimp landings were in the Gulf and South Atlantic States. Commercial shrimp landings in this region totaled \$474 million in 1984. Most of the shrimp harvested in Gulf and South Atlantic waters are caught by vessels from ports in these States.

Shrimp is the most valuable fishery in the Gulf and South Atlantic region. Although shrimp comprised only 9 percent of the quantity of total fish and shellfish landings in the region during 1980-84, they accounted for 61 percent of the value of such landings. 1/

Processed shrimp production in the Gulf and South Atlantic region totaled \$933 million in 1983. This accounted for 83 percent of total U.S. processed shrimp production in that year. Shrimp accounted for 60 percent of the production of processed fishery products in the Gulf and South Atlantic region in 1983.

The principal species of shrimp harvested by the U.S. shrimp industry are commonly referred to as brown, white, and pink. The principal processed shrimp product forms are, in decreasing order of value, raw, headless, shell-on; breaded; peeled; and canned. A relatively small amount of specialty items are produced, such as shrimp cocktails, patties, burgers, dips, soups, sauces, as well as dried shrimp.

Shrimp are marketed through a variety of channels. Most domestically landed shrimp are processed into a form noted above, and most of these are marketed in the frozen state. A relatively small amount is marketed fresh, since fresh shrimp spoils quickly. Most domestically landed shrimp are channeled through dockside "dealers" who market to processors, brokers, and wholesalers. Processed shrimp are marketed by processors, brokers, and wholesalers. Most shrimp reach the ultimate consumer in restaurants. Other outlets are retail seafood establishments, food chains, and institutions (hospitals, schools, and so forth).

The waters of the Gulf and South Atlantic region contain virtually all of the available commercial supply of U.S. warmwater shrimp resources and the majority of all U.S. shrimp resources. Shrimp resources in the Gulf and South Atlantic region are located primarily in an area that includes the estuaries and bays along the coast to the open Gulf and Atlantic waters, mainly within the U.S. 200-mile territorial waters. Shrimp are an annual crop that may migrate considerable distances. Thus, the location of the shrimp resources within a region varies depending on the species, coastal area, and time of the year.

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1/ The lower percentage for shrimp landings in quantity is accounted for mainly by the large quantity of low-valued menhaden that is landed in the region.

Concentration is relatively low in the industry because most shrimp is harvested and processed by a large number of concerns. Horizontal and vertical integration is relatively limited. There is some fleet ownership by individuals or investor groups, and vessels may be owned by packinghouses or processors. However, the extent of such integration is believed to be minor in relation to the total number of operations in the industry.

Shrimp harvesting has been regulated by the various Gulf and South Atlantic States for some time and more recently by the Federal Government in order to protect the resource and increase the revenues of the harvesting sector. The shrimp fishery, being an "open-access" fishery, is characterized by intense competition for a relatively fixed resource base. Significant increases in fishing effort and capitalization in recent years has led to increased State and Federal intervention in managing shrimp resources.

The U.S. Gulf and South Atlantic shrimp industry can be generally divided into the harvesting and processing sectors and their associated marketing activities. There is also a limited amount of aquaculture activity in the region.

#### Harvesting Sector

The harvesting sector of the U.S. Gulf and South Atlantic shrimp industry comprises thousands of boats and vessels 1/ based in a large number of ports along the Gulf and South Atlantic coasts. There are three general groups of shrimp harvesters--recreational shrimpers, commercial bait shrimpers, and commercial shrimpers. Recreational shrimpers generally operate small boats in shallow, inshore waters. Their catch is usually restricted, by license, to a relatively small amount. Such restrictions, however, vary greatly by State. Recreational shrimpers generally operate part time, usually on weekends and evenings. Their catch may be for personal consumption or for channeling into the commercial market. It is estimated that although the number of recreational shrimpers is high, they account for a relatively small portion of the total U.S. Gulf and South Atlantic shrimp catch. Commercial bait shrimpers harvest shrimp for use as bait for saltwater game fish. The number of such shrimpers and their harvest is relatively minor. Commercial shrimpers account for the great bulk of all U.S. Gulf and South Atlantic shrimp landings. There are two general categories of commercial shrimpers. Inshore shrimpers operate small boats in the bays and estuaries and in shallow inshore, or near-shore waters. These boats are generally each manned by a single person, and their harvesting trips usually last only a day. Offshore shrimpers operate larger vessels in deeper waters, out to the 200-mile U.S. territorial limit and beyond. Offshore trips may last several weeks, since some offshore shrimp vessels can freeze their catch. Crew size on such vessels is generally about three persons.

Horizontal and vertical integration is limited in the harvesting sector. Most shrimp boats and vessels are individually owned, usually by the skipper. Most commercial shrimpers market their catch directly to fish houses (also known as dealers) and are not involved in further processing and marketing.

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1/ For the purposes of this discussion, a boat is a craft of 5 gross register tons or less. A vessel is a craft over 5 gross register tons. A gross register ton, as used in fishing vessel measurement, is a measure of volume. One gross register ton equals 100 cubic feet of interior vessel space.

## Technology

Shrimp are harvested by boats and vessels using a variety of types of harvesting gear. Inshore shrimp boats generally range from 16 to 50 feet in length and are constructed of wood or fiberglass. Gasoline-powered inboard or outboard motors are generally used for propulsion. Inshore shrimp boats employ a variety of gear types, including haul seines, cast nets, traps, and otter trawls. Offshore shrimp vessels generally range from 56 to 85 feet in length (although some are as long as 100 feet) and are constructed of wood, steel, or fiberglass. There has been a trend towards using steel as a material in constructing offshore shrimp vessels, and most new boats use this material, as it is more durable and seaworthy. Offshore shrimp vessels generally use diesel motors for propulsion because they are more reliable and economical than gasoline engines for offshore applications. The most common harvesting gear employed by offshore shrimp trawlers is the otter trawl, a funnel-shaped net with wings on each side. While being towed, the mouth of the net is kept open by means of two doors, or boards, on the end of each wing. Various designs of otter trawls are shown in figure 1. Shrimp vessels may tow a single otter trawl or may tow one otter trawl from each side of the vessel simultaneously. This is referred to as double-rig trawling (fig. 2). The advantages of double-rig trawling over trawling with a single net are increased catch per unit effort, lower initial gear costs, and easier gear handling (which results in a lower incidence of gear damage and crew injuries). A more recent gear development is the twin-trawl, where a pair of nets are towed on each side of a vessel. Many offshore shrimp trawlers are also equipped with freezers to freeze their shrimp catch since their trips may last several weeks.

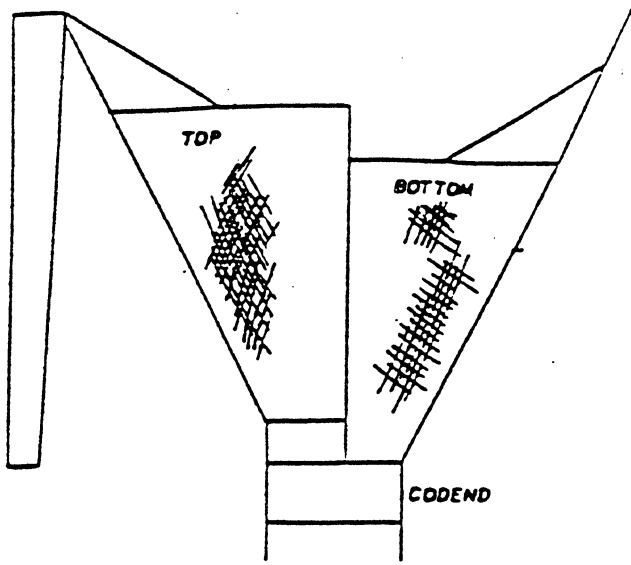
Most larger shrimp boats and vessels are equipped with sophisticated electronic gear for navigation, communication, and fishfinding. This is particularly true for the offshore trawlers. Such electronic gear may cost several thousand dollars.

## Number of boats, vessels, and employment

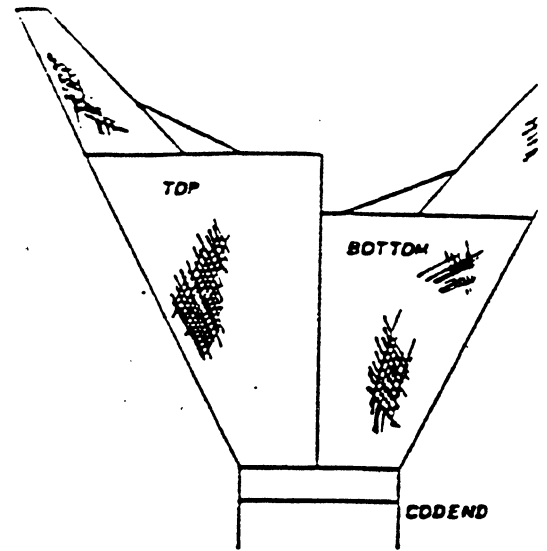
The U.S. Gulf and South Atlantic commercial shrimp fleet is located in a number of port communities along the Gulf and South Atlantic coast (fig. 3). The fleet, particularly in the Gulf area, is relatively mobile and may land shrimp at several different ports in different States. The major ports in the Gulf area, in terms of the value of shrimp landings, are Brownsville-Port Isabel, TX, Aransas-Rockport, TX, and Dulac-Chauvin, LA. Boats and vessels from throughout the Gulf area may land shrimp at these ports, depending on the season. The South Atlantic shrimp fleet contains fewer and smaller boats and vessels and is less mobile than the Gulf fleet, because it is made up of a large proportion of inshore boats. However, larger South Atlantic shrimp vessels may migrate to the Gulf area shrimping grounds, particularly during poor harvesting years in their home waters.

Table 1 shows the number of commercial shrimp otter trawl boats and vessels that landed shrimp in the Gulf and South Atlantic region during 1980-84. (In 1977, 96 percent of the total quantity of shrimp landed in the

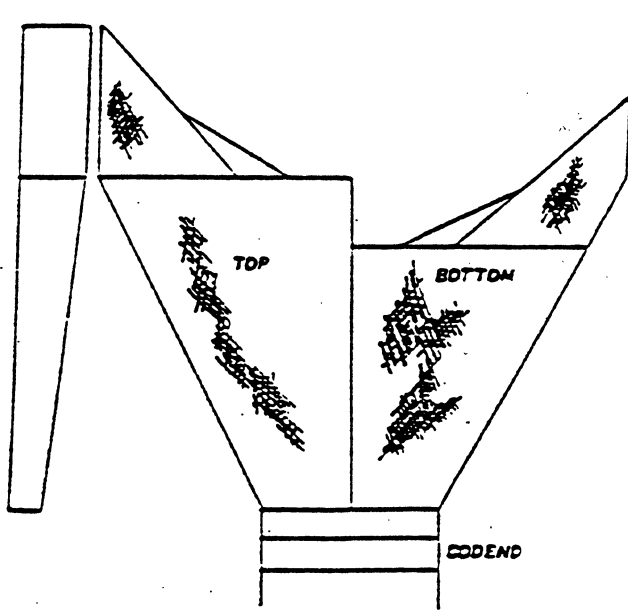
Figure 1.-- Basic shrimp otter trawl designs.



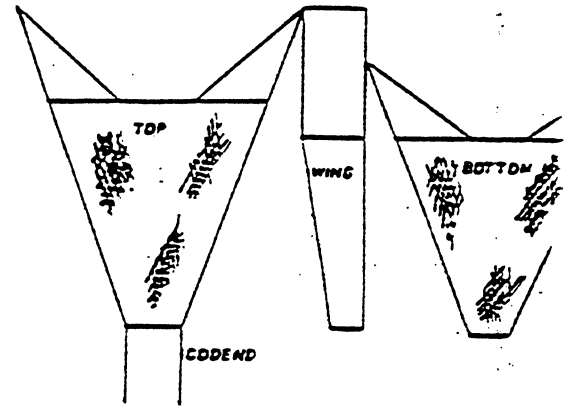
Gulf flat net



Two-seam semi-balloon trawl



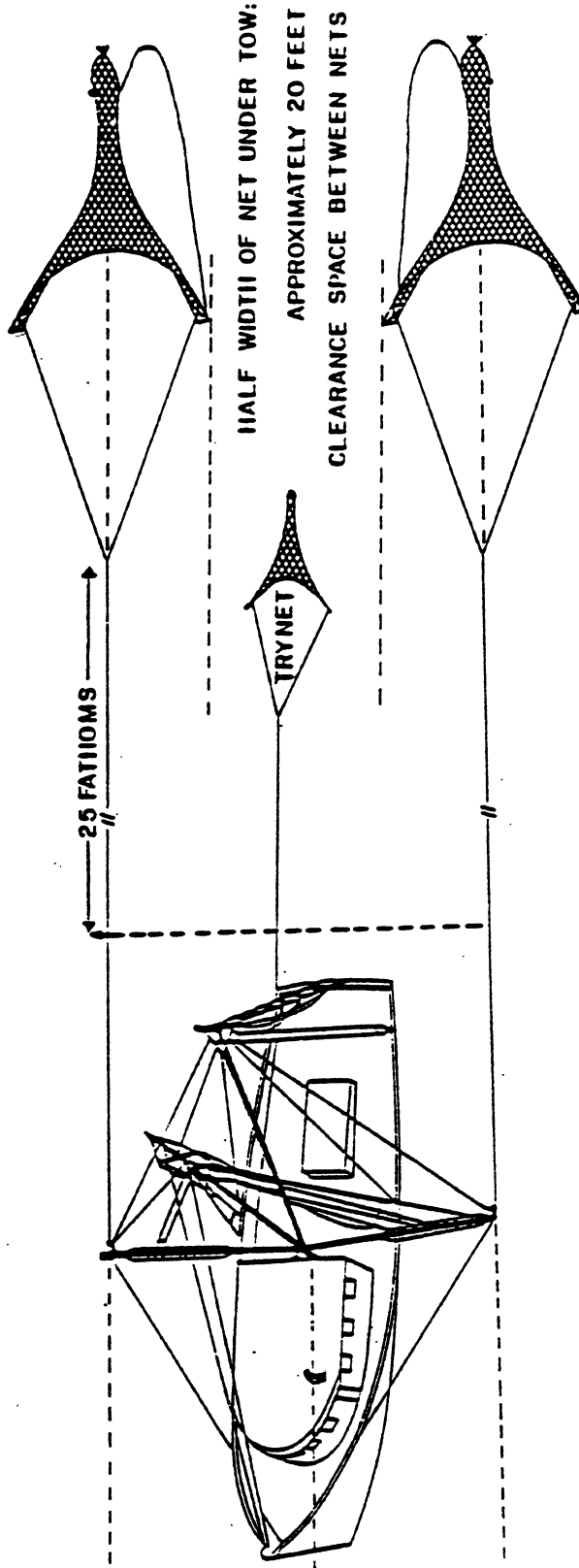
Gulf four-seam semi-balloon trawl



Star net

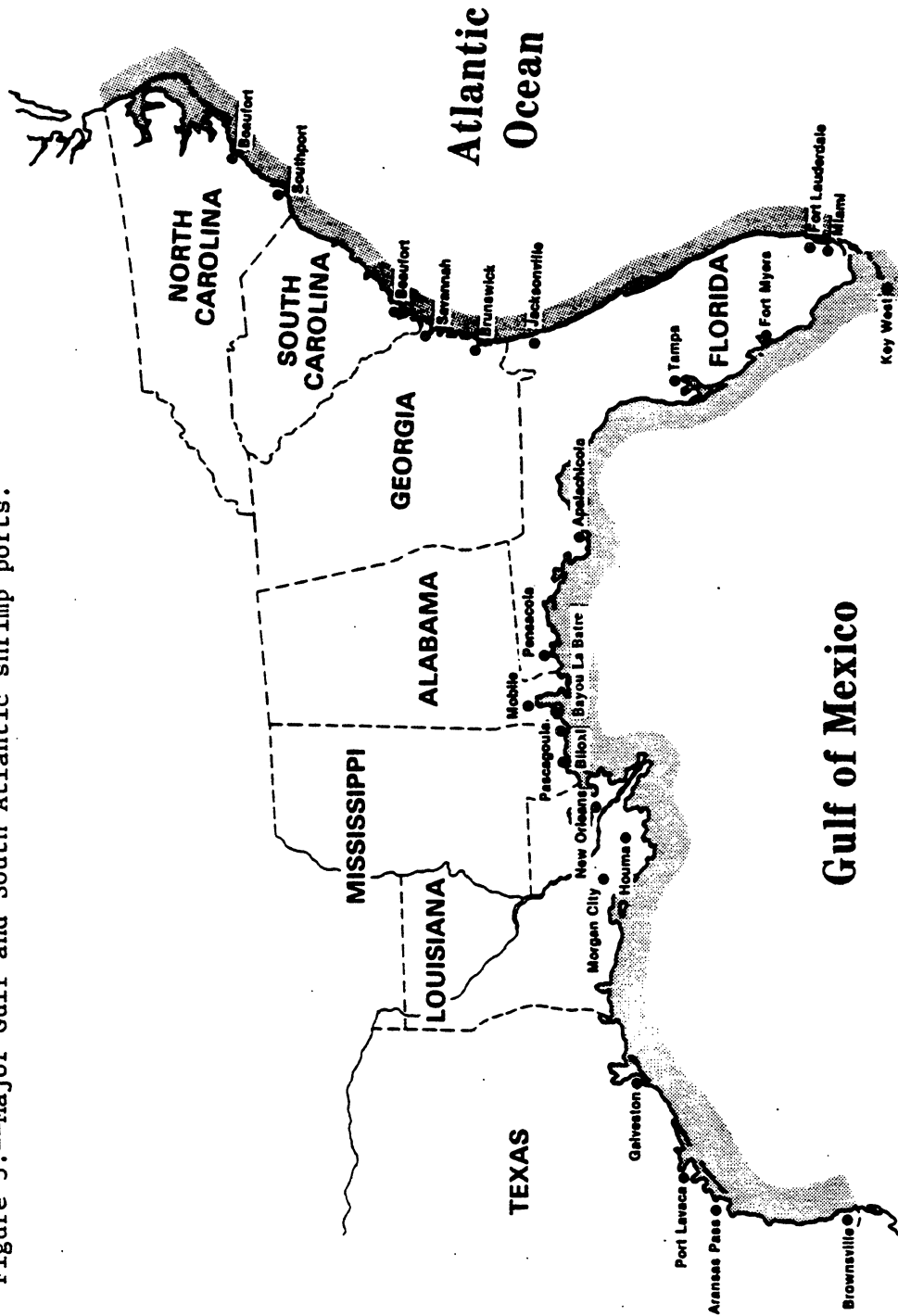
Source: Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters, Gulf of Mexico Fishery Management Council, Tampa, Florida.

Figure 2.---Double-rig shrimp trawl configuration.



Source: Profile of the Penaeid Shrimp Fishery in the South Atlantic, South Atlantic Management Council, Charleston, South Carolina.

Figure 3.--Major Gulf and South Atlantic shrimp ports.



Source: Fishery Statistics of the United States, 1977, U.S. Department of Commerce, National Marine Fisheries Service.

Gulf and South Atlantic region was harvested by otter trawls. 1/) The number of shrimp otter trawl boats increased irregularly from 7,427 in 1980 to 7,653 in 1983, or by 3 percent. This increase occurred in both the Gulf and South Atlantic areas. The number of shrimp otter trawl vessels in the Gulf and South Atlantic region increased from 5,951 in 1980 to 6,405 in 1983, or by 8 percent. There was a decline in the number of vessels in the South Atlantic area, from 1,806 in 1980 to 1,681 in 1983, but this decline was offset by an increase in the number of vessels in the Gulf area, which rose from 4,420 in 1980 to 4,999 in 1983. In 1984, the total number of boats in the Gulf and South Atlantic region declined to 7,329, and the total number of vessels declined to 6,166.

Table 1.--Number of U.S. Gulf and South Atlantic region shrimp otter trawl boats and vessels, 1980-84 1/

Year	Boats <u>2/</u>			Vessels <u>3/</u>		
	Gulf	South Atlantic	Total <u>4/</u>	Gulf	South Atlantic	Total <u>4/</u>
1980-----	6,284	1,143	7,427	4,420	1,806	5,951
1981-----	6,203	1,167	7,370	4,610	1,638	5,973
1982-----	5,985	1,195	7,180	4,840	1,697	6,262
1983-----	6,439	1,214	7,653	4,999	1,681	6,405
1984-----	<u>5/</u>	<u>5/</u>	7,329	<u>5/</u>	<u>5/</u>	6,166

1/ Preliminary.

2/ Less than 5 gross tons.

3/ 5 gross tons and greater.

4/ Exclusive of duplication.

5/ Not available.

Source: Compiled from unpublished statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

The increase in the number of shrimp otter trawl boats and vessels has been more dramatic in the longer term. Table 2 presents the number of commercial shrimp otter trawl boats and vessels that landed shrimp in the Gulf and South Atlantic region in 1950, 1960, 1970, 1980, and 1983. The number of boats in the region increased irregularly from 4,056 in 1950 to 7,653 in 1983. The number of vessels increased from 2,573 in 1950 to 6,405 in 1983. Most of the increase in the size of the U.S. Gulf and South Atlantic commercial shrimp fleet has occurred since 1970. From 1970 to 1983, the number of Gulf and South Atlantic boats increased 47 percent while the number of vessels increased 48 percent. This number was at a peak in 1983, as the number of boats and vessels declined in 1984.

1/ These are the latest available data. However, it is believed that this percentage has not changed significantly during the period under review.



Table 2.--Number of U.S. Gulf and South Atlantic region shrimp otter trawl boats and vessels, 1950, 1960, 1970, 1980, and 1983

Year	Boats <u>1/</u>			Vessels <u>2/</u>		
	Gulf	South Atlantic	Total <u>3/</u>	Gulf	South Atlantic	Total <u>3/</u>
1950-----	3,209	847	4,056	2,193	944	2,573
1960-----	3,089	814	3,903	2,941	1,090	3,782
1970-----	4,495	727	5,222	3,579	949	4,333
1980 <u>4/</u> -----	6,284	1,143	7,427	4,420	1,806	5,951
1983 <u>4/</u> -----	6,439	1,214	7,653	4,999	1,681	6,405

1/ Less than 5 gross tons.

2/ 5 gross tons and greater.

3/ Exclusive of duplication.

4/ Preliminary.

Source: Compiled from unpublished statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Recent data are not available on employment in shrimp harvesting in the Gulf and South Atlantic region. However, in 1977, the latest year for which data are available, there were 21,710 shrimp fishermen in the Gulf and South Atlantic region. Of these, about 18,000 were in the Gulf area. Because the number of shrimp harvesting craft has increased since 1977, current employment is believed to be significantly higher in the Gulf and the South Atlantic region.

### Landings

The term "landings" refers to the production of fish and shellfish by the harvesting sector. Shrimp is landed by U.S. Gulf and South Atlantic shrimp harvesters at dockside and is sold to dealers or processors. Shrimp generally is landed in the whole, fresh form; however, a significant amount of shrimp is landed headed (heads-off), and some shrimp are headed and frozen at sea. The catch is usually transferred directly from the boat to a dockside facility where the shrimp is washed, graded (sorted by size and, to a lesser extent, by species), and packed or processed into other forms. The catch also may be transferred by truck from the boat to facilities further from the dock.

Most U.S. Gulf and South Atlantic shrimp vessels land one species at a time, owing to the different locations of species habitats depending on the season and geographic area. Feeding habits and offshore migration patterns differ by species, and thus shrimping effort usually is concentrated by species. For example, brown shrimp feed at night and white shrimp feed during the day, during which time they are harvested.

Seasonality plays an important role in influencing the level of shrimp harvesting activity in the Gulf. For example, the brown shrimp fishery peaks in June-July and drops to a low in April, while pink shrimp availability

exhibits a broad plateau from October through May, owing to the continuous recruitment of young shrimp to the fishery off Florida's west coast. White shrimp exhibit two peaks--the larger occurs in September, followed by a decline in availability until April or May when so-called "overwintering" shrimp (adult shrimp which remained in the bays and estuaries during the previous year) are harvested in a second peak in availability. A harsh winter can easily disrupt this early fishery by killing off large quantities of overwintering shrimp.

Shrimp landings in the South Atlantic are also quite seasonal, with the harvest of brown shrimp (the dominant species in North Carolina and to a lesser extent in South Carolina) beginning generally about June or July, as the postlarval shrimp leave the estuaries, continuing through the fall. The harvest of white shrimp (the dominant species in Florida and Georgia and also important in South Carolina) begins around August and lasts through December. As in the Gulf, a large stock of overwintering white shrimp supports an early fishery in the spring.

There is a significant bycatch, or incidental catch, associated with shrimp harvesting. Most of the bycatch in the Gulf area is composed of groundfish such as Atlantic croaker, spot, sand seatrout, and sea catfish and is discarded at sea. National Marine Fisheries Service data indicate that the fish discard ratios (ratio of pounds of fish discarded to pounds of shrimp harvested) ranged from 1:1 to 20:1 for inshore and offshore shrimp trawling in the northern Gulf of Mexico during 1973-77, with generally higher discard ratios for offshore than inshore trawling. <sup>1/</sup> The bycatch poses problems both in terms of lower efficiency for shrimp vessels and unnecessary mortality of groundfish resulting in lost revenues to Gulf groundfish harvesters. In the South Atlantic area, the bycatch consists mostly of "trash" fish, but some commercially important species, such as whiting, flounder, croaker, and spot, are captured. Shellfish, such as crabs, are also part of the incidental catch. Most of the incidental catch is suitable for industrial use (mainly fish meal), but efforts generally are not made to land the bycatch owing to relatively low prices for the bycatch in relation to the increased effort and cost (i.e., labor, hold space) to bring it ashore.

The United States is a major world producer of shrimp. During 1979-82, the United States accounted for 9 percent (about 1.3 billion pounds) of total world shrimp landings (table 3). U.S. shrimp landings by areas, during the period 1980-84, are given in table 4. Such landings, which vary considerably on an annual basis, decreased irregularly in quantity from 340 million pounds in 1980 to 302 million pounds in 1984, or by 11 percent (heads-on basis). The period-low level in 1983 was 30 percent below the period-high level in 1981. The value of U.S. shrimp landings increased irregularly from \$403 million in 1980 to \$488 million in 1984, or by 21 percent. Such landings increased in value during 1980-82 before declining in 1983 and 1984. The different trends in the quantity and value of U.S. shrimp landings during 1980-84 are accounted for by changes in the volume landed and by price (unit value) movements. For example, although landings were greater in quantity in 1984 than in 1983, lower prices the latter year caused a decline in value.

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<sup>1/</sup> Gulf of Mexico Fishery Management Council, Fishery Management Plan for the Shrimp Fishery of the Gulf of Mexico, United States Waters, Tampa, November 1981, p. 3-113.

Table 3.--Shrimp: World landings, by selected countries, 1979-82 1/

(In metric tons, live weight)

Country	1979	1980	1981	1982
India-----	183,159	250,314	164,165	199,211
United States-----	152,389	161,846	160,830	136,223
Thailand-----	119,723	122,010	137,035	116,975
Mexico-----	73,904	77,457	72,367	75,602
Brazil-----	86,052	57,891	56,450	57,910
Norway-----	34,214	45,269	40,989	51,679
Ecuador-----	12,485	17,501	20,100	29,500
Panama-----	5,716	6,968	7,823	6,392
Peru-----	644	807	635	460
Other-----	914,948	921,288	982,126	1,021,140
World total-----	1,583,234	1,661,351	1,642,520	1,695,092

1/ Includes aquaculture production.

Source: Yearbook of Fishery Statistics, 1982, Food and Agriculture Organization of the United Nations.

The Gulf and South Atlantic region accounts for the bulk of U.S. shrimp landings and virtually all U.S. landings of the principal warm water brown, white and pink shrimp species. During 1980-84, Gulf and South Atlantic region shrimp landings accounted for 82 percent of the quantity and 95 percent of the value of total U.S. shrimp landings (table 4). The trend in landings in each area of that region was different during 1980-84. Gulf shrimp landings, which alone accounted for 74 percent of the quantity and 84 percent of the value of total U.S. shrimp landings during 1980-83, set the trend mentioned earlier for the United States during these years. After increasing 29 percent in quantity from 208 million pounds in 1980 to 268 million pounds in 1981, Gulf shrimp landings fell to 198 million pounds in 1983. The value increased from \$302 million in 1980 to \$426 million in 1982 and fell slightly to \$417 million in 1983. The drop in value in 1983 was caused by a large decrease in the quantity landed even though the average prices (represented by unit values) increased that year. In 1984, Gulf landings increased to 254 million pounds, valued at \$440 million. South Atlantic shrimp landings, which accounted for 8 percent of the quantity and 11 percent of the value of the U.S. total during 1980-84, declined irregularly from 33 million pounds, valued at \$57 million, in 1980 to 19 million pounds, valued at \$34 million, in 1984. As a result of the decreased 1984 landings, many South Atlantic shrimpers received disaster assistance from the Small Business Administration.

Shrimp landings in the Pacific and New England regions of the United States are of cold-water shrimp. Such shrimp generally are smaller and are channeled into the canned and frozen, peeled markets. Pacific shrimp landings, which led the nation in the mid to late 1970's, steadily decreased from 98 million pounds, valued at \$43 million, in 1980 to 21 million pounds, valued at \$10 million, in 1984. New England landings increased from 731,000

Table 4.--Shrimp: U.S. landings, by areas, 1980-84

Area	1980	1981	1982	1983	1984 <u>1/</u>
Quantity (1,000 pounds)					
Gulf-----	208,280	268,190	209,926	198,457	254,254
South Atlantic-----	32,996	16,514	25,580	26,615	19,179
Total, Gulf and South					
Atlantic-----	241,276	284,704	235,506	225,072	273,433
Pacific-----	97,697	67,496	44,738	21,124	20,807
New England-----	731	2,271	3,383	3,469	7,114
Other-----	3	95	90	6	400
Grand total-----	339,707	354,566	283,717	249,671	301,754
Value (1,000 dollars)					
Gulf-----	302,077	401,400	425,748	416,911	439,727
South Atlantic-----	57,399	32,469	59,942	69,755	33,996
Total, Gulf and South					
Atlantic-----	359,476	433,869	485,690	486,666	473,723
Pacific-----	42,741	27,888	21,193	14,401	9,842
New England-----	477	1,438	2,010	2,312	3,475
Other-----	3	238	225	16	1,360
Grand total-----	402,697	463,433	509,118	503,395	488,400
Unit value (per pound)					
Gulf-----	\$1.45	\$1.50	\$2.03	\$2.10	\$1.73
South Atlantic-----	1.74	1.97	2.34	2.62	1.77
Average, Gulf and South					
Atlantic-----	1.49	1.52	2.06	2.16	1.73
Pacific-----	.44	.41	.47	.68	.47
New England-----	.65	.63	.59	.67	.49
Other-----	1.00	2.51	2.50	2.67	3.40
Average-----	1.19	1.31	1.79	2.02	1.62

1/ Preliminary.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Landings are reported in round (live) weight.

pounds, valued at \$477,000, in 1980 to 7 million pounds, valued at \$3 million, in 1984. Negligible amounts of shrimp are landed in other regions, mainly Hawaii.

Table 5 shows Gulf and South Atlantic region shrimp landings by State. Texas is the leading Gulf (and U.S.) State for shrimp landings, in terms of value, and the second State in terms of quantity. The higher ranking in value as opposed to quantity is due mainly to the fact that Texas shrimp landings are composed of larger (thus more valuable) shrimp compared with the leading State in terms of quantity (Louisiana). During 1980-84, Texas shrimp landings ranged in quantity from 96 million pounds in 1981 to 70 million pounds in 1983. The value of such landings increased from \$140 million in 1980 to \$179 million in 1984. During 1980-84, Texas accounted for 26 percent of the quantity and 35 percent of the value of total U.S. shrimp landings.

Louisiana is the leading Gulf (and U.S.) State for shrimp landings in terms of quantity, and the second leading State in terms of value (see the discussion above for Texas concerning the ranking of quantity and value). Louisiana shrimp landings increased irregularly from 89 million pounds, valued at \$99 million, in 1980 to 106 million pounds, valued at \$153 million, in 1984. During that period, Louisiana shrimp landings accounted for 31 percent of the quantity and 28 percent of the value of the U.S. total.

Shrimp landings in the remaining Gulf States generally trended upward during the period under review, with most of these States showing a peak in the quantity landed in 1981. Shrimp landings are substantially lower in Florida (west coast), Alabama, and Mississippi than in the leading States of Texas and Louisiana.

South Atlantic area shrimp landings are more evenly distributed by State than in the Gulf area. During 1980-84, Georgia was the leading South Atlantic State in terms of the value of shrimp landings; Georgia shrimp landings ranged from \$10 million in 1981 to \$22 million in 1983; the quantity ranged from 8 million pounds in 1980 to 3 million pounds in 1984. Shrimp landings in Florida (east coast), North Carolina, and South Carolina fluctuated during 1980-84, showing no discernible trend.

Table 6 shows U.S. Gulf and South Atlantic region shrimp landings by distance from shore. A majority of Gulf area shrimp landings are harvested from waters located 3 to 200 miles from shore. During 1980-84, 59 percent of the quantity and 67 percent of the value of Gulf area shrimp landings were harvested from those waters. This distribution of catch in Gulf waters varies significantly by State, however. Table 7 shows U.S. Gulf and South Atlantic shrimp landings by distance from shore by State. The great bulk of Texas shrimp landings are harvested from waters located between 3 and 200 miles from shore (75 percent of the quantity during 1980-84). This is due, in large part, to shrimp management policies in Texas, which restrict the inshore harvest. By contrast, the majority of the quantity of Louisiana shrimp landings are harvested in waters within 3 miles of shore (59 percent during 1980-84), owing mainly to a large inshore fishery. For the remaining Gulf States, most shrimp landings in Mississippi are harvested in waters within 3 miles of shore, and in Florida (west coast) and Alabama in waters 3 to 200 miles from shore.

Table 5.--Shrimp: U.S. Gulf and South Atlantic region landings, by areas and States, 1980-84

Area and State	1980	1981	1982	1983	1984 <sup>1/</sup>
Quantity (1,000 pounds)					
Gulf:					
Texas-----	74,106	95,730	70,695	70,191	91,329
Louisiana-----	88,700	110,211	90,530	76,998	106,354
Florida (west coast)-----	24,474	33,800	21,732	25,191	25,898
Alabama-----	15,100	20,802	16,797	15,416	18,461
Mississippi-----	5,900	7,647	10,172	10,661	12,212
Total, Gulf-----	208,280	268,190	209,926	198,457	254,254
South Atlantic:					
North Carolina-----	9,824	2,557	7,027	6,115	5,059
Florida (east coast)-----	7,504	6,302	6,806	7,528	7,687
Georgia-----	8,475	4,710	6,541	7,643	3,299
South Carolina-----	7,194	2,945	5,206	5,329	3,134
Total, South Atlantic-----	32,996	16,514	25,580	26,615	19,179
Grand total-----	241,276	284,704	235,506	225,072	273,433
Value (1,000 dollars)					
Gulf:					
Texas-----	140,047	165,230	175,411	170,710	179,459
Louisiana-----	99,345	131,466	143,669	133,052	153,230
Florida (west coast)-----	32,550	52,800	46,379	51,291	43,500
Alabama-----	22,460	38,096	41,400	40,025	40,335
Mississippi-----	7,675	13,808	18,889	21,833	23,203
Total, Gulf-----	302,077	401,400	425,748	416,911	439,727
South Atlantic:					
North Carolina-----	17,185	5,295	16,411	13,565	10,514
Florida (east coast)-----	9,305	10,900	9,971	19,272	9,301
Georgia-----	17,481	10,091	19,150	22,213	8,561
South Carolina-----	13,428	6,183	14,410	14,705	5,620
Total, South Atlantic-----	57,399	32,469	59,942	69,755	33,996
Grand total-----	359,476	433,869	485,690	486,666	473,723
Unit value (per pound)					
Gulf:					
Texas-----	\$1.89	\$1.73	\$2.48	\$2.43	\$1.96
Louisiana-----	1.12	1.19	1.59	1.73	1.44
Florida (west coast)-----	1.33	1.56	2.13	2.04	1.68
Alabama-----	1.49	1.83	2.46	2.60	2.18
Mississippi-----	1.30	1.81	1.86	2.05	1.90
Average, Gulf-----	1.45	1.50	2.03	2.10	1.73
South Atlantic:					
North Carolina-----	1.75	2.07	2.34	2.22	2.08
Florida (east coast)-----	1.24	1.73	1.47	2.56	1.21
Georgia-----	2.06	2.14	2.93	2.91	2.60
South Carolina-----	1.87	2.10	2.77	2.76	1.79
Average, South Atlantic-----	1.74	1.97	2.34	2.62	1.77
Average-----	1.49	1.52	2.06	2.16	1.73

<sup>1/</sup> Preliminary.

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

Note.--Landings are reported in round (live) weight.

Table 6.--Shrimp: U.S. Gulf and South Atlantic region landings, by areas and distance from U.S. shores, 1980-84

Area and distance	1980	1981	1982	1983	1984 <sup>1/</sup>
Quantity (1,000 pounds)					
Gulf:					
0-3 miles-----	77,144	93,890	81,847	82,019	127,942
3-200 miles-----	131,136	174,300	125,020	116,438	126,312
Total <sup>2/</sup> -----	208,280	268,190	209,926	198,457	254,254
South Atlantic:					
0-3 miles-----	23,712	10,499	18,128	18,823	11,610
3-200 miles-----	15,957	6,015	7,452	7,792	7,569
Total-----	32,996	16,514	25,580	26,615	19,179
Grand total-----	241,276	284,704	235,506	225,072	273,433
Value (1,000 dollars)					
Gulf:					
0-3 miles-----	86,838	117,266	120,174	149,188	170,280
3-200 miles-----	215,239	284,134	296,795	267,723	269,447
Total <sup>2/</sup> -----	302,077	401,400	425,748	416,911	439,727
South Atlantic:					
0-3 miles-----	41,442	21,194	49,348	49,642	22,996
3-200 miles-----	15,957	16,514	10,594	20,113	11,000
Total-----	57,399	32,469	59,942	69,755	33,996
Grand total-----	359,476	433,869	485,690	486,666	473,723

<sup>1/</sup> Preliminary.

<sup>2/</sup> Data for 1982 include landings off the high seas or off foreign shores; therefore, figures may not add to totals shown.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Landings are reported in round (live) weight.

Table 7.--Shrimp: U.S. landings by region and State and distance from U.S. shores, 1980-84

Region and State	From 0 to 3 miles		Between 3 and 200 miles		High seas or off foreign shores		Total	
	(1,000 pounds)	(1,000 dollars)	(1,000 pounds)	(1,000 dollars)	(1,000 pounds)	(1,000 dollars)	(1,000 pounds)	(1,000 dollars)
1980:								
South Atlantic States:								
Florida (east coast)	3,495	4,334	4,009	4,971	-	-	7,504	9,305
Georgia	3,476	7,001	4,999	10,480	-	-	8,475	17,481
North Carolina	9,741	17,027	82	158	-	-	9,823	17,185
South Carolina	7,000	13,080	194	348	-	-	7,194	13,428
Total, South Atlantic	23,712	41,442	9,284	15,957	-	-	32,996	57,399
Gulf States:								
Alabama	5,285	8,310	9,815	14,150	-	-	15,100	22,460
Florida (west coast)	5,100	6,783	19,374	25,767	-	-	24,474	32,550
Louisiana	48,099	48,303	40,601	51,042	-	-	88,700	99,345
Mississippi	3,839	2,435	2,061	5,240	-	-	5,900	7,675
Texas	14,821	21,007	59,285	119,040	-	-	74,106	140,047
Total, Gulf	77,144	86,838	131,136	215,239	-	-	208,280	302,077
Grand total, South Atlantic and Gulf	100,856	128,280	140,420	231,196	-	-	241,276	359,476
1981:								
South Atlantic States:								
Florida (east coast)	2,500	4,325	3,802	6,575	-	-	6,302	10,900
Georgia	2,749	5,922	1,961	4,169	-	-	4,710	10,091
North Carolina	2,557	5,295	0	0	-	-	2,557	5,295
South Carolina	2,693	5,652	252	531	-	-	2,945	6,183
Total, South Atlantic	10,499	21,194	6,015	11,275	-	-	16,514	32,469
Gulf States:								
Alabama	7,280	12,571	13,522	25,525	-	-	20,802	38,096
Florida (west coast)	7,100	11,076	26,700	41,724	-	-	33,800	52,800
Louisiana	57,309	59,160	52,902	72,306	-	-	110,211	131,466
Mississippi	4,970	6,370	2,677	7,438	-	-	7,647	13,808
Texas	17,231	28,089	78,499	137,141	-	-	95,730	165,230
Total, Gulf	93,890	117,266	174,300	284,134	-	-	268,190	401,400
Grand total, South Atlantic and Gulf	104,389	138,460	180,315	295,409	-	-	284,704	433,869
1982:								
South Atlantic States:								
Florida (east coast)	1,723	5,702	5,083	4,269	-	-	6,806	9,971
Georgia	4,526	13,720	2,015	5,430	-	-	6,541	19,150
North Carolina	7,005	16,350	22	61	-	-	7,027	16,411
South Carolina	4,874	13,576	332	834	-	-	5,206	14,410
Total, South Atlantic	18,128	49,348	7,452	10,594	-	-	25,580	59,942
Gulf States:								
Alabama	6,074	13,662	10,723	27,738	-	-	16,797	41,400
Florida (west coast)	4,500	9,585	17,232	36,794	-	-	21,732	46,379
Louisiana	47,076	64,651	43,454	79,018	-	-	90,530	143,669
Mississippi	6,611	8,689	3,561	10,200	-	-	10,172	18,889
Texas	17,586	23,587	50,050	143,045	3,059	8,779	70,695	175,411
Total, Gulf	81,847	120,174	125,020	296,795	3,059	8,779	209,926	425,748
Grand total, South Atlantic and Gulf	99,975	169,522	132,472	307,389	3,059	8,779	235,506	485,690
1983:								
South Atlantic States:								
Florida (east coast)	2,203	5,640	5,325	13,632	-	-	7,528	19,272
Georgia	5,289	16,002	2,354	6,211	-	-	7,643	22,213
North Carolina	6,079	13,456	36	109	-	-	6,115	13,565
South Carolina	5,252	14,544	77	161	-	-	5,329	14,705
Total, South Atlantic	18,823	49,642	7,792	20,113	-	-	26,615	69,755
Gulf States:								
Alabama	5,858	15,209	9,558	24,816	-	-	15,416	40,025
Florida (west coast)	5,038	10,278	20,153	41,013	-	-	25,191	51,291
Louisiana	41,579	71,848	35,419	61,204	-	-	76,998	133,052
Mississippi	5,544	11,353	5,117	10,480	-	-	10,661	21,833
Texas	24,000	40,500	46,191	130,210	-	-	70,191	170,710
Total, Gulf	82,019	149,188	116,438	267,723	-	-	198,457	416,911
Grand total, South Atlantic and Gulf	100,842	198,830	124,230	287,836	-	-	225,072	486,666
1984 1/:								
South Atlantic States:								
Florida (east coast)	2,562	3,100	5,125	6,201	-	-	7,687	9,301
Georgia	1,913	4,965	1,386	3,596	-	-	3,299	8,561
North Carolina	4,810	9,825	249	689	-	-	5,059	10,514
South Carolina	2,325	5,106	809	514	-	-	3,134	5,620
Total, South Atlantic	11,610	22,996	7,569	11,000	-	-	19,179	33,996
Gulf States:								
Alabama	4,984	7,664	13,477	32,671	-	-	18,461	40,335
Florida (west coast)	5,600	9,408	20,298	34,092	-	-	25,898	43,500
Louisiana	87,146	112,505	19,208	40,725	-	-	106,354	153,230
Mississippi	8,212	15,603	4,000	7,600	-	-	12,212	23,203
Texas	22,000	25,100	69,329	154,359	-	-	91,329	179,459
Total, Gulf	127,942	170,280	126,312	269,447	-	-	254,254	439,727
Grand total, South Atlantic and Gulf	139,552	193,276	133,881	280,447	-	-	273,433	473,723

1/ Preliminary.

Source: Compiled from official statistics of the National Marine Fisheries Service.

Note.--Landings are reported in round (live) weight.



Shrimp landings in the South Atlantic area States also vary significantly by distance from shore. Overall, the South Atlantic area shrimp harvest is concentrated in waters within 3 miles of shore. During 1980-84, 68 percent of the quantity and 73 percent of the value of South Atlantic shrimp landings were harvested in these waters (table 7). The great bulk of landings in North and South Carolina, which account for the majority of the South Atlantic area total, were harvested within three miles of shore, while landings in Georgia and Florida (east coast) were mainly harvested in waters farther offshore, owing to the shallower water farther from shore off Georgia and Florida than that off the Carolinas.

Gulf area landings by species are shown in table 8. During 1980-84, Gulf landings consisted predominantly of brown shrimp, followed by white and pink shrimp. Gulf landings of brown shrimp ranged from 79 million pounds in 1981 to 52 million pounds in 1983. Landings of brown shrimp in the Gulf amounted to 62 million pounds in 1984, accounting for 55 percent of the total Gulf landings that year. White shrimp, the second leading species landed in the Gulf, ranged from 27 million pounds landed in 1982 to 37 million pounds landed in 1984. White shrimp accounted for from 25 percent to 33 percent of annual Gulf landings during 1980-84. Landings of pink shrimp in the Gulf ranged from 15 million pounds in 1981 to 8 million pounds in 1982. Landings of pink shrimp in 1984 amounted to 11 million pounds or 10 percent of the total Gulf landings that year. Landings of sea bobs, royal red shrimp, and rock shrimp averaged 3 million pounds during 1980-84, and accounted for 3 percent of the total Gulf landings in 1984.

Table 9 shows Gulf shrimp landings by size count for 1980-84. The predominant size landed during this period was size count 71 and over, accounting for 29 to 34 percent of the annual Gulf landings. The remaining Gulf landings consist mainly of size count categories 15/20 through 61/70, with each size count within this range accounting for from 5 to 11 percent of annual Gulf landings during the period.

Table 10 shows Gulf shrimp landings on a quarterly basis for 1980-85. Gulf landings are seasonal with landings generally being greater during the third and fourth quarter and lower during the first two quarters. For example, Gulf shrimp landings reached 9 million pounds in the first quarter of 1984 and reached 55 million pounds in the third quarter of 1984.

Table 8.--Shrimp: U.S. Gulf landings, by species, 1980-84

Species	1980	1981	1982	1983	1984 <sup>1/</sup>
	Quantity : pounds)	Quantity : pounds)	Quantity : pounds)	Quantity : pounds)	Quantity : pounds)
	Share of total	Share of total	Share of total	Share of total	Share of total
	(percent)	(percent)	(percent)	(percent)	(percent)
	(1,000	(1,000	(1,000	(1,000	(1,000
	: pounds)	: pounds)	: pounds)	: pounds)	: pounds)
Brown-----	57,210	79,063	57,903	51,573	61,793
White-----	30,479	31,616	27,475	30,123	37,317
Pink-----	9,969	14,595	7,642	8,660	10,881
Other-----	6,137	2,864	2,841	2,734	2,879
Total--	103,795	128,138	95,861	93,090	112,870
	100	100	100	100	100
	55	62	60	55	55
	29	25	29	32	33
	10	11	8	9	10
	6	2	3	3	3

<sup>1/</sup> Preliminary.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Because of rounding, figures may not add to the totals shown.

Table 9.--Shrimp: U.S. Gulf landings, by size count, 1980-84

Size Count	1980		1981		1982		1983		1984 <sup>1/</sup>	
	Quantity (pounds)	Share of total (percent)	Quantity (pounds)	Share of total (percent)	Quantity (pounds)	Share of total (percent)	Quantity (pounds)	Share of total (percent)	Quantity (pounds)	Share of total (percent)
Under 15----	1,755	2	1,347	1	1,644	2	1,128	1	1,340	1
15-20-----	7,860	8	8,329	7	7,769	8	6,696	7	8,348	7
21-25-----	9,976	10	13,149	10	8,124	8	7,015	8	10,706	9
26-30-----	10,453	10	12,472	10	8,032	8	7,353	8	12,957	11
31-35-----	8,143	8	12,160	9	6,956	7	6,856	7	11,389	10
36-40-----	7,077	7	13,161	10	8,468	9	8,874	10	9,833	9
41-50-----	8,974	9	12,026	9	7,821	8	10,395	11	8,986	8
51-60-----	8,543	8	11,860	9	7,249	8	7,643	8	9,288	8
61-70-----	5,174	5	6,937	5	4,960	5	4,297	5	5,132	5
71 and over-----	30,413	29	34,479	27	32,427	34	30,460	33	32,186	29
Sea Bob-----	5,427	5	2,220	2	2,411	3	2,348	3	2,703	2
Total--	103,795	100	128,138	100	95,861	100	93,065	100	112,868	100

<sup>1/</sup> Preliminary.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Because of rounding, figures may not add to the totals shown.

Table 10.--Shrimp: U.S. Gulf landings, all species,  
by quarters, 1980-84

(In thousands of pounds, heads-off weight)

Year	1st quarter	2d quarter	3d quarter	4th quarter
1980-----	8,987	29,165	49,677	44,935
1981-----	8,974	52,385	65,010	45,022
1982-----	10,290	42,648	43,409	35,930
1983-----	9,727	36,803	43,817	36,070
1984-----	8,928	47,561	54,515	49,281
1985-----	15,829	<u>1/</u>	<u>1/</u>	<u>1/</u>

1/ Data not available.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Because of rounding, figures may not add to the totals shown.

Financial experience of U.S. Gulf and South Atlantic region shrimp craft 50 feet or less in length 1/

Average gross revenue (catch) for all reporting craft 50 feet or less in length was \$22,400 per vessel in 1984, compared with \$20,100 in 1983 and \$22,300 in 1982 (table 11). Average net revenue (gross revenue less trip expenses) was \$15,300 in 1984, compared with \$13,600 in 1983 and \$15,100 in 1982. Decreased shrimp landings in 1983 contributed to the lower gross and net revenues during 1983. In the aggregate, the reporting craft sustained an average net loss of \$500 in 1983, or 3.7 percent of net revenue. In 1982 and 1984, the average net income was \$2,400, or 15.9 percent of net revenue, and

1/ The Commission sent questionnaires to 400 owners of shrimping craft that operated in the Gulf and/or South Atlantic region, requesting income-and-loss and other data concerning their operating results during 1982-84. The sample was obtained randomly from a shrimp craft activity file maintained by the National Marine Fisheries Service. The sample was drawn from two categories based on craft size--50 feet in length and under, and over 50 feet in length. These two categories generally correspond to inshore and offshore operations, although not all craft in each size category will correspond exactly to the general type of operation. Usable responses were received for 15 craft 50 feet or less in length and for 64 craft over 50 feet in length.

Data reported by respondents include all operations of their craft and, as such, may include harvesting effort for fishery products other than shrimp. However, shrimp was the primary product harvested by the respondents during the subject period (nearly 100 percent for craft 50 feet and under and 99 percent for craft over 50 feet). Data are aggregated for all respondents, and averages are given for each category of shrimp craft. Appendix H contains data concerning operating and ownership characteristics of respondents to Commission questionnaires.

Table 11.--Average income-and-loss experience of 12-15 U.S. Gulf and South Atlantic region shrimp craft, 50 feet or less, 1982-84 1/

Item	1982	1983	1984
Gross revenue <u>2/</u> -----1,000 dollars-----	22.3	20.1	22.4
Trip expenses:			
Fuel-----do-----	5.3	4.6	4.7
Other-----do-----	1.9	1.9	2.4
Total trip expenses-----do-----	7.2	6.5	7.1
Net revenue-----do-----	15.1	13.6	15.3
Operating expenses:			
Captain's and/or crew's share-----do-----	4.5	4.5	4.1
Gear, nets, and supplies-----do-----	1.5	1.8	1.8
Vessel repair and maintenance-----do-----	2.6	2.9	2.5
Insurance-----do-----	.3	.4	.5
Interest expense-----do-----	.3	.1	.1
Taxes and licenses (except income taxes)-----do-----	.1	.1	.2
Depreciation-----do-----	2.9	3.4	3.9
Other expenses-----do-----	.5	.9	1.1
Total operating expenses-----do-----	12.7	14.1	14.2
Net income or (loss) before officers' or partners' salaries or income taxes-----do-----	2.4	(0.5)	1.1
Officers' or partners' salaries-----do-----	-	-	-
Net income or (loss) before income taxes-----do-----	2.4	(0.5)	1.1
Cash flow from operations <u>3/</u> -----do-----	5.3	2.9	5.0
Ratio to net revenue:			
Captain's and/or crew's share-----percent-----	29.8	33.1	26.8
Gear, nets, and supplies-----do-----	9.9	13.2	11.8
Vessel repair and maintenance-----do-----	17.2	21.3	16.3
Insurance-----do-----	2.0	2.9	3.3
Interest expense-----do-----	2.0	.7	.6
Taxes and licenses (except income taxes)-----do-----	.7	.7	1.3
Depreciation-----do-----	19.2	25.0	25.5
Other expenses-----do-----	3.3	6.6	7.2
Total operating expenses-----do-----	84.1	103.7	92.8
Officers' or partners' salaries-----do-----	-	-	-
Net income or (loss) before income taxes-----do-----	15.9	(3.7)	7.2

1/ The number of respondents for each year is as follows: 1982--15; 1983--14; and 1984--12.

2/ Gross catch.

3/ Net income or (loss) before income taxes plus depreciation.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

\$1,100, or 7.2 percent of net revenue, respectively. There was a positive cash flow reported in each of the reporting periods, which ranged from an average of \$2,900 in 1983 to \$5,300 in 1982.

Average operating expenses rose annually from \$12,700, or 84.1 percent of net revenue, in 1982 to \$14,200, or 92.8 percent of net revenue, in 1984. The captains' and crews' share was 29.8 percent of net revenue in 1982, 33.1 percent in 1983, and 26.8 percent in 1984. Depreciation of vessels and equipment rose from 19.2 percent of net revenue in 1982 to 25.5 percent in 1984. Vessel repairs and maintenance were equal to 16.3 percent of net income in 1984 compared with 21.3 percent in 1983 and 17.2 percent in 1982.

Financial experience of U.S. Gulf and South Atlantic region shrimp craft over 50 feet in length

Average gross revenue (catch) for all reporting craft in this category was \$126,200 in 1984, compared with \$125,600 in 1983 and \$127,400 in 1982 (table 12). Average net revenue (gross revenue less trip expenses) was \$85,900 in 1984 compared with \$84,400 in 1983 and \$84,500 in 1982. This group of craft reported an average net loss of \$900, or 1.0 percent of net revenue, in 1984, compared with a net loss of \$5,300, or 6.3 percent of net revenue, in 1983 and a net loss of \$1,700, or 2.0 percent of net revenue, in 1982. Officers' or partners' salaries amounted to an average of \$1,700 in 1982 and \$2,000 in 1983 and 1984. This group of craft did, however, report positive cash flows in each of the reporting years, ranging from an average of \$8,600 in 1983 to \$12,100 in 1984.

Average operating expenses rose from \$84,500, or 100 percent of net revenue, in 1982 to \$87,700, or 103.9 percent of net revenue, in 1983. Operating expenses declined to \$84,800, or 98.7 percent of net revenue, in 1984. The average captain's and crew's share amounted to 40.8 percent of net revenue in 1982 and 41.2 percent in 1983 and 1984. Vessel repairs and maintenance amounted to an average of 13.9 percent of net revenue in 1982, 14.7 percent in 1983, and 14.2 percent in 1984. Depreciation ranged from an average of 14.6 percent of net revenue in 1982 to 16.5 percent in 1983.

Costs

The following discussion on costs in the U.S. Gulf and South Atlantic shrimp harvesting sector is presented in three sections. First, costs are given separately by area (Gulf and South Atlantic). Second, trends in major cost items over a period of time are discussed. Finally, cost data obtained from responses to Commission questionnaires are presented.

Costs by area.--The data on vessel costs used in this section were obtained from a survey of shrimp craft operating in the Gulf and South Atlantic areas administered by the Southeast Fisheries Center of the National

Table 12.--Average income-and-loss experience of 61-64 U.S. Gulf and South Atlantic region shrimp craft, 50 feet or over, 1982-84 1/

Item	1982	1983	1984
Gross revenue <u>2/</u> -----1,000 dollars----	127.4	125.6	126.2
Trip expenses:			
Fuel-----do-----	34.8	33.0	31.8
Other-----do-----	8.1	8.2	8.5
Total trip expenses-----do-----	42.9	41.2	40.3
Net revenue-----do-----	84.5	84.4	85.9
Operating expenses:			
Captain's and/or crew's share-----do-----	34.5	34.8	35.4
Gear, nets, and supplies-----do-----	9.4	8.5	8.3
Vessel repair and maintenance-----do-----	11.8	12.4	12.2
Insurance-----do-----	6.3	6.5	6.7
Interest expense-----do-----	6.6	7.6	5.8
Taxes and licenses (except income taxes)-----do-----	.8	1.0	1.0
Depreciation-----do-----	12.3	13.9	13.0
Other expenses-----do-----	2.8	3.0	2.4
Total operating expenses-----do-----	84.5	87.7	84.8
Net income or (loss) before officers' or partners' salaries or income taxes-----do-----	-	(3.3)	1.1
Officers' or partners' salaries-----do-----	1.7	2.0	2.0
Net income or (loss) before income taxes-----do-----	(1.7)	(5.3)	(0.9)
Cash flow from operations <u>3/</u> -----do-----	10.6	8.6	12.1
Ratio to net revenue:			
Captain's and/or crew's share-----percent-----	40.8	41.2	41.2
Gear, nets, and supplies-----do-----	11.1	10.1	9.7
Vessel repair and maintenance-----do-----	13.9	14.7	14.2
Insurance-----do-----	7.5	7.7	7.8
Interest expense-----do-----	7.8	9.0	6.8
Taxes and licenses (except income taxes)-----do-----	.9	1.2	1.2
Depreciation-----do-----	14.6	16.5	15.1
Other expenses-----do-----	3.3	3.6	2.8
Total operating expenses-----do-----	100.0	103.9	98.7
Officers' or partners' salaries-----do-----	2.0	2.4	2.3
Net income or (loss) before income taxes-----do-----	(2.0)	(6.3)	(1.0)

1/ The number of respondents for each year is as follows: 1982--64; 1983--63; and 1984--61.

2/ Gross catch.

3/ Net income or (loss) before income taxes plus depreciation.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Marine Fisheries Service. <sup>1/</sup> Data obtained from the survey indicate that both the average annual fixed and variable costs were about twice as high for Gulf area shrimp craft as for South Atlantic area craft (table 13). In both areas, wages and fuel were the major cost items, followed by depreciation and vessel mortgage payments. Repairs were also major cost items, particularly if grouped together (the survey separated engine, gear, and general repair, and a varying number of respondents provided data on each item). Each individual repair cost item generally was about twice as high for Gulf area craft as for South Atlantic area craft.

Table 13.--Average costs associated with U.S. Gulf and South Atlantic region shrimp craft, by items and areas, 1982

(In dollars)			
Item	:	Gulf area	South Atlantic area
<b>Fixed costs:</b>			
Depreciation-----	:	14,872	10,417
Vessel mortgage-----	:	14,765	5,838
Working capital-----	:	9,730	2,464
Insurance-----	:	7,048	4,301
Hull repairs-----	:	5,250	2,836
Other-----	:	2,283	853
Total-----	:	33,185	17,031
<b>Variable costs:</b>			
Wages-----	:	38,884	17,671
Fuel-----	:	36,311	18,350
Engine repairs-----	:	7,164	3,233
Gear repairs-----	:	6,754	3,138
General repairs-----	:	4,093	2,308
Hardware-----	:	3,676	1,633
Groceries-----	:	3,599	2,592
Ice-----	:	3,539	2,561
Other-----	:	4,295	2,516
Total-----	:	106,328	52,510

Source: A Financial Profile of Shrimp Vessels in the Southeastern United States During 1982, Southeast Fisheries Center, National Marine Fisheries Service, Miami, October 1984.

<sup>1/</sup> A Financial Profile of Shrimp Vessels in the Southeastern United States During 1982, Southeast Fisheries Center, National Marine Fisheries Service, Miami, October 1984. Data were collected from shrimp craft owners in the Gulf and South Atlantic region for the 1982 calendar year. Results were reported separately for Gulf area craft and South Atlantic area craft, as the survey assumed that shrimp craft activity and characteristics differed by geographic area. In general, the South Atlantic area shrimp fleet comprises mainly inshore operators, whereas the Gulf area shrimp fleet varies from inshore to offshore craft and mobility is greater.



The higher average costs for Gulf area craft are caused mainly by differences in fishing operations and in physical characteristics of craft between the two areas. In general, whether the craft fished inshore or offshore, the number of trips, the average length of each trip, and the size of the craft all contributed to cost differences between the Gulf and South Atlantic area shrimp craft. According to the survey, the differences in variable costs are attributable mainly to differences in boat and vessel operations. The lower average variable costs incurred by the South Atlantic area shrimp craft resulted from operating closer to shore with shorter trip lengths, (1.8 days per trip), more fishing days (207), and a lower degree of migration to other ports and States. Gulf area craft, on the other hand, operated further from shore with longer trip lengths (11.3 days per trip) (which entails greater time and costs steaming to shrimping grounds), relatively fewer fishing days (160), and a greater degree of migration to other ports and States.

The differences in fixed costs are attributable mainly to average craft sizes and ages. The average size for the Gulf area craft in the survey was 66.7 feet compared with 58.7 feet for South Atlantic area. The average craft age was 13.3 years for the Gulf area compared with 15.8 years for the South Atlantic area. Generally, mortgage payments, depreciation and insurance, and hull repairs were greater for larger and newer craft.

The survey also presented cost data on a per-trip basis. Table 14 shows U.S. Gulf and South Atlantic area average craft costs for 1982 on a per-trip basis, by type of operation (i.e., inshore, offshore, and both). As would be expected, the average costs for offshore craft in both the Gulf and South Atlantic areas were substantially higher than for inshore craft involved in both inshore and offshore shrimping operations. Also, as is true of average costs on an aggregate dollar basis, average costs per trip were substantially higher for all types of operations for Gulf area shrimp craft than for South Atlantic craft.

Trends in major cost items.---Appendix I shows major cost items for Gulf and South Atlantic shrimp trawlers. 1/ The average cost of constructing a typical Gulf shrimp otter trawler (68-80 feet in length, fully rigged, equipped with ice refrigerators) rose from \$262,107 in 1980 to \$324,547 in 1984, or by 24 percent. This cost has risen nearly 200 percent since 1972.

Diesel fuel is a major cost item in shrimp harvesting. During 1980-84, diesel fuel prices in the Gulf area moderated, ranging from \$0.90 per gallon in 1983 to \$1.11 per gallon in 1981. However, current diesel fuel prices are much higher than in the past. A major price increase occurred between 1978-79, when diesel fuel prices rose from \$0.39 per gallon to \$0.85 per gallon, or by 118 percent.

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1/ Data were contained in a presentation by T.S. Allen, Chief, Financial Services Branch, National Marine Fisheries Service, Southeast Region, at the Louisiana Shrimp Association Meeting, New Orleans, Louisiana, Mar. 22, 1985.

Table 14.--Average cost per trip of operating U.S. Gulf and South Atlantic region shrimp craft, by areas and types of operation, 1982

(In dollars)

Area and type of operation	Variable costs per trip	Fixed costs per trip
<b>Gulf:</b>		
Inshore-----	1,533	90
Offshore-----	8,117	2,798
Both <u>1</u> /-----	2,254	698
Total <u>2</u> /-----	6,614	2,255
<b>South Atlantic:</b>		
Inshore-----	413	41
Offshore-----	889	221
Both <u>1</u> /-----	284	113
Total <u>2</u> /-----	640	175

1/ Respondents who reported both inshore and offshore operations.

2/ This is not the average of the sum of inshore, offshore, and both, but rather the average for all respondents regardless of type of operation. The number of respondents is different for each of the types of operations and for the "total," as some respondents did not specify type of operation.

Source: A Financial Profile of Shrimp Vessels in the Southeastern United States During 1982, Southeast Fisheries Center, National Marine Fisheries Service, Miami, October 1984.

Insurance costs also rose in the Gulf and South Atlantic region. The typical annual premium 1/ for offshore trawlers rose from \$7,950 in 1972 to \$16,605 in 1978, or by 109 percent, before declining during 1979 and 1980. However, during 1980-84, premiums rose again, from \$12,161 in 1980 to \$14,541 in 1984, or by 20 percent. In 1985, the typical premium rose to \$21,168, or 46 percent over the previous year's level. Along with the recent rise in premiums, policies generally reduced the scope of coverage and have increased deductibles. The rise in premiums is largely attributed to an increase in injury claims by crewmen and deteriorating conditions of craft caused by the postponement of normal maintenance and repair. The current rise in insurance premiums have caused many Gulf and South Atlantic shrimp harvesters to drop their policies.

Interest rates affect the ability of shrimp fishermen to obtain new craft, gear and related supplies, and other items. Average annual interest rates available to shrimp fishermen under the Fishing Vessel Obligation Guarantee

1/ Based on \$300,000 hull and machinery and \$300,000 protection and indemnity coverage, on a vessel with a crew of three.

Program 1/ in the Gulf and South Atlantic region increased sharply from 12.72 percent in 1980 to 17.06 percent in 1981, or by 34 percent. Although interest rates declined to 12.93 percent in 1984, representing a decline of 24 percent during 1981-84, the level of interest rates during 1980-84 was significantly higher than historical levels in the 1960's and 1970's of 5-7 percent. The increase in interest rates has affected the availability of capital to finance new craft and equipment and to refinance debt by raising the costs of financing. Further, shrimp fishermen have had greater difficulty qualifying for loans. Also, there has been an increase in loan defaults among shrimp fishermen, thus making them a high risk category to lending institutions.

Costs reported by questionnaire respondents.--Based on information reported by respondents to Commission questionnaires, trip expenses ranged from 32.3 percent of gross revenue in 1982 and 1983 to 31.7 percent in 1984 for shrimp craft 50 feet in length or less (table 15). Fuel, by far, was the main trip expense item, declining from 23.8 percent of gross revenue in 1982 to 21.0 percent of gross revenue in 1984. Operating expenses for shrimp craft in this category rose from 57.0 percent of gross revenue in 1982 to 70.1 percent in 1983 before abating to 63.4 percent in 1984. Captain's and crew's share was the principal operating expense item, rising from 20.2 percent of gross revenue in 1982 to 22.4 percent in 1983 before falling to 18.3 percent in 1984. Following captain's and crew's share as principal operating expense items were depreciation (17.4 percent of gross revenue in 1984), repair and maintenance (11.2 percent), and gear, nets, and related supplies (8.0 percent). Other items were relatively minor.

For shrimp craft over 50 feet in length, trip expenses decreased from 33.7 percent of gross revenue in 1982 to 31.9 percent in 1984. Fuel, the principal component, decreased from 27.3 percent of gross revenue in 1982 to 25.2 percent in 1984. Operating expenses rose from 66.3 percent of gross revenue in 1982 to 69.8 percent in 1983 before dropping to 67.2 percent in 1984. Captain's and crew's share, the main item, rose from 27.1 percent of gross revenue in 1982 to 28.1 percent in 1984. Other operating expense items were significantly lower than captain's and crew's share for this category of shrimp craft, ranging in 1984 from 10.3 percent of gross revenue for depreciation to 0.8 percent for taxes and licenses.

### Productivity

Productivity in the harvesting sector of the Gulf and South Atlantic shrimp industry is affected by both endogenous, or controllable, factors such as the skill and experience of the captain and crew, craft and gear configurations, and fishing methods, and by exogenous, or uncontrollable,

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1/ The Fishing Vessel Obligation Guarantee Program is a Federal loan guarantee program that makes loans available to fishermen at relatively low interest rates. See the section on government assistance later in the report for further details.

Table 15.--Costs reported by respondents to questionnaires relating to shrimp craft, 1982-1984

(In percent of gross revenue)			
Category and item	1982	1983	1984
Craft 50 feet and less:			
Trip expenses:			
Fuel-----	23.8	22.4	21.0
Other-----	8.5	9.5	10.7
Total-----	32.3	32.3	31.7
Operating expenses:			
Captain's and crew's share--	20.2	22.4	18.3
Depreciation-----	13.0	16.9	17.4
Repair and maintenance-----	11.7	14.4	11.2
Gear, nets, and related			
supplies-----	6.7	9.0	8.0
Insurance-----	1.3	2.0	2.2
Interest-----	1.3	0.5	0.4
Taxes and licenses-----	0.4	0.5	0.9
Other-----	2.2	4.5	4.9
Total-----	57.0	70.1	63.4
Craft over 50 feet:			
Trip expenses:			
Fuel-----	27.3	26.3	25.2
Other-----	6.4	6.5	6.7
Total-----	33.7	32.8	31.9
Operating expenses:			
Captain's and crew's share--	27.1	27.7	28.1
Depreciation-----	9.7	11.1	10.3
Repair and maintenance-----	9.3	9.9	9.7
Gear, nets, and related			
supplies-----	7.4	6.8	6.6
Insurance-----	4.9	5.2	5.3
Interest-----	5.1	6.1	4.6
Taxes and licenses-----	0.6	0.8	0.8
Other-----	2.2	2.4	1.9
Total-----	66.3	69.8	67.2

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Note: Data are averages based on the number of respondents for each item. The number of respondents for craft 50 feet and less ranged from 11 to 15 and the number of respondents for craft over 50 feet ranged from 58 to 64.

factors such as environmental effects on the shrimp resource and on fishing effort. The wide variation in the endogenous factors between individual craft and the prominence of the effect of the exogenous factors on the Gulf and South Atlantic region shrimp fishery limits the accuracy of productivity measures of the region's harvesting sector.

Productivity in the harvesting of fishery resources, including shrimp, is usually measured in terms of catch per unit effort (CPUE). Common measures of CPUE include catch per day fished and catch per man day fished. Such measures are not available at present for shrimp boats and vessels in the Gulf and South Atlantic region. However, an extremely simple estimation of productivity can be derived by dividing total Gulf and South Atlantic region shrimp landings by the number of craft in the region. The trends exhibited by this measure are believed to generally reflect conditions in the Gulf and South Atlantic region shrimp harvesting sector during the periods studied. This estimation is presented in the following tabulation, both in terms of quantity and value, during 1980-83 (compiled from unpublished statistics of the U.S. Department of Commerce, National Marine Fisheries Service):

<u>Measure and area</u>	<u>Catch per craft</u>			
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Quantity (1,000 pounds):				
Gulf-----	12.24	15.60	12.20	10.91
South Atlantic-----	7.04	3.70	5.56	5.78
Total-----	11.34	13.42	11.02	10.07
Value (1,000 dollars):				
Gulf-----	28.22	37.12	39.33	36.44
South Atlantic-----	19.46	11.58	20.73	24.09
Total-----	26.87	32.52	36.13	34.62
Value (1,000 1980 dollars):				
Gulf-----	28.22	34.06	34.85	31.87
South Atlantic-----	19.46	10.62	18.37	21.07
Total-----	26.87	29.84	32.01	30.28

Landings per craft, in terms of quantity, for both the Gulf and South Atlantic areas combined fell irregularly from 11,340 pounds in 1980 to 10,070 in 1983, or by 11 percent. In terms of value, however, landings per craft generally increased from \$26,870 in 1980 to \$34,620 in 1983, or by 29 percent. In real terms (1980 dollars), the value of landings per craft increased from \$26,870 in 1980 to \$30,280 in 1983, or by 13 percent. This increase reflects generally rising ex-vessel 1/ prices during the period. These measures of productivity trended differently for the Gulf and the South Atlantic areas during the period, owing mainly to variations in factors affecting shrimp-harvesting activities in each area.

Trends in these measures of productivity for shrimp harvesting in the Gulf and South Atlantic region are more pronounced over the long-run. The

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1/ Received by fishermen.

following tabulation presents productivity measures the years 1960, 1970, 1980, and 1983 (compiled from unpublished statistics of the U.S. Department of Commerce, National Marine Fisheries Service):

<u>Measure and area</u>	<u>Catch per craft</u>			
	<u>Year</u>			
	<u>1960</u>	<u>1970</u>	<u>1980</u>	<u>1983</u>
Quantity (1,000 pounds):				
Gulf-----	21.46	17.95	12.24	10.91
South Atlantic-----	10.31	7.73	7.04	5.78
Total-----	19.39	16.53	11.34	10.07
Value (1,000 dollars):				
Gulf-----	9.56	13.40	28.22	36.44
South Atlantic-----	4.47	6.79	19.46	24.09
Total-----	8.61	12.51	26.87	34.62
Value (1,000 1960 dollars):				
Gulf-----	9.56	11.52	10.71	12.09
South Atlantic-----	4.47	5.84	7.39	8.00
Total-----	8.61	10.76	10.20	11.49

The catch per craft in the Gulf and South Atlantic region declined in terms of quantity between 1960 and 1970 by 15 percent, between 1970 and 1980 by 31 percent, and between 1980 and 1983 by 11 percent, or by 48 percent during 1960-83. In terms of value, however, the catch per craft increased by 45 percent between 1960 and 1970, 115 percent between 1970 and 1980, and 29 percent between 1980 and 1983, or threefold during 1960-83. In real terms (1960 dollars), the value of the catch per craft rose by 25 percent between 1960 and 1970, fell by 5 percent between 1970 and 1980, and rebounded by 13 percent between 1980 and 1983; this represented an overall increase of one-third during 1960-83, again reflecting generally rising real ex-vessel prices during the period. Again, the trends in the measures differed for the Gulf and the South Atlantic areas are due to differences in factors affecting shrimp-harvesting activities in each area. According to some researchers who have studied the shrimp industry, the capacity expanded in response to higher prices, and this expanded capacity has reduced the catch per craft, raised the cost per pound harvested, and, despite the rising value of the catch per craft, reduced net revenues per craft. 1/

#### Processing Sector

Shrimp processing ranges from the relatively simple process of heading, washing, grading, packing, and freezing shrimp into blocks to the production of highly processed items such as formed and extruded breaded shrimp products. The great bulk of shrimp is processed on shore, although a significant amount of shrimp is headed or headed and frozen at sea.

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1/ Submission by J.E. Easley, Jr., Agricultural Extension Service, North Carolina State University, Nov. 28, 1984; and testimony of Dr. Thomas D. McIlwain, transcript of hearing, p. 290.

Shrimp processing is conducted by a variety of operations. Dealers (also referred to as shrimp houses or fish houses) purchase shrimp dockside from fishermen and may wash and pack shrimp for packinghouses, other processors, or distributors. Packinghouses, which may obtain shrimp directly from shrimp vessels or from dealers, may wash, grade (sort by size), and pack shrimp for distribution to further processors or distributors. The level of processing carried out by dealers and packinghouses is minimal; as such, dealers and packinghouses are not considered "processors" for the purposes of this study.

Firms at the first level of processing considered in this investigation produce frozen, heads-off, shell-on shrimp. Other product forms produced at higher levels of processing are frozen peeled shrimp (either cooked or raw); breaded shrimp (usually frozen, either cooked or raw); canned shrimp; and various specialty forms, such as dried shrimp, shrimp cocktails, cakes, patties, stuffed shrimp, and shrimp creoles and gumbos, among various other forms.

Shrimp processors in the U.S. Gulf and South Atlantic region generally are single-plant operations. Shrimp plants may produce several shrimp product forms and also may produce a variety of other seafood items, such as crab, oyster, and fish products. Shrimp processing is seasonal in nature, although this may vary by type of processor. For example, processors producing heads-off, shell-on, peeled, and breaded shrimp rely to various degrees on both domestic and imported shrimp for raw materials, and seasonality in production is less pronounced. Processors producing canned shrimp generally rely heavily on domestic product, usually utilize smaller shrimp harvested during a relatively limited period of time, and, therefore, operate on a more seasonal basis than other types of shrimp processors.

Processors producing frozen heads-off, shell-on shrimp are generally referred to as "freezers"; those producing peeled shrimp are referred to as "peelers"; those producing breaded shrimp as "breaders"; and, those producing canned shrimp as "canners." These terms will be used in this report.

Some shrimp processors own vessels and boats; a greater number have buying arrangements with several shrimp craft. Shrimp processors are also involved, to some degree, in marketing shrimp, although most shrimp are distributed through middlemen, such as wholesalers and brokers.

### Technology

Shrimp processors utilize machinery to wash, grade, peel, devein, or bread shrimp; the extent of use of such machinery varies greatly between shrimp processors. Recent developments have been made in utilizing specialized equipment in processing formed shrimp products, either using 100 percent shrimp or a mixture of shrimp and surimi (a paste made from a minced fish base) or other extenders. Such production, however, is limited compared with the production of traditional shrimp products. In addition, as most shrimp products are marketed in the frozen form, other efforts to extend the shelf life of shrimp products have been limited.

Number of plants and employment

Table 16 shows the number of shrimp processing plants in the U.S. Gulf and South Atlantic region during 1980-83. The total number of such plants increased from 150 in 1980 to 157 in 1983, or by 5 percent. 1/ The greatest number of these plants produced heads-off, shell-on shrimp. The number of plants producing this type of shrimp increased from 117 in 1980 to 130 in 1983, or by 11 percent. The number of plants producing peeled shrimp increased irregularly from 50 in 1980 to 61 in 1983; the number of plants producing breaded shrimp ranged from 24 in 1980 to 21 in 1982; and, the number of plants producing canned shrimp ranged from 13 in 1980 and 1981 to 12 in 1982 and 1983.

Table 16.--Number of U.S. Gulf and South Atlantic region shrimp-processing plants, by types of product, 1980-83 1/

Type of product	1980	1981	1982	1983 <u>2/</u>
Headless, shell-on-----	117	122	124	130
Peeled-----	50	58	62	61
Breaded-----	24	22	21	23
Canned-----	13	13	12	12
Total <u>3/</u> -----	150	150	154	157

1/ States include Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina.

2/ Preliminary.

3/ Exclusive of duplication.

Source: Compiled from unpublished statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Table 17 shows employment in shrimp processing plants in the U.S. Gulf and South Atlantic region during 1980-83. Total employment in these plants rose from 7,579 persons in 1980 to 8,777 persons in 1983, representing an increase of 16 percent. 1/ Employment was greatest in plants producing heads-off, shell-on shrimp. Employment in such plants rose from 4,872 in 1980 to 7,290 in 1983, or by 50 percent. Employment in plants producing peeled shrimp increased irregularly from 4,162 persons in 1980 to 5,252 persons in 1983, or by 26 percent. Employment in plants producing breaded shrimp increased by 14 percent, from 4,319 persons in 1980 to 4,943 persons in 1983. Employment in canned shrimp plants increased from 599 persons in 1980 to 694 persons in 1981 before falling to 613 persons in 1983.

1/ Exclusive of duplication, as some plants (and their related employment) produce more than one shrimp product form. Data are not available for 1984.



Table 17.--Employment in U.S. Gulf and South Atlantic region shrimp-processing plants, by types of product, 1980-83 1/

Type of product	1980	1981	1982	1983 <u>2/</u>
	----- Number of employees -----			
Headless, shell-on-----	4,872	6,741	6,508	7,290
Peeled-----	4,162	5,156	5,697	5,252
Breaded-----	4,319	4,407	4,503	4,943
Canned-----	599	694	638	613
Total <u>3/</u> -----	7,579	7,890	8,588	8,777

1/ States include Texas, Louisiana, Mississippi, Alabama, Florida, Georgia, South Carolina, and North Carolina. Data are for average annual employment.

2/ Preliminary.

3/ Exclusive of duplication.

Source: Compiled from unpublished statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

### Production

U.S. Gulf and South Atlantic region shrimp processors produce a variety of shrimp products. These include fresh or frozen raw, heads-off, shell-on; frozen raw or cooked peeled or peeled and deveined; frozen raw or cooked breaded; canned; and lesser amounts of specialty items such as dried shrimp and shrimp patties, burgers, and cocktails.

Heads-off, shell-on shrimp is produced from whole shrimp, or to a lesser degree, from shrimp that has been headed at sea. Processing involves heading, washing, grading (sorting by size), packing, and, usually, freezing. A significant but indeterminable amount of heads-off, shell-on shrimp is marketed fresh (iced).

Peeled shrimp is processed from shell-on shrimp. The shell-on shrimp is headed, washed, graded, and then peeled, either by hand or mechanically. The tail section is usually removed, but may be left on, particularly for larger shrimp. Peeled shrimp may be deveined and/or cooked, and usually is frozen.

Breaded shrimp is processed similarly to peeled and deveined shrimp. After the shell and vein have been removed from the shrimp, a coating of batter or breading is applied. The shrimp is usually frozen raw, but a significant amount is cooked before freezing. Breaded shrimp may be prepared in four basic styles: round, tail-on; round, tail-off; butterfly (or fantail), tail-on; and, butterfly, tail-off. Round refers to the whole shrimp, whereas butterfly refers to splitting the shrimp down the middle and spreading the halves.

Canned shrimp is produced from shell-on shrimp that has been peeled and then canned. Some canned shrimp is also deveined. Canned shrimp is usually produced from smaller sizes of shrimp. There are four designations for canned shrimp sizes, as specified by the Food and Drug Administration. These designations are large, medium, small, and tiny (21 C.F.R. 161.173). Most canned shrimp production is of cans containing 4 1/4 ounces (drained weight) of shrimp meat.

Table 18 shows the production of various shrimp products, by area, during 1980-83. <sup>1/</sup> The leading product form, in terms of ex-plant value, is raw, heads-off, shell-on shrimp. Total U.S. production of such shrimp increased irregularly from 78 million pounds, valued at \$301 million, in 1980 to 86 million pounds, valued at \$401 million, in 1983. Production of raw, heads-off, shell-on shrimp was at 98 million pounds in 1981, largely the result of increased landings that year, which were channeled into the production of this form.

Breaded shrimp is the second leading product form in terms of ex-plant value. Total U.S. breaded shrimp production increased steadily from 83 million pounds, valued at \$254 million, in 1980 to 98 million pounds, valued at \$381 million, in 1983, or by 18 percent in quantity and 50 percent in value.

Peeled shrimp is next in commercial importance. Total U.S. production of peeled shrimp increased from 57 million pounds, valued at \$198 million, in 1980 to 76 million pounds, valued at \$300 million, in 1982 before falling to 69 million pounds, valued at \$262 million, in 1983.

Canned shrimp production in the United States decreased from 16 million pounds, valued at \$71 million, in 1980 to 8 million pounds, valued at \$45 million, in 1982 before increasing slightly to 9 million pounds, valued at \$54 million, in 1983.

U.S. production of other shrimp products showed no discernible trend and ranged from 7 million pounds, valued at \$13 million, in 1980 to 8 million pounds, valued at \$20 million, in 1982.

The majority of U.S. processed shrimp production occurs in the Gulf and South Atlantic region, with the great bulk of production in this region accounted for by the Gulf area. Virtually all U.S. production of raw, heads-off, shell-on shrimp is accounted for by the Gulf and South Atlantic region. Such production in this region increased from 78 million pounds, valued at \$301 million, in 1980 to 86 million pounds, valued at \$401 million, in 1983. Gulf production set the trend, increasing from 77 million pounds, valued at \$294 million, in 1980 to 84 million pounds, valued at \$396 million, in 1983. During 1980-83, the Gulf area accounted for 98 percent of the quantity and value of U.S. production of raw, heads-off, shell-on shrimp. South Atlantic area production of such shrimp showed no discernible trend and ranged from 2 million pounds, valued at \$9 million, in 1982 to 1 million pounds, valued at \$5 million, in 1983. During 1980-83, the South Atlantic area accounted for only 2 percent of the quantity and value of U.S. production of raw, heads-off, shell-on shrimp.

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<sup>1/</sup> Data are not available for 1984.

Table 18.--Shrimp: U.S. production, by product forms and areas, 1980-83

Product form and area	1980	1981	1982	1983
	Quantity (1,000 pounds <u>1/</u> )			
Raw, headless, shell-on:				
Gulf-----	76,567	95,446	80,803	84,240
South Atlantic-----	1,651	2,416	2,001	1,356
Total-----	78,218	97,862	82,804	85,596
Total, United States----	78,218	97,887	82,829	85,735
Breaded <u>2/</u> :				
Gulf-----	53,068	55,581	59,558	57,441
South Atlantic-----	10,907	9,658	11,247	16,389
Total-----	63,975	65,239	70,805	73,830
Total, United States----	83,182	85,177	94,391	98,430
Peeled <u>3/</u> :				
Gulf-----	31,893	41,702	49,297	45,842
South Atlantic-----	3,018	4,310	2,600	3,845
Total-----	34,911	46,012	51,897	49,687
Total, United States----	56,961	70,552	76,422	68,805
Canned <u>4/</u> :				
Gulf-----	11,833	7,230	4,759	6,325
South Atlantic-----	-	-	-	-
Total-----	11,833	7,230	4,759	6,325
Total, United States----	15,890	12,339	7,938	9,140
Other <u>5/</u> :				
Gulf-----	1,160	1,546	1,767	2,584
South Atlantic-----	901	476	516	618
Total-----	2,061	2,022	2,283	3,202
Total United States----	6,902	6,642	7,605	6,663

See footnotes at end of table.

Table 18.--Shrimp: U.S. production, by product forms and areas, 1980-84--Continued

Product form and area	1980	1981	1982	1983
Value (1,000 dollars)				
Raw, headless, shell-on:				
Gulf-----	294,316	364,488	387,077	395,775
South Atlantic-----	6,320	7,443	9,007	5,314
Total-----	300,636	371,931	396,084	401,089
Total, United States---	300,641	372,051	396,210	401,412
Breaded 2/:				
Gulf-----	156,029	179,880	204,325	229,919
South Atlantic-----	30,630	33,142	48,577	61,458
Total-----	186,659	213,022	252,902	291,377
Total, United States---	254,283	282,026	337,604	380,990
Peeled 3/:				
Gulf-----	107,632	142,247	194,855	171,337
South Atlantic-----	9,222	22,258	12,999	18,847
Total-----	116,854	164,505	207,854	190,184
Total, United States---	197,660	245,121	300,288	262,264
Canned 4/:				
Gulf-----	58,725	36,209	28,513	39,468
South Atlantic-----	-	-	-	-
Total-----	58,725	36,209	28,513	39,468
Total, United States---	70,504	58,922	45,008	54,474
Other 5/:				
Gulf-----	2,862	6,534	5,999	8,254
South Atlantic-----	3,072	1,441	1,928	2,289
Total-----	5,934	7,975	7,927	10,543
Total, United States---	12,766	19,321	19,790	18,293

1/ Product weight.

2/ Whole; raw and cooked.

3/ Raw and cooked, including deveined.

4/ Natural pack.

5/ Includes bait shrimp, shrimp cocktails, patties and burgers, stuffed shrimp, shrimp croquettes, salad mixes, dips, pastes, pickles, soups, sauces, and sun-dried shrimp.

Source: Processed Fishery Products, Annual Summaries 1980-84, U.S. Department of Commerce, National Marine Fisheries Service.

Gulf and South Atlantic region production of breaded shrimp accounted for a smaller portion of U.S. production than was the case for heads-off, shell-on shrimp. Breaded shrimp production in the Gulf and South Atlantic region increased from 64 million pounds, valued at \$187 million, in 1980 to 74 million pounds, valued at \$291 million, in 1983. This represented about three-quarters of U.S. production of breaded shrimp during 1980-83. Breaded shrimp production in the Gulf area increased irregularly from 53 million pounds, valued at \$156 million, in 1980 to 57 million pounds, valued at \$230 million, in 1983, and accounted for 62 percent of the quantity and 61 percent of the value of U.S. breaded shrimp production during the period. South Atlantic area production of breaded shrimp increased irregularly from 11 million pounds, valued at \$31 million, in 1980 to 16 million pounds, valued at \$61 million, in 1983. During the period, the South Atlantic area accounted for 13 percent of the quantity and 14 percent of the value of U.S. breaded shrimp production, and breaded shrimp was the principal product form produced in the area.

Gulf and South Atlantic region production of peeled shrimp increased irregularly from 35 million pounds, valued at \$117 million, in 1980 to 50 million pounds, valued at \$190 million, in 1983. During the period under review, peeled-shrimp production in this region accounted for 67 percent of the quantity and 68 percent of the value of U.S. production. The bulk of peeled-shrimp production occurred in the Gulf area, where such production increased irregularly from 32 million pounds, valued at \$108 million, in 1980 to 46 million pounds, valued at \$171 million, in 1983, and accounted for 62 percent of the quantity and 61 percent of the value of U.S. peeled shrimp production during 1980-83. Production of peeled shrimp in the South Atlantic area showed no discernible trend during 1980-83 and ranged from 3 million pounds, valued at \$9 million, in 1980 to 4 million pounds, valued at \$22 million, in 1981; this represented 5 percent of the quantity and 6 percent of the value of U.S. production of peeled shrimp during 1980-83.

Canned shrimp is produced only in the Gulf area of the Gulf and South Atlantic region. Gulf area production of canned shrimp decreased irregularly from 12 million pounds, valued at \$59 million, in 1980 to 6 million pounds, valued at \$39 million, in 1983. Such production, which has been in a long-term decline, accounted for 67 percent of the quantity and 71 percent of the value of U.S. production of canned shrimp during 1980-83.

Gulf and South Atlantic region production of other shrimp products, which is of relatively minor commercial importance in the region, increased from 2 million pounds, valued at \$6 million, in 1980 to 3 million pounds, valued at \$11 million, in 1983. This accounted for 46 percent of the quantity and 34 percent of the value of U.S. production of specialty shrimp products during 1980-83.

### Concentration

Concentration in the U.S. Gulf and South Atlantic shrimp processing sector varies significantly by type of shrimp product form. The following tabulation shows concentration ratios for plants producing major shrimp product forms in the Gulf and South Atlantic region during 1980-83 <sup>1/</sup>

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<sup>1/</sup> Data are not available for 1984.

(compiled from unpublished data of the U.S. Department of Commerce, National Marine Fisheries Service, in percent of the value of total Gulf and South Atlantic production):

<u>Product form and number of firms</u>	<u>Share of total production (percent)</u>			
	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
Raw, heads-off, shell-on:				
Top 4-----	34	26	26	30
Top 8-----	48	40	42	42
Top 20-----	67	64	62	63
Breaded:				
Top 4-----	47	47	51	52
Top 8-----	56	71	70	71
Top 20-----	<u>1/</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>
Peeled:				
Top 4-----	26	21	13	26
Top 8-----	33	26	18	34
Top 20-----	<u>1/</u>	<u>1/</u>	23	40
Canned:				
Top 4-----	59	65	66	61
Top 8-----	91	91	79	93
Top 20-----	<u>1/</u>	<u>1/</u>	<u>1/</u>	<u>1/</u>

1/ Not available.

Concentration is lower for the production of raw, heads-off, shell-on shrimp and peeled shrimp, while concentration is higher for the production of breaded and canned shrimp. Concentration has increased for the production of breaded and canned shrimp and has decreased for raw, heads-off, shell-on and peeled shrimp during 1980-83.

Concentration is lower for the production of raw, heads-off, shell-on shrimp and for the production of peeled shrimp mainly because these forms involve a relatively low degree of processing and are processed by a large number of firms located in or near ports where shrimp are landed. Breaded shrimp and canned shrimp are processed by fewer, generally larger plants and require a higher degree of processing compared with the previous two products.

### Inventories

Shrimp processors and distributors maintain a substantial, though declining, amount of domestic and foreign frozen shrimp supplies in cold-storage warehouses. They have traditionally relied on these inventories to maximize their profits. They build up the inventories in the second half of the year when shrimp landings were at their peak and prices were low, and draw down inventories during the first half of the year, when landings were low and shrimp prices were high. For example, U.S. shrimp inventories were at 39 million pounds as of June 30, 1983 and at 71 million pounds as of December 31, 1983 (table 19).

Table 19.--Shrimp: U.S. inventories, by product forms, 1980-84

(In thousands of pounds, product weight)

Year and product form	Jan. 1	Mar. 31	June 30	Sept. 30	Dec. 31
1980:					
Raw, headless-----	46,866	41,248	17,735	23,118	31,612
Breaded-----	6,838	6,196	4,784	5,533	6,360
Peeled-----	20,101	18,859	13,914	16,876	19,111
Unclassified-----	13,638	12,338	11,812	10,976	20,595
Total-----	87,443	78,641	48,245	56,503	77,678
1981:					
Raw, headless-----	31,612	27,400	20,023	26,969	27,740
Breaded-----	6,360	5,231	5,141	4,465	5,577
Peeled-----	19,111	14,713	14,544	15,878	15,265
Unclassified-----	20,595	13,592	7,850	10,914	16,289
Total-----	77,678	60,936	47,558	58,226	64,871
1982:					
Raw, headless-----	27,740	16,075	14,242	17,637	24,580
Breaded-----	5,577	4,672	4,232	4,549	5,361
Peeled-----	15,265	15,511	13,348	13,441	15,695
Unclassified-----	16,289	10,634	8,004	5,272	11,916
Total-----	64,871	46,892	39,826	40,899	57,552
1983:					
Raw, headless-----	24,580	18,498	15,693	23,519	26,521
Breaded-----	5,361	4,167	3,777	4,343	5,002
Peeled-----	15,695	14,812	12,280	18,313	19,865
Unclassified-----	11,916	8,246	7,324	13,487	19,274
Total-----	57,552	45,723	39,074	59,662	70,662
1984: 1/					
Raw, headless-----	26,521	20,709	19,690	27,438	31,062
Breaded-----	5,002	6,522	3,962	4,191	3,976
Peeled-----	19,865	11,813	10,268	13,453	12,859
Unclassified-----	19,274	21,594	15,846	13,770	13,154
Total-----	70,662	60,638	49,766	58,852	61,051

1/ Preliminary.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

U.S. inventories of shrimp generally declined during 1980-84. Total shrimp inventories fell from 78 million pounds in December 1980 to 58 million pounds in December 1982. They rose to 71 million pounds in December 1983 and then fell to 61 million pounds in December 1984 (table 19). The general decline in inventories during 1980-84 was due, in part, to high interest rates and the importation of aquaculture-produced shrimp, which has made the U.S. supply of shrimp less seasonal. The higher levels of inventories in 1983 and 1984 relative to 1982 levels reflects, in part, record-high levels of imports and a decline in interest rates during the period.

Table 20 shows changes in U.S. shrimp inventories on a quarterly basis during 1980-84. Inventories declined during the first two quarters and increased during the second two quarters for each year during the period. During January-March, 1983, for example, inventories decreased by 12 million pounds, and during June-September, 1983, inventories increased by 21 million pounds.

Table 21 shows U.S. shrimp beginning and ending inventories during 1980-84 (heads-off basis). Inventories showed a downward trend during the period. In 1981, beginning inventories were at 110 million pounds, while ending inventories dropped to 90 million pounds. By December 1982, inventories dropped further to 77 million pounds. Inventories were at higher levels in 1983, but by December 1984, inventories declined to 82 million pounds, following the trend exhibited during 1980-82.

Financial experience of U.S. Gulf and South Atlantic region processors of raw, heads-off, shell-on shrimp <sup>1/</sup>

During 1982-84, net sales of processed shrimp declined annually from \$135 million to \$125 million, or by 7 percent (table 22). Operating income fell from \$3.1 million, or 2.3 percent of net sales, in 1982 to \$521,000, or 0.4 percent of net sales, in 1983. In 1984, operating income rose to \$1.1 million, or 9 percent of net sales. U.S. shrimp processors in this category

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<sup>1/</sup> The Commission sent questionnaires to 122 shrimp processors in the Gulf and South Atlantic region requesting data on financial experience during 1982-84. Processors were categorized according to the major product form they produced, with the criteria for being included in a specific category being that more than 50 percent of the total value of their production had to be in that product form. Categories included raw, heads-off, shell-on; peeled; breaded; and canned. Usable responses were received from processors in the raw, heads-off, shell-on and the canned shrimp processor categories. In the raw, heads-off, shell-on processor category, there were 14 usable responses, and in the canned-processor category, there were 6 usable responses. The respondents in the raw, heads-off, shell-on category accounted for at least 22 percent of the quantity of U.S. Gulf and South Atlantic production of that shrimp product form (only 11 of 14 respondents reported production data), and the respondents in the canned-shrimp category accounted for 87 percent of the quantity of U.S. Gulf and South Atlantic production, both based on 1983 data.

The data reported by respondents are for total plant operations and, as such, may include the production of shrimp products outside of the category they are in. Data are aggregated for all respondents, and totals are given for each item.



Table 20.--Shrimp: Changes in U.S. inventory, by product forms, 1980-84

(In thousands of pounds, product weight)

Year and product form	From Jan. 1 to Mar. 31	From Mar. 31 to June 30	From June 30 to Sept. 30	From Sept. 30 to Dec. 31
1980:				
Raw, headless-----	-5,618	-23,513	+5,383	+8,494
Breaded-----	-642	-1,412	+749	+827
Peeled-----	-1,242	-4,945	+2,962	+2,235
Unclassified-----	-1,300	-526	-836	+9,619
Total-----	-8,802	-30,396	+8,258	+21,175
1981:				
Raw, headless-----	-4,212	-7,377	+6,946	+771
Breaded-----	-1,129	-90	-676	+1,112
Peeled-----	-4,398	-169	+1,334	-613
Unclassified-----	-7,003	-5,742	+3,064	+5,375
Total-----	-16,742	-13,378	+10,668	+6,645
1982:				
Raw, headless-----	-11,665	-1,833	+3,395	+6,943
Breaded-----	-905	-440	+317	+812
Peeled-----	+246	-2,163	+93	+2,254
Unclassified-----	-5,655	-2,630	-2,732	+6,644
Total-----	-17,979	-7,066	+1,073	+16,653
1983: <u>1/</u>				
Raw, headless-----	-6,082	-2,805	+7,826	+3,002
Breaded-----	-1,194	-390	+566	+659
Peeled-----	-883	-2,532	+6,033	+1,552
Unclassified-----	-3,670	-922	+6,163	+5,787
Total-----	-11,829	-6,649	+20,588	+11,000
1984: <u>1/</u>				
Raw, headless-----	-5,812	-1,019	+7,748	+3,624
Breaded-----	+1,520	-2,560	+229	-215
Peeled-----	-8,052	-1,545	+3,185	-594
Unclassified-----	+2,320	-5,748	-2,076	-616
Total-----	-10,024	-10,872	+9,086	+2,199

1/ Preliminary.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Table 21.--Shrimp: U.S. beginning and ending inventories and changes in inventory, by product forms, 1980-84

(In thousands of pounds, heads-off weight)

Year and Product form	Beginning inventories in January	Ending inventories in December	Change in inventory
1980:			
Raw, headless-----	46,866	31,612	-15,254
Breaded-----	4,308	4,007	- 301
Peeled-----	25,729	24,462	- 1,267
Unclassified-----	32,731	49,428	+16,697
Total-----	109,634	109,509	- 125
1981:			
Raw, headless-----	31,612	27,740	- 3,872
Breaded-----	4,007	3,514	- 493
Peeled-----	24,462	19,539	- 4,923
Unclassified-----	49,428	39,094	-10,334
Total-----	109,509	89,887	-19,622
1982:			
Raw, headless-----	27,740	24,580	- 3,160
Breaded-----	3,514	3,377	- 137
Peeled-----	19,539	20,090	+ 551
Unclassified-----	39,094	28,598	-10,496
Total-----	89,887	76,645	-13,242
1983 <u>1</u> / <sub>1</sub> :			
Raw, headless-----	24,580	26,521	+ 1,941
Breaded-----	3,377	3,151	- 226
Peeled-----	20,090	25,427	+ 5,337
Unclassified-----	28,598	46,258	+17,660
Total-----	76,645	101,357	+24,712
1984:			
Raw, headless-----	26,521	31,062	+4,541
Breaded-----	3,151	2,505	-646
Peeled-----	25,427	16,460	-8,967
Unclassified-----	46,258	31,570	-14,688
Total-----	101,357	81,597	-19,760

1/ Preliminary.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Product forms converted to heads-off weight.

Table 22.--Income-and-loss experience of 14 U.S. Gulf and South Atlantic region processors on their operations processing heads-off, shell-on shrimp, 1982-84

Item	1982	1983	1984
Net sales-----1,000 dollars---	135,002	127,071	124,888
Cost of shrimp processed-----do---	124,446	119,832	116,915
Gross income-----do---	10,556	7,239	7,973
General, selling, and administrative expenses-----do---	7,475	6,718	6,890
Operating income-----do---	3,081	521	1,083
Other income or (expense):			
Interest expense-----do---	1,356	1,508	1,640
All other income or (expense)-net-----do---	(249)	232	152
Total income or (expense)-net-----do---	(1,107)	(1,276)	(1,488)
Net income or (loss) before income taxes-----do---	1,974	(755)	(405)
Ratio to net sales:			
Gross income-----percent---	7.8	5.7	6.4
Operating income-----do---	2.3	.4	.9
Net income or (loss) before income taxes-----do---	1.5	(.6)	(.3)
Cost of shrimp processed-----do---	92.2	94.3	93.6
General, selling, and administrative expenses-----do---	5.5	5.3	5.5

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

incurred interest expense ranging from \$1.4 million in 1982 to \$1.6 million in 1984 and earned a small net income equal to 1.5 percent of net sales in 1982. In 1983 and 1984, they sustained net losses equal to 0.6 percent and 0.3 percent of net sales, respectively.

#### Financial experience of U.S. Gulf and South Atlantic region processors of canned shrimp

Net sales of processors of canned shrimp was \$39.1 million in 1984, 10 percent less than the \$43.5 million level achieved in 1983 and 2 percent less than the \$40.0 million level achieved in 1982 (table 23). U.S. Gulf and South Atlantic shrimp canners earned an operating income of \$581,000, or 1.5 percent of net sales, in 1984, which was substantially less than the 1982 and 1983 operating incomes of 3.0 million, or 7.4 percent of net sales, and \$2.0 million, or 4.5 percent of net sales, respectively. Interest expense averaged nearly \$1.3 million annually during 1982-84, and net income before income taxes was equal to only 4.4 percent of net sales. In 1983 and 1984, canners sustained net losses equal to 1.6 percent and 1.7 percent of net sales, respectively.

Table 23.--Income-and-loss experience of 6 U.S. Gulf area canners on their operations canning shrimp, 1982-84

Item	1982	1983	1984
Net sales-----1,000 dollars---	40,007	43,471	39,127
Cost of shrimp canned-----do-----	32,220	36,659	31,883
Gross income-----do-----	7,787	6,812	7,244
Officers' or partners' salaries-----do-----	719	657	740
General, selling, and administrative expense-----do-----	4,072	4,203	5,923
Operating income-----do-----	2,996	1,952	581
Other income or (expense):			
Interest expense-----do-----	1,246	1,289	1,261
All other income or (expense)-net-----do-----	8	20	4
Total other income or (expense)-net-----do-----	1,238	1,269	1,257
Net income or (loss) before income taxes-----do-----	1,758	(683)	(676)
Ratio to net sales:			
Gross income-----percent-----	19.5	15.7	18.5
Operating income-----do-----	7.4	4.5	1.5
Net income or (loss) before income taxes-----do-----	4.4	(1.6)	(1.7)
Cost of shrimp canned-----do-----	80.5	84.3	81.5
Officers' or partners' salaries-----do-----	1.8	1.5	1.9
General, selling, and administrative expenses-----do-----	10.2	9.7	15.1

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

### Costs

The following discussion on costs in the U.S. Gulf and South Atlantic shrimp-processing sector is presented in three sections. These include costs by type of plant (i.e., by principal shrimp product form produced), trends in major cost items over a period of time, and costs reported by questionnaire respondents.

Costs by type of plant.--The data on shrimp-processing costs used in this section were obtained by a study sponsored by the National Fisheries Institute in cooperation with the National Marine Fisheries Service. <sup>1/</sup> Table 24 shows cost items per pound of production and as a percentage of total cost for

<sup>1/</sup> The U.S. Shrimp Industry, An Economic Profile For Policy and Regulatory Analysis, National Fisheries Institute and National Marine Fisheries Service, January 1983. The study presented data for all U.S. shrimp processors whose sales of the particular product forms of shrimp accounted for 95 percent of their total sales during 1982. As such, costs can neither be separated for Gulf and South Atlantic region processors nor can they be compared over time. However, relative cost items can be compared, and, as the majority of shrimp processors are located in the Gulf and South Atlantic region, the costs likely will not differ greatly between the region and the United States as a whole. The study costs did not include the cost of shrimp used as a raw material for most of the product forms included; thus, the cost of raw material, which is substantial, is not included in the data in this section.

Table 24.--Costs and share of cost components of processing headless, shell-on shrimp, by size of plant, 1982

Cost item	Large plants		Medium plants		Small plants	
	Dollars per pound	Share of total cost	Dollars per pound	Share of total cost	Dollars per pound	Share of total cost
Operating costs:		Percent		Percent		Percent
Labor	0.10	42	0.11	42	0.10	32
Packaging	.03	13	.03	11	.03	10
Utilities	.02	8	.02	8	.05	16
Marketing	.03	13	.03	11	.03	10
Maintenance and other	.01	4	.01	4	.01	3
Fixed costs:						
Depreciation and rent	.01	4	.01	4	.02	6
Interest	.02	8	.03	11	.03	10
Administrative costs	.01	4	.01	4	.02	6
Other	.01	4	.01	4	.02	6
Total processing costs	.24	100	.26	100	.31	100

Source: The U.S. Shrimp Industry, An Economic Profile For Policy and Regulatory Analysts, National Fisheries Institute and National Marine Fisheries Service, January 1983.

Note.--Because of rounding, figures may not add to the totals shown.

processing frozen raw, heads-off, shell-on shrimp during 1982. The plants are separated by size, with small plants defined as having annual sales of less than \$1 million; medium plants with sales of at least \$1 million but less than \$5 million; and large plants with sales of \$5 million or more. Labor was, by far, the principal cost item for processing raw, heads-off, shell-on shrimp. Labor costs accounted for 42 percent of total processing costs in medium and large plants and accounted for 32 percent of total processing costs in small plants, and ranged from 10 to 11 cents per pound. Other major operating cost items were much lower in relation to labor and included packaging, utilities, marketing, maintenance, and "other." These costs ranged from 3 percent to 16 percent of total processing costs and ranged from 1 to 5 cents per pound. Fixed costs, including depreciation and rent, interest, administrative costs, and "other" ranged from 1 to 3 cents per pound. Total costs of processing heads-off, shell-on shrimp were 24 cents per pound for large plants, 26 cents per pound for medium plants, and 31 cents per pound for small plants, indicating economies of scale.

Table 25 presents processing costs for producing peeled shrimp. Plant-size definitions are the same as for frozen raw, heads-off, shell-on shrimp, and data are combined for medium and small plants. Labor was the major cost item, accounting for nearly half of total processing costs in all three plant

Table 25.--Costs and share of cost components of processing peeled shrimp, by size of plant, 1982

Cost item	Large plants		Medium and small plants	
	Dollars per pound	Share of total cost	Dollars per pound	Share of total cost
		Percent		Percent
Operating costs:				
Labor-----	0.20	49	0.25	49
Packaging-----	.05	12	.06	12
Utilities-----	.04	10	.05	10
Marketing-----	.03	7	.01	6
Maintenance and other-----	.01	2	.01	2
Fixed costs:				
Depreciation and rent-----	.02	5	.02	4
Interest-----	.04	10	.05	10
Administrative costs-----	.01	2	.02	4
Other-----	.01	2	.02	4
Total processing costs----	.41	100	.51	100

Source: The U.S. Shrimp Industry, An Economic Profile For Policy and Regulatory Analysts, National Fisheries Institute and National Marine Fisheries Service, January 1983.

Note.--Because of rounding, figures may not add to the totals shown.

size categories, and ranged from 20 cents per pound in large plants to 25 cents per pound in medium and small plants. Other operating costs (the same categories as discussed above) ranged from 2 percent to 12 percent of total costs and from 1 cent per pound to 6 cents per pound. Total costs of processing peeled shrimp were 41 cents per pound for large plants and 51 cents per pound for medium and small plants, again indicating economies of scale.

Table 26 shows processing costs for breaded shrimp. The size categories for breaded shrimp plants are as follows: small, less than \$3 million in sales; medium, at least \$3 million but less than \$15 million in sales; large, \$15 million or more in sales. Labor costs, which were by far the principal cost item, ranged from 35 percent to 40 percent of total costs and from 32 cents per pound for large plants to 60 cents per pound for small plants. Other cost items ranged from zero to 16 percent of total costs and from zero to 20 cents per pound. Total processing costs for breaded shrimp were 92 cents per pound for large plants, \$1.10 per pound for medium plants, and \$1.50 per pound for small plants, again indicating economies of scale.

Table 27 shows processing costs for producing canned shrimp. The size categories for such plants are as follows: small, less than \$1 million in sales; medium, at least \$1 million but less than \$5 million in sales; large, \$5 million or more in sales. Cost items are presented in dollars per case of canned shrimp 1/, as well as a percentage of total costs. The principal cost item was cans, which accounted for from 25 percent to 41 percent of total processing costs and amounted to \$3.00 per case for all size plants. Utilities, marketing, and maintenance collectively were the next important cost item, accounting for from 23 percent to 25 percent of total costs and ranging from \$1.80 to \$3.05 per case. Labor costs, which were the principal cost item in processing all other forms of shrimp, were third, accounting for from 14 percent to 20 percent of total costs and ranging from \$1.50 to \$1.70 per case. Other costs ranged from less than 1 percent to 19 percent of total costs and from \$0.10 per case to \$2.30 per case. Total processing costs were \$7.40 per case for large plants, \$9.00 per case for medium plants, and \$12.00 per case for small plants, again indicating economies of size. Total processing costs, converted to a per-pound, drained-weight, basis, were \$1.10 per pound for large plants, \$1.33 per pound for medium plants, and \$1.78 per pound for small plants.

Table 28 shows total processing costs for processing each shrimp product form. As would be expected, processing costs increase as the level of shrimp processing increases. Canned shrimp processing costs were highest, about five times greater than processing costs for frozen, raw, heads-off, shell-on shrimp. Breaded shrimp processing costs were about four times greater, and those for peeled shrimp about twice as high as the processing costs for frozen, raw, heads-off, shell-on shrimp.

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1/ A case is equal to 24 cans each containing 4 1/4 ounces (drained weight) of shrimp meat.

Table 26.--Costs and share of cost components of processing breaded shrimp, by size of plant, 1982

Cost item	Large plants		Medium plants		Small plants	
	Dollars per pound	Share of total cost	Dollars per pound	Share of total cost	Dollars per pound	Share of total cost
		Percent		Percent		Percent
Operating costs:						
Labor	0.32	35	0.40	36	0.60	40
Packaging 1/	.15	16	.18	16	.20	13
Utilities 2/	.11	12	.10	9	.12	8
Marketing and other	.09	10	.12	11	.20	13
Fixed costs:						
Depreciation	.04	4	.08	7	.12	8
Interest	.08	9	.10	9	-	-
Administrative costs	.10	11	.08	7	.16	11
Other	.03	3	.04	4	.10	7
Total processing costs	.92	100	1.10	100	1.50	100

1/ Breading and batter, cardboard, labels.  
 2/ Includes water.

Source: The U.S. Shrimp Industry. An Economic Profile For Policy and Regulatory Analysts, National Fisheries Institute and National Marine Fisheries Service, January 1983.

Note.--Because of rounding, figures may not add to the totals shown.



Table 27.--Costs and share of cost components of processing canned shrimp, by size of plant, 1982

Cost item	Large plants		Medium plants		Small plants	
	Dollars per case	Share of total cost	Dollars per case	Share of total cost	Dollars per case	Share of total cost
		Percent		Percent		Percent
Operating costs:						
Labor-----	1.50	20	1.60	18	1.70	14
Cans-----	3.00	41	3.00	33	3.00	25
Utilities, marketing, and maintenance-----	1.80	24	2.05	23	3.05	25
Fixed costs:						
Interest-----	.10	1	1.00	11	1.25	10
Administrative costs-----	.60	8	.75	8	2.30	19
Depreciation-----	.30	4	.50	6	.60	5
Other-----	.10	1	.10	1	.10	1
Total processing costs-----	7.40	100	9.00	100	12.00	100

Source: The U.S. Shrimp Industry, An Economic Profile For Policy and Regulatory Analysts, National Fisheries Institute and National Marine Fisheries Service, January 1983.

Note:--Because of rounding, figures may not add to the totals shown.

Table 28.--Total processing costs for U.S. shrimp-processing plants, by types of product and by plant sizes, 1982

(In dollars per pound, processed weight)				
Type of product	Large plants	Medium plants	Small plants	
Headless, shell-on-----	0.24	0.26	0.31	
Peeled-----	.41	.51	.51	
Breaded-----	.92	1.10	1.50	
Canned-----	1.10	1.33	1.78	

Source: The U.S. Shrimp Industry, An Economic Profile For Policy and Regulatory Analysts, National Fisheries Institute and National Marine Fisheries Service, January 1983.

Trends in major cost items.--Major cost items for shrimp-processing plants include raw material, labor, utilities, and interest. Raw-material costs (shrimp) to shrimp processors can be approximated by the unit value of shrimp landings. During 1980-84, the average annual unit value of shrimp landings (heads-on basis) in the Gulf and South Atlantic region increased from \$1.49 per pound in 1980 to \$2.16 per pound in 1983, or by 45 percent (table 4). The unit value then dropped to \$1.73 per pound in 1984, or by 20 percent. In the long term, the unit value rose from \$0.48 per pound in 1970 to \$1.73 per pound in 1983, or by 260 percent.

Labor accounts for a substantial portion of shrimp-processing costs. Shrimp-processing plants in the Gulf and South Atlantic region generally base their employees' wages on the minimum wage rate set by the Federal Government, as unionization of shrimp plant employees is uncommon. The following tabulation shows the Federal minimum wage during 1970-84 (obtained from the U.S. Department of Labor, in dollars per hour):

<u>Period</u>	<u>Minimum wage</u> <u>(dollars per</u> <u>hour)</u>	<u>Increase from</u> <u>previous period</u> <u>(percent)</u>
1970-74-----	2.00	-
1975-----	2.10	5
1976-----	2.30	10
1977-----	2.30	0
1978-----	2.65	15
1979-----	2.90	9
1980-----	3.10	7
1981-84-----	3.35	8

During 1980-84, the minimum wage increased only from 1980 to 1981, rising from \$3.10 per hour the former year to \$3.35 per hour the latter year (or by 8 percent). In the long term, the minimum wage rose from \$2.00 per hour during

1970-74 to \$3.35 per hour during 1981-84, or by 68 percent. The minimum wage showed the greatest increase from 1977 to 1978, when it rose 15 percent.

Utilities, particularly electricity, represent another major cost item for shrimp processors. The following tabulation shows an annual index for electricity costs in the South during 1980-84 (derived from official statistics of the U.S. Department of Labor, in percent (1980=100) 1/):

<u>Year</u>	<u>Index</u> <u>(percent)</u>
1980-----	100
1981-----	118
1982-----	131
1983-----	136
1984-----	144

Electricity costs rose 44 percent in the region during 1980-84, according to this index.

Interest rates represent both the cost of capital and the cost of carrying inventories for shrimp processors. Appendix J shows New York prime interest rates from 1919 to 1985. Interest rates reached record highs during 1980-84, fluctuating between about 11 percent and 21 percent. Interest rates generally declined between 1981 (16-20 percent) and 1984 (11-13 percent) but were still much above the historical levels of about 5-7 percent.

Costs reported by questionnaire respondents.--Table 22 includes major cost items during 1980-84 for processors of raw, heads-off, shell-on shrimp that responded to Commission questionnaires. The main cost item, by far, was shrimp used for raw material. The cost of shrimp ranged from 92.2 percent of net sales in 1982 to 94.3 percent in 1983. General, selling, and administrative expenses ranged from 5.3 percent of net sales in 1983 to 5.5 percent in 1982 and 1984.

Table 23 includes major cost items during 1982-84 for processors of canned shrimp that responded to Commission questionnaires. Again, raw material (shrimp) was the primary cost item, accounting for from 80.5 percent of net sales in 1982 to 84.3 percent in 1983. General, selling, and administrative expenses, the next major cost item, ranged from 9.7 percent of net sales in 1983 to 15.1 percent in 1984. Officers' or partners' salaries were a relatively minor cost item and ranged from 1.5 percent of net sales in 1983 to 1.9 percent in 1984.

### Productivity

Productivity in the shrimp processing sector of the Gulf and South Atlantic region is measured by the average annual production per employee. The following tabulation shows production, the number of employees, and production per employee in shrimp processing plants in the subject region

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1/ Consumer price index series CUU 57 0300 2601.

during 1980-83 1/ (compiled from unpublished data of the U.S. Department of Commerce, National Marine Fisheries Service):

<u>Product form</u> <u>and year</u>	<u>Production</u> <u>(1,000 pounds)</u>	<u>Number of</u> <u>employees <u>1/</u></u>	<u>Production per</u> <u>employee</u> <u>(pounds)</u>
Raw, heads-off, shell-on:			
1980-----	78,218	4,872	16,055
1981-----	97,862	6,741	14,517
1982-----	82,804	6,508	12,723
1983-----	63,975	7,290	11,742
Breaded:			
1980-----	63,975	4,319	14,812
1981-----	65,239	4,407	14,803
1982-----	70,805	4,503	15,724
1983-----	73,830	4,943	14,936
Peeled:			
1980-----	34,911	4,162	8,388
1981-----	46,012	5,156	8,294
1982-----	51,897	5,696	9,110
1983-----	49,687	5,252	9,461
Canned:			
1980-----	11,833	599	19,755
1981-----	7,230	694	10,418
1982-----	4,759	638	7,459
1983-----	6,325	613	10,318

1/ Includes all employees in plants that produce the subject product form.

Productivity in plants that produce raw, heads-off, shell-on shrimp declined from 16,055 pounds per employee in 1980 to 11,742 pounds per employee in 1983, or by 37 percent. Productivity in plants that produce breaded shrimp increased slightly from 14,812 pounds per employee in 1980 to 14,936 pounds per employee in 1983, or by about 1 percent. Plants producing peeled shrimp exhibited an irregular increase in productivity from 8,388 pounds per employee in 1980 to 9,461 pounds per employee in 1983, an increase of 13 percent. Productivity in plants producing canned shrimp declined irregularly from 19,755 pounds per employee in 1980 to 10,318 pounds per employee in 1983, or by 48 percent.

The usefulness of this method of measuring productivity is limited by a number of factors. First, an individual plant may produce a variety of shrimp products as well as other fish and shellfish products, making product-specific productivity measurement difficult. Next, shrimp processing is seasonal (to a varying degree depending on the product form) and productivity may be much higher during peak production periods than is indicated by annual averages. Finally, variations may exist in individual processing operations in terms of the degree of utilization of machinery, employee tasks, and so forth, that would affect the aggregate productivity measurement for the industry.

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1/ Data are not available for 1984.

## Aquaculture Sector

The aquaculture sector of the U.S. shrimp industry refers to those operations that produce shrimp in a controlled environment. Aquaculture shrimp production involves several stages: hatching eggs; growing shrimp through various larval phases; and growing postlarval shrimp to a mature, commercially marketable size. Some operations have experimented with "polyculture," where different types of fish and/or shellfish are grown in ponds simultaneously. Currently, the scope of shrimp aquaculture in the United States is small and is limited mainly by climate and technology. Costs of production are prohibitive in many cases, as the climate limits aquaculture operations to one or two crops annually, and there are technological barriers (such as production of shrimp larvae) to be overcome. However, U.S. shrimp aquaculture activity has been increasing in recent years as U.S. firms have gained expertise from investments in overseas operations and as techniques developed through research in the United States have been applied in commercial shrimp-farming operations.

Some industry sources contend that the future for shrimp aquaculture in the United States is limited by these factors whereas others believe that there is potential for substantial growth in the U.S. shrimp-aquaculture sector. Factors that may contribute to this growth include increased production costs, shortages of seed stock, and inadequate infrastructure (electricity, transportation, equipment) in existing foreign aquaculture-producing areas. <sup>1/</sup> Also, rising costs of harvesting wild shrimp in the United States may enhance the competitiveness of the U.S. shrimp aquaculture sector in the future.

Shrimp aquaculture operations produce whole shrimp, which may be further processed by the operation (sometimes under contract to processors) or may be sold to processors. Most shrimp aquaculture operations have concentrated on saltwater species, but some freshwater shrimp are produced.

### Technology

Shrimp aquaculture may employ one of three general methods of production--extensive, semi-intensive, and intensive. Extensive shrimp culture involves the production of shrimp with a minimal amount of control. Shrimp are usually grown in large (150 acres or so) earthen ponds. Stocking density is low, and there is little or no feeding, water circulation (for oxygen), and predator control. Production yields in this type of operation are relatively low, but it is generally the least costly method of shrimp farming. Semi-intensive culture refers to systems that control production to a greater degree than extensive systems, and are characterized by smaller ponds, higher stocking densities, and greater control of feeding, water circulation, and predation. Intensive systems exhibit a high degree of control of production. Under this system, shrimp are grown in small ponds (one-half acre or so) or covered raceways (or tanks), feeding is comprehensive, water is circulated at a high rate, and there is a greater degree of predator control. Production yields are greatest for intensive systems, but costs are also higher. Most U.S. shrimp aquaculture operations use extensive or semi-intensive methods owing to the environmental and technological constraints discussed earlier.

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<sup>1/</sup> Testimony of Dr. Thomas D. McIlwain, transcript of hearing, p. 284.

### Number of operations

According to industry sources, in 1984, there were 10 commercial shrimp aquaculture farms operating on the mainland United States on 2,476 acres. 1/ Of these farms, six were in Texas, two in South Carolina, and one each in Louisiana and California. 2/ In addition, there was an experimental shrimp aquaculture facility in both Texas and South Carolina. Two commercial hatcheries, located in Florida, produced and sold shrimp postlarvae. During 1985, the number of shrimp aquaculture farms is expected to increase to 12, covering 3,093 acres. These mainland shrimp farms produce mainly saltwater species and a lesser amount of freshwater shrimp species.

Freshwater shrimp (Macrobrachium rosenbergii) is produced to a greater degree in Hawaii. In 1982, there were 21 shrimp farms, comprising 300 acres of ponds, that produced freshwater shrimp (also called Hawaiian prawn) in Hawaii. 3/ These farms also produce saltwater shrimp to a lesser degree.

### Production

Official data on U.S. commercial shrimp aquaculture production are not available, as the industry is relatively new. However, mainland production has been estimated at 307,000 pounds in 1984 and was projected to be 2.5 million pounds in 1985. 4/ Hawaiian production in 1982 was estimated at 316,000 pounds, valued at \$1.5 million. 5/

The production of shrimp in the United States by aquaculture represents a very minor share of U.S. shrimp production. Using an estimated annual level of 1 million pounds (heads-on weight), U.S. aquaculture shrimp production was 0.3 percent of the 5-year annual average U.S. wild shrimp catch of 306 million pounds (heads-on weight) during 1980-84.

### Costs

Operating costs may vary considerably by individual shrimp aquaculture operation, depending mainly on the type of production method (extensive, semi-intensive, intensive), size of the operation, and the geographic location (climate, land values, input costs). Since the U.S. commercial shrimp aquaculture industry is relatively new, actual cost data are not available. In a recent study, cost estimates were presented for a 250 acre shrimp production unit under various assumptions (production per acre, pond stocking density, shrimp prices, and others) detailing three different cases (best, expected, and least). 6/ These estimates are believed to be representative of general cost characteristics of U.S. shrimp aquaculture production facilities.

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1/ Testimony of Dr. Thomas D. McIlwain, transcript of hearing, p. 285-286.

2/ Coastal Aquaculture, Vol II., No. I., Texas Agricultural Extension Service, Jan. 11, 1985.

3/ "Prawn and Shrimp Farming in Hawaii: An Update," Aquaculture Digest, Vol. 8, No. 12, Bob Rosenberry, Publisher, December, 1983.

4/ Testimony of Dr. Thomas D. McIlwain, transcript of hearing, p. 285-286.

5/ "Prawn and Shrimp Farming in Hawaii: An Update," Aquaculture Digest, Vol. 8, No. 12, Bob Rosenberry, Publisher, December, 1983.

6/ Lawrence, A., Johns, M., Griffin, W., Shrimp Mariculture: State of the Art, Texas A&M Sea Grant College Program, October 1983.

The following tabulation shows these costs, on an annual basis as a percentage of gross revenue, for the expected (or average) case:

<u>Item</u>	<u>Dollars</u>	<u>Share (percent) of gross revenue</u>
Gross revenue-----	1,117,200	100
Variable costs:		
Feed-----	234,301	21
Seedstock-----	150,000	13
Labor-----	56,546	5
Other-----	<u>73,157</u>	<u>7</u>
Total-----	513,914	46
Fixed costs:		
Interest-----	267,302	24
Depreciation-----	86,254	8
Salaries-----	43,200	4
Other-----	<u>20,268</u>	<u>2</u>
Total-----	417,024	37

According to these estimates, feed was the largest variable cost item, amounting to 21 percent of gross revenue, followed by seedstock (13 percent), labor (5 percent), and other (7 percent). Interest was the primary fixed cost item (24 percent of gross revenue), followed by depreciation (8 percent), salaries (4 percent), and other (2 percent).

The analysis also gave a "break-even" price for the shrimp to be sold at. This price, which is comparable to the ex-vessel price received by shrimp harvesters, was estimated to be \$4.00 per pound for 16 count shrimp (heads-off basis) for the expected (average) case.

### Productivity

Productivity in shrimp aquaculture is measured at different stages of production. First, productivity in the hatching of shrimp eggs and the maturing of the shrimp to various larval stages is measured by the survival rate. As shrimp hatchery production in the United States is relatively new and is carried out by only a few firms, specific data on productivity are not available. However, a recent report stated that a survival rate of 50 percent for newly hatched larvae to reach the 5 or 10 day old postlarvae age, which is the age that the postlarvae is usually placed in maturation (grow-out) facilities, is the generally accepted norm in the industry. <sup>1/</sup> Also, according to this study, the overall survival rate, from egg to harvesting from the pond, should be at least 20 percent for a commercial shrimp aquaculture operation. This compares with an estimated overall survival rate of less than one percent for wild shrimp.

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<sup>1/</sup> Ibid.

Productivity in the maturation stage for shrimp aquaculture operations is usually measured by the yield of shrimp per acre of pond. This measure varies mainly by the type of operation (i.e., extensive, semi-intensive, or intensive) and also by differences in factors common to each type of operation, such as pond stocking density, level of feeding, and predator control. Again, specific data are not available on the yield of shrimp per acre for U.S. shrimp aquaculture operations. However, according to an industry newsletter, in 1984, extensive shrimp aquaculture operations in the United States yielded 50-300 pounds (heads-on weight) of shrimp per acre, semi-intensive operations yielded up to about 2,600 pounds per acre, and intensive operations yielded up to 3,500 pounds per acre. 1/

An important, basic factor which affects productivity in shrimp aquaculture is the efficiency with which shrimp can convert feed into meat. This measure of efficiency is generally referred to as the feed-conversion ratio and represents the amount of feed consumed per unit of production. This ratio may be affected by a number of factors such as water temperature, species of shrimp, and feed composition. Industry members have estimated that the feed-conversion ration for shrimp ranges between 2.5-5 pounds of feed to produce 1 pound of live shrimp. 2/ This ratio may be compared to those of other meat animals. In general, for efficient operations, the feed conversion ratio for broilers (chickens) is about 2 to 1, for hogs about 4 to 1, and for cattle about 8 to 1.

When comparing these ratios, the relative cost of feed ingredients and manufacturing must be considered. Although the feed-conversion ratio is least efficient for cattle, a significant portion of cattle feed consists of relatively low-cost roughage, such as hay. Shrimp feed, in contrast, is more expensive in that it contains relatively high-cost ingredients such as protein supplements and it must be milled into finer particles, thus increasing manufacturing costs.

Also to be considered in analyzing the importance of the feed-conversion ratio is the extent to which feed is utilized in a particular aquaculture operation. As mentioned earlier, extensive operations generally utilize a low level of feeding while intensive operations use feed to a great degree. Thus, the relevance of the feed-conversion ratio differs greatly according to the type of production method employed by a particular shrimp aquaculture operation.

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1/ Coastal Aquaculture, Vol. II, No. 1, Texas Agricultural Extension Service, Jan. 11, 1985.

2/ Testimony of Dr. Thomas D. McIlwain, transcript of hearing, p. 288.



## GOVERNMENT INVOLVEMENT IN THE SHRIMP FISHERY

## Resource Availability and Management

The shrimp fisheries of the Gulf and South Atlantic areas are unique among major U.S. fisheries in their population dynamics and yield-effort relationships and the consequent implications for resource availability and management. Most commercial fisheries are classic examples of "open access" resources, which are characterized by two destructive tendencies when unregulated. First, an unregulated fishery allows unrestricted access to the resource by all who wish to harvest it; thus, at some point, congestion will cause the efforts of one individual to have an adverse effect on those of other harvesters. This will frequently produce an industry that is inefficient, overcapitalized, and destined to low economic returns. Second, the resource may be so exploited as to put it in a precarious position. The tendency toward low returns and possible resource damage is the fundamental impetus for regulation (usually by Government) of commercial fisheries, for example by setting annual catch quotas or restricting vessel licenses.

In the shrimp fisheries, however, the second tendency, that toward congestion, is of lesser importance than in other fisheries. Shrimp are an annual crop; although they can live for many years, they generally reach maturity and harvestable size within 1 year of age (particularly warmwater species, which are of primary concern in this investigation). Although this could seem to indicate that a year's abundance of shrimp depends heavily on how many shrimp were harvested in the previous year, such is not the case for a variety of reasons. Overfishing of the Gulf and South Atlantic shrimp resources is probably impossible, given present technology and realistically probable fishing effort levels. It is not likely that fishing effort could increase in the shrimp fisheries to such an extent that the total catch of shrimp would fall because of depleted resources. Shrimp populations are very resilient to fishing, in large part because of breeding patterns; for the most part, shrimp are harvested after they have had a chance to spawn. <sup>1/</sup> In addition, the fact that much of the shrimp resource is protected from fishermen by environmental conditions (e.g., rocky ocean bottom) helps to protect the resource from excessively high depletion.

Because there is no demonstrated effect on shrimp availability from fishing effort, the usual basis for fisheries management, the concept of maximum sustainable yield (MSY), is not relevant for the management of shrimp. A basic assumption underlying MSY is that the total catch of a species in one time period affects the availability of the species in following time periods. Hence, with shrimp, there is no need to manage the fishery in the traditional way (i.e., to restrict total fishing effort in order to allow for more individual fish and greater sustainable harvest levels in the future). Instead, management of shrimp fisheries is based on the concept of yield-per-recruit, or the pounds of shrimp that can be harvested from a given number of post-larval shrimp. That is, by extending the time between the recruitment of the shrimp into the fishery (the point at which it becomes of minimum harvestable size) and the capture of the shrimp by fishermen, the total weight (biomass) of the available resource stock will increase as the individual shrimp grow in size, despite the fact that the

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<sup>1/</sup> Gulf of Mexico Fishery Management Council, op. cit., p. 4-1.

numbers of shrimp will decline somewhat through natural mortality. The shrimp management problem then becomes how to restrict fishing effort long enough to allow for a maximum increase in the stock biomass and, consequently, the yield-per-recruit. There is, theoretically, some optimum point where the revenues foregone by delaying fishing effort are just offset by the added gain in the value of the stock due to larger shrimp. Achieving this point is the primary goal of shrimp fisheries management.

### Resource Availability

The shrimp resource available to the fishing industry of the South Atlantic area is distinct from that available to fishermen in the Gulf area. Within each area, there are a number of shrimp species that congregate in distinct areas and are biologically separate from each other. In the Gulf area, the major species include brown shrimp, white shrimp, pink shrimp, and royal red shrimp. Principal species in the South Atlantic area include white shrimp, brown shrimp, and pink shrimp.

Despite wide year-to-year fluctuations in catch, the long run condition of the shrimp resources of both the South Atlantic area and Gulf area has been fairly stable, as indicated in the following tabulation of Penaeid shrimp landings in both areas (data from the U.S. Department of Commerce, in thousands of pounds):

<u>Period</u>	<u>Average annual catch</u> <u>(heads-on basis)</u>	
	<u>South Atlantic</u>	<u>Gulf of Mexico</u>
1961-65-----	20,586	170,578
1966-70-----	22,726	207,974
1971-75-----	26,267	198,963
1976-80-----	22,698	230,079
1981-83-----	22,903	225,524

In the case of the South Atlantic area shrimp fishery, the harvesting capacity of the industry appears to have increased substantially over the past several years. The number of fishermen employing shrimp trawls reached a low of 2,904 in 1967 and subsequently peaked at 4,456 in 1976, and the number of vessels ranged from 1,595 in 1964 to 2,525 in 1977, along with an apparent increase in average vessel size (gross tonnage) over the years. <sup>1/</sup> In spite of this, the average annual catch was 22.7 million pounds in 1976-80 and 22.9 million pounds in 1981-83, about equal to the 1966-70 average of 22.7 million pounds. This indicates that the South Atlantic area shrimp fishery has generally been fished to its maximum for several years, and a reasonable estimate of the resource stock available to the industry is the 1960-1983 average annual harvest of 23.4 million pounds (heads-on basis). It should be remembered that this is a long-term annual average, and the resource availability in any given year may be quite different from this estimate, depending on environmental, biological, and other factors.

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<sup>1/</sup> South Atlantic Fishery Management Council, Profile of the Penaeid Shrimp Fishery in the South Atlantic, Charleston, South Carolina, 1981.

Much the same catch-effort relationship characterizes the shrimp fishery of the Gulf area, where the long-run trend in total annual catch has not increased nearly as fast as total effort. The total number of craft employed in the Gulf area shrimp fishery rose from a low of 5,673 in 1961 to 10,722 in 1977 (the latest year for which final data are available). At the same time, the average gross tonnage of shrimp trawlers in the fishery rose from 42.6 tons per craft in 1961 to 63.9 tons in 1977, indicating a very large increase in industry harvesting capacity. 1/ Meanwhile, the average annual shrimp harvest in the Gulf area during 1976-1980 was 230 million pounds, up 35 percent from an average of 170.6 million caught in 1961-65. Under the same assumption as used above for the South Atlantic shrimp fishery, that is, that the Gulf area shrimp resource has likely been fished to capacity in the last several years, it is reasonable to estimate the availability of shrimp to Gulf area fishermen as 205 million pounds (heads-on basis) annually, the average annual harvest during 1961-1983. As before, this is an average value, and the actual stock of shrimp in any given year may vary from this average as a result of exogenous influences.

In both the shrimp fisheries of the South Atlantic area and of the Gulf area, numerous analyses of the fishery have indicated that the quantity of shrimp available in one year is not likely related to fishing effort and catch in the previous year. As indicated earlier, shrimp is an annual "crop," that is, shrimp reproduce and reach harvestable age and size in 1 year. While the stocks of each of the subject species do fluctuate--sometimes greatly--from year to year, there is no evidence that any of this fluctuation is due to fishing effort. 2/ Rather, environmental and biological influences are found by fisheries scientists to account for changes in shrimp resource availability.

A number of environmental and biological factors influence the abundance of shrimp in a fishery. Two of the most important of these are water temperature and salinity. Several studies have shown that shrimp spawning is correlated with water temperatures. 3/ If the water is too cold or (less likely) too hot, shrimp will either not reproduce or will move to areas with proper temperatures, though less suitable otherwise (e.g. with a greater number of predators). The location and direction of movement of shrimp larvae is affected by changes in water temperatures, so that shrimp normally located in one area may, in the event of adverse water temperatures, be found in greater concentrations in other areas instead. Within acceptable temperature ranges, lower temperatures result in reduced growth rates and delayed migration into open waters.

Salinity, the measure of salt content in water, affects shrimp populations in bays and estuaries, where shrimp larvae mature. Weather changes, particularly precipitation, cause changes in salinity in these bays and estuaries by altering the flow of water from rivers and streams. Too much

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1/ Gulf of Mexico Fishery Management Council, op. cit., and National Fisheries Statistics Program, Fishery Statistics of the United States, 1977, National Marine Fisheries Service, Washington, DC, 1984.

2/ Gulf of Mexico Fishery Management Council, op. cit., pp. 6-1, 6-2; South Atlantic Fishery Management Council, op. cit., p. 5-50.

3/ South Atlantic Fishery Management Council, op. cit., and sources cited therein.

rainfall dilutes the salinity of these areas, and the reverse is true during droughts. As with temperature, there are ranges of salinity above and below which proper development of shrimp larvae populations is inhibited.

Another important influence related to the environmental condition of bays and estuaries is the nutrient level of these waters. A considerable quantity of these nutrients is carried into the bays and estuaries by rivers and other tributaries; hence, after heavy rainfall, shrimp growth and abundance is enhanced. The clearest example of this was the massive flooding of the Pacific coastal areas of South America during 1982-1983, which resulted in record shrimp harvests in Ecuador in 1983.

Other exogenous factors influencing shrimp abundance include predator abundance, disease, pollution and coastal zone alteration, and ocean bottom conditions.

### Resource management

Regulation of Gulf area shrimp fisheries currently takes place at both Federal and State levels and the regulation of South Atlantic area shrimp fisheries at the State level. The Department of Commerce has jurisdiction over fisheries management in U.S. coastal waters between 3 (9 off Texas) nautical miles and 200 nautical miles from the coastline. Management plans are prepared by the Gulf of Mexico Fishery Management Council for approval and implementation by the Secretary of Commerce. At the State level, the government of each coastal State has jurisdiction over its territorial waters, which for all concerned States, except Texas, extend from the coastline to 3 nautical miles from shore, and for Texas, to 9 nautical miles from shore.

State fisheries management.--Unlike many U.S. fisheries, the shrimp fishery is largely an "inshore" fishery, with a considerable portion of the harvesting of shrimp carried out under State jurisdiction. As a result, the effects of State fisheries management are important in shrimp fishing, and each State has set up a variety of management tools with which to regulate the fishery. These tools include restrictions on the size of shrimp that can be taken; licenses or permits for fishing craft, gear, and for shrimp marketing; time or area closures restricting harvesting activity; and other management schemes. In many cases, the separate States attempt to coordinate their management policies with adjacent States and with the Federal Government so as to reduce inefficiency and conflict.

Currently, there exist reciprocal fishing agreements between the States of North Carolina, Georgia, and Florida, and between Florida, Alabama, Mississippi, and Louisiana, whereby access to the fisheries of one State is allowed on a resident basis to nonresidents from other States party to the agreement. Neither Texas nor South Carolina have authorized legislative authority to enter into such reciprocal fishing agreements.

North Carolina.--Management of the shrimp fisheries of North Carolina is the responsibility of the Division of Marine Fisheries of the Department of Natural Resources and Community Development. Restrictions on shrimp harvesting imposed by the division include a minimum mesh size of 1 1/2 inches for shrimp nets used on craft, and of 1 1/4 inches for hand seines and channel nets. While a gear license is not required, shrimp

fishermen must register their craft: licenses are required for craft without motors (\$1.00 annual fee); craft with motors, less than 18 feet in length (\$3.00 fee); motorized craft between 18 and 26 feet in length (\$0.50 per foot); and those over 26 feet in length (\$0.75 per foot). Nonresidents must pay \$200.00 for a license for any-length craft. Shrimp dealers must also obtain a license (\$10.00 annual fee). There is a tax assessed for shrimp harvested in North Carolina: \$0.15 per pound of shrimp meats, or \$0.10 per pound of whole shrimp. Restrictions on shrimp harvesting efforts include a ban on fishing by craft on Sundays, or between January 1 and the date the State opens the fishing season in all primary and some secondary shrimp nursery areas.

South Carolina.--The Marine Resources Division of the Wildlife and Marine Resources Department is the State agency in South Carolina responsible for shrimp fisheries management. Shrimp fishermen using seines in South Carolina waters are restricted to a maximum 40-foot seine, with a minimum square mesh of 1/2 inch (nylon) or 9/16 inches (cotton). Fishermen employing channel nets are restricted to a minimum square mesh of 3/4 inch and must obtain a special permit each year (\$5.00 fee). Commercial shrimp craft (other than trawlers) under 18 feet in length must obtain a \$2.50 annual license; those boats and vessels over 18 feet in length must obtain a \$10.00 license. Resident shrimp trawler licenses cost \$75.00 annually, while nonresident trawler licenses cost \$200. Trawler skippers must also register and obtain a license (\$5.00). There are no taxes on shrimp harvested in South Carolina. A \$20.00 annual license is required of anyone wishing to sell shrimp; a \$100.00 license is required of shrimp processors. Bait shrimp dealers must obtain a \$5.00 license. The shrimp season in South Carolina extends from May 15-December 21 in open waters and from August 15-December 15 in sounds and bays. Shrimping is banned in areas designated as shrimp nurseries, within one-half mile of any pier or during nighttime.

Georgia.--Shrimp fisheries management in Georgia is carried out by the Coastal Resources Division of the Department of Natural Resources. While there are no licenses required for gear, shrimp fishermen are generally restricted to using seines of a maximum of 12 feet in width with a minimum 1 inch mesh. In specified areas, a 1 1/4 inch mesh may be used. Fishermen must obtain a personal license (\$10.25 resident, \$100.25 nonresident), and a vessel license (\$50.00 for vessels 18 feet or less; \$50.00 plus \$3.00 per foot, otherwise). The nonresident fee for the vessel license is \$75.00 (plus \$3.00 per foot for large vessels) or the fee that would be charged in the nonresident's home State for a Georgia fisherman, whichever is greater. All licensed shrimp fishermen in Georgia must also be registered as or employed by a shrimp dealer. Shrimp dealers must obtain a \$50.00 license from the State's Agriculture Department. The season for shrimp fishing normally runs from June 1 to December 31, subject to change as the condition of the resource warrants. Nighttime shrimp fishing is banned.

Florida.--Shrimp fishery management in Florida is carried out by the Department of Natural Resources. Mesh regulation, as well as the issuance of fishing gear permits, is done on a county-by-county basis. The size limit for shrimp harvested in State waters is not more than 47 whole shrimp (or 70 tails) to the pound, while in some Panhandle counties, the local limit is not more than 55 whole shrimp to the pound. There are no restrictions on annual or per-trip catches by shrimp vessels. Shrimp fishermen in Florida must obtain a fishing permit and a trawl gear permit, for which there is no charge;

aliens and nonresident commercial fishermen must also obtain a license (\$50.00) to harvest shrimp in Florida waters. In addition, craft operating in Florida waters must be registered, the fees ranging from \$25.00 to \$76.00, depending on craft length. Certain fishing grounds are subject to various seasonal restrictions. In addition, certain areas, such as State parks, are completely closed to commercial shrimp fishing.

Alabama.--The Department of Conservation and Natural Resources is the Alabama State agency that manages shrimp fisheries in that State. The Department's size-limit regulations include a count of not more than 68 whole shrimp per pound; in addition, while there are no catch limits for commercial shrimpers, recreational fishermen are restricted to 25 pounds of shrimp per boat in areas open to commercial shrimp fishing. Residents must obtain a commercial shrimp boat license (\$7.50 fee) and a gear permit for shrimp trawls (\$7.50 for vessels 30 feet in length or less; \$15.00 otherwise). Nonresidents from States without reciprocal agreements with Alabama must pay double these fees for equivalent fishing privileges. Effort restrictions include a complete closure of the shrimp fishery from late April to mid-June, and a ban on shrimp fishing in any body of water designated as a shrimp nursery, such as many rivers, streams, bayous, etc.

Mississippi.--The Commission on Wildlife Conservation of the Mississippi Department of Wildlife Conservation is the agency responsible for shrimp fishery management in Mississippi. Commercial shrimp fishermen are restricted in the size of shrimp they can harvest to a maximum count of 68 whole shrimp per pound. Bait-shrimp fishermen are restricted to a maximum of 20 pounds of dead shrimp and cannot fish in an area until such time as the shrimp are determined by sampling to have reached a size of not more than 95 whole shrimp per pound. Licensing of commercial shrimp craft is based on craft length: craft less than 30 feet pay \$7.50; craft between 30 and 45 feet pay \$15.00; and those in excess of 45 feet pay \$25.00. Bait shrimp craft pay \$7.50 for a license, the same fee as that for recreational shrimp craft. Firms engaged in the processing of shrimp must also obtain a permit (\$5 fee); in addition, a tax of 25¢ per 210 pounds of shrimp is assessed these firms. The season for harvesting shrimp in Mississippi runs from the first or second week in June to December 1 of each year. At no time may commercial fishermen (licensed bait shrimpers excepted) harvest shrimp within one-half nautical mile of the Mississippi-Alabama boundary west to Bayou Caddy, nor in most bayous, in order to protect the resource.

Louisiana.--The regulation of shrimp fishing in Louisiana is the responsibility of the Wildlife and Fisheries Commission. The harvest of shrimp in Louisiana is restricted to a size limit of not more than 68 whole shrimp to the pound for commercial fishermen; bait fishermen are not subject to any restriction on size. There are no other catch limits in Louisiana.

The licensing of shrimp craft and gear in Louisiana is based on craft length, with resident fees ranging from \$15 to \$25 for trawl licenses and \$10 to \$15 for a craft license, and non-resident fees ranging from \$25 to \$45 for trawl licenses and \$15 to \$25 for a craft license. Nonresidents from States with reciprocal agreements pay "resident" fees. There is no craft license requirement for recreational fishermen in Louisiana, but those operating craft in excess of 16 feet must still obtain a gear license. The shrimping season commences no later than May 25 and continues for at least 50 days, or until it

is determined that the resource would be endangered by continued harvesting. The fall season runs from the third Monday in August to December 21. A number of areas, particularly wildlife refuges, are completely closed to shrimpers.

Texas.--Shrimp fishery management in Texas is handled primarily by the Governor-appointed Parks and Wildlife Commission, some aspects of shrimp management are also controlled by the State legislature. Unlike the other Gulf Coast States, which extend their jurisdiction to within 3 nautical miles of their coastline, Texas claims jurisdiction of all water within 9 nautical miles of its coastline. In addition, Texas is the only Gulf Coast State without reciprocal shrimp fishing agreements with the other Gulf Coast States. Until 1981, there was a maximum size count of not more than 39 whole shrimp to the pound applicable to commercial shrimp fishermen. Then, Texas amended its regulations by eliminating the size restriction as long as the Federal shrimp management plan corresponds with Texas regulations concerning closed seasons. Bays and estuaries are normally open only from May 15 to July 15 and from August 15 to December 15. Offshore waters are open year round, except during June 1-July 15 and December 16-February 1. In some of the smaller bays, defined as shrimp nurseries, shrimp harvesting is completely closed. Catch limits on commercial shrimping include a 300-pound-per-day limit during the spring season in bays and estuaries; no catch limits during the fall season or anytime in open waters. In the bays, a maximum size count of not more than 50 whole shrimp per pound is in effect from August 15 to October 31; otherwise there is no size restriction. Recreational shrimp fishermen may harvest a maximum of 100 pounds per day in open waters and 15 pounds a day in coastal areas. Bait shrimpers are restricted to 200 pounds of shrimp per day. Commercial Gulf shrimp vessels must be licensed (\$80.00 fee), as must bay shrimp boats (\$60.00 fee). Commercial bait shrimp boat licenses cost \$60.00, as do permits for selling bait shrimp. In addition, bait shrimpers must obtain a \$10.00 permit for each individual bait shrimp trawl. Operators of commercial shrimp houses also must obtain a license (\$300 fee).

Federal fisheries management 1/--It is required, not only from a practical perspective but also by statute (the Coastal Zone Management Act), that for sound shrimp management, the Federal shrimp management plans be coordinated and consistent with the management schemes of the various South Atlantic and Gulf Coast States. This is important, for the shrimp resource is best managed as a "unit," despite the fact that the resource overlaps political boundaries. With respect to Florida and Texas particularly, efforts have been made to coordinate fishery management policies with State policies; for example, the territorial sea of Texas and the adjacent U.S. waters out as far as 200 nautical miles are subject to a simultaneous seasonal closure each year. Another source of management difficulty is the fact that the resource, particularly brown and white shrimp species, overlap the U.S.-Mexican maritime boundary in the Gulf of Mexico, further complicating effective Federal management of the fisheries, since cooperative management with Mexico has to date been difficult to achieve.

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1/ There currently exists a Federal shrimp management plan only for the shrimp fisheries of the Gulf area; a plan for the South Atlantic shrimp fisheries is being prepared and is not yet implemented.

The Federal shrimp management plan for the Gulf of Mexico <sup>1/</sup> provides for the management of the shrimp resources as a single unit comprising all six species and extending in length from one biological end of the resource in the waters off southwestern Florida to the other end, the political boundary with Mexico, and in width from the U.S. coastline to the 200-mile maritime boundary of the United States. The plan specifies a management year for all species except royal red shrimp beginning May 1 and extending through April 30 annually. Because of the administration of a foreign fishery for royal red shrimp, the management year for that fishery is the calendar year.

The Federal plan sets out eight objectives for shrimp management, each with specific measures designed to achieve those objectives. The objectives include optimization of the yield of shrimp in terms of protein yield and economic return, habitat protection, coordination of the plan with State management programs, protection of endangered species and marine mammals, minimization of the incidental bycatch of finfish by shrimpers, minimization of conflict between shrimpers and crab fishermen, minimization of adverse effects of underwater obstructions to shrimp trawling, and provision of a statistical reporting system.

The management measures include a permanent closure of the area known as the "Tortugas Shrimp Sanctuary" off the southwest coast of Florida, in order to help preserve the resource and allow for greater economic returns resulting from increased shrimp availability in adjacent areas. This closure is jointly enforced with the State of Florida. Another closure involves the territorial waters of Texas and the adjacent U.S. waters, which are closed to shrimp harvesting each year, normally from June 1 to July 15. As an additional protection measure, the Council makes recommendations to State agencies for restrictions on harvesting in areas located almost exclusively within State maritime jurisdictions in which shrimp populations breed. Further, the States are encouraged by the Council to coordinate their respective shrimp management programs as much as possible with other States, thereby allowing for more efficient management of the shrimp resource as a whole.

The so-called "Texas closure," whereby both Texas and U.S. waters off the Texas coast are closed to shrimping during June 1-July 15 of each year, has been closely watched by industry members and State and Federal fisheries regulators, to estimate the effects of the closure on shrimp abundance, catch rates and sizes, fishing patterns, bycatch effects, and other factors. The basic intent of the closure is, in the words of a witness at the hearing who is a member of the Gulf of Mexico Regional Fishery Management Council, "to increase the size and the weight of the shrimp. The shrimp will grow; in 45 days of closure a shrimp will triple (its) size. So by leaving that area closed we figured that we would increase the yield of shrimp." <sup>2/</sup> Although natural mortality of the shrimp population increases with the closure, this is offset by the gain in weight of the biomass.

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<sup>1/</sup> Gulf of Mexico Fishery Management Council, op. cit.

<sup>2/</sup> Testimony of Julius Collins, hearing transcript, pp. 80-81.



The effects of the 1981 Texas closure on the Gulf shrimp fishery were studied by the National Marine Fisheries Service and the results reported in a published compendium. <sup>1/</sup> In sum, the researchers estimated that the effects of the 1981 closure on the offshore Texas harvest of shrimp in July and August were to raise the yield (measured by biomass weight) by as much as 40 percent (with the actual figure for the Gulf as a whole probably closer to 10 percent); the effects on the value of the harvest were estimated to have been a rise in the gross revenue of the Gulf brown shrimp fishery during May-August 1981 by \$21.5 million, or 18 percent. Abundance of shrimp in the Gulf was not found to be significantly affected by the closure, consistent with the objective of the closure which was to raise the size rather than the number of individual shrimp. Seasonal fishing patterns of Gulf shrimp vessels were affected by the closure, with several Texas shrimpers moving to Louisiana and other Gulf State waters during the closure and numerous non-Texas shrimpers diverting their effort to the waters off Texas once the closure ended. Of significant importance was the observation that catch rates were not found to be affected by the relaxation and subsequent concentration of effort on Texas shrimp resources during and following the closure.

As part of the effort to maintain a statistical reporting system in order to improve future management, a data collection system is being maintained, which is coordinated with those programs maintained by the various States. Each State requires certain reporting practices of shrimp fishermen, processors, and dealers. For example, Alabama dealers must report monthly on their customers and suppliers, including names and addresses, quantities traded, etc. Louisiana retailers must report quarterly on their purchases, including sellers' names and license numbers, and amount of product traded. To supplement these and other data collection systems, the Federal Government maintains a collection of data on catch, effort, biological and socioeconomic information through sample surveys of the industry. Justification of these mandatory surveys lies in the need to "monitor the fishery in order to insure the viability of the stocks, to evaluate reasonable solutions to conflicts, and to provide for the management of the fishery." <sup>2/</sup>

#### Government Assistance

Government financial assistance to the shrimp fisheries of the U.S. Gulf and South Atlantic region is available in a variety of forms and from a variety of sources, the most important of which is the Federal Government. The National Marine Fisheries Service (NMFS) of the U.S. Department of Commerce administers a number of assistance programs designed to help with vessel acquisition, gear damage or loss, and other activities. Appendix K contains data on programs, participation, and funding for NMFS assistance to the Gulf and South Atlantic fishing industry. Assistance is also available from other Federal agencies, and from State governments in the respective areas.

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<sup>1/</sup> Marine Fisheries Review, Vol. 44, No. 9-10, Scientific Publications Office, National Marine Fisheries Service, Seattle, Washington, 1982.

<sup>2/</sup> Gulf of Mexico Fishery Management Council, op. cit., p. 8-21.

### Federal Government assistance

Two of the most important programs administered by the NMFS are the Fishing Vessel Obligation Guarantee Program and the Fishing Vessel Capital Construction Fund. The Fishing Vessel Obligation Guarantee Program provides loan guarantees for construction, reconstruction, or reconditioning of fishing vessels of 5 net tons or larger and of shoreside facilities such as unloading facilities or processing plants. Shoreside facilities have been eligible for this program only since December 1982. Downpayments required of borrowers range from 12.5 to 25 percent; financing is arranged by the borrower. If this is not possible, the Government will seek private financing, usually brokerage houses or local banks. Interest rates usually fall in the prime range less 1 to 2 percent, and loan maturities range from 15 to 25 years. As of January 31, 1985, a total of 372 fishing vessels, mostly shrimpers, in the Gulf and South Atlantic region were active in this program, accounting for a total loan balance of \$58.5 million.

Funding vessel acquisition or construction is assisted by the Fishing Vessel Capital Construction Fund. Under this program, fishermen may defer payment of Federal income tax on any portion of their income earned from fishing that is set aside in the fund. The money in the fund is to be used by the fishermen only for payment toward the cost of vessel construction or reconstruction. The program allows for an interest-free "loan" from the U.S. Government equal to the deferred Federal income tax that would otherwise have to be paid. The depreciable value of the new vessel is reduced by the amount of the investment from the fund; in this way, depreciation charges are reduced and taxable net income from the vessel operation is higher, allowing the deferred Federal income tax to be repaid through the depreciable life of the vessel. At the end of 1984, a total of 238 accounts held by Gulf and South Atlantic shrimp fishermen were active, for a total deposit of \$12.4 million.

Other programs available to the U.S. Gulf and South Atlantic region shrimp industry from the NMFS include the Fishing Vessel and Gear Damage Compensation Fund established under the Fishermen's Protective Act of 1967. This program compensates fishermen for gear damage resulting from manmade acts, such as damage from other vessels. The financing of this program is provided by revenues received from fees assessed to owners of seized foreign fishing vessels. Another program established by the Fishermen's Protective Act is the Fishermen's Guarantee Fund, which compensates fishermen for claims and administrative expenses related to seizures of vessels by foreign governments, usually as a result of fishing in disputed or non-U.S.-recognized foreign territorial waters. Another program is the Fishermen's Contingency Fund, set up under the 1978 Outer Continental Shelf Lands Acts Amendment. This program, financed by fees assessed to firms engaged in offshore energy exploration, compensates fishermen for damage to gear arising from outer continental shelf energy activities.

### State and local government assistance

Support of the shrimp harvesting and processing industry of the Gulf and South Atlantic region by State and local governments is provided indirectly through provision of various public services. Several States and local (both county and municipal) governments fund port and harbor services such as harbor

dredging and infrastructure development, which benefit the shrimp industry as well as other users of such facilities. General business development assistance, such as industrial development bonds, supports shoreside operations in shrimp processing and handling, as well as related industries.

Port development can have its adverse effects on the shrimp industry as well. In several instances observed during Commission staff fieldwork, development of a port's tourism potential or other nonfisheries-related activity has tended to boost land values and raise the cost of craft berths, supplies provided by dockside chandleries, and other expenses, even displacing fishing craft from traditional ports altogether.

Other assistance is provided to the shrimp industry from State Governments in the forms of product promotion and market development. As an example common to States in the Gulf and South Atlantic region, the Louisiana Cooperative Extension Service, a part of the Louisiana State University and A. & M. College, in cooperation with the Sea Grant Program of the U.S. Department of Commerce and the U.S. Department of Agriculture, provides market research and technical development support to the industry, an activity which would not likely otherwise be taken in such a competitive industry full of small, low-margin firms as shrimping. Cooperative Extension Services and Marine Advisory Services in the various States disseminate information on technology, markets, and other areas through newsletters, trade shows, promotional publications, and other means.

#### Other Government Involvement

Various other programs and pieces of legislation affect the relationship between the Federal Government and the shrimp industry. The "Jones Act" (46 U.S.C. 883) requires that any vessel flying a U.S. flag engaged in commercial fishing in the United States must have a U.S.-built hull and, thus, forbids U.S. fishermen from acquiring foreign-built vessels for use in U.S. commercial fisheries.

The "Nicholson Act" (46 U.S.C. 251) forbids foreign vessels from landing fish directly in U.S. ports, thus protecting U.S. fishermen from direct competition from foreign competitors (an important restriction in the shrimp fishery, particularly with respect to Mexico), but restricting the supply somewhat to U.S. processors.

Section 205 of the 1976 Magnuson Fishery Conservation and Management Act (MFCMA) (16 U.S.C. 1801), which authorized the 200-mile fishery conservation zone, provides for the prohibition of all fish and fish product imports from any country that seizes a U.S. fishing vessel as the result of its fishing within a boundary not recognized by the United States. While generally only the particular species harvested by the U.S. vessel concerned has been the subject of an import ban (tuna imports from Mexico have been interrupted following Mexican seizure of U.S. tuna vessels, for example), the MFCMA does provide for the extension of the ban to all fish products from the offending country. To date, no action has been taken under this provision of section 205 with respect to shrimp vessels and U.S. imports of shrimp.

Recently, legislation was passed to assist in fisheries export and trade development. On November 8, 1984, Congress authorized the Commodity Credit

Corporation of the U.S. Department of Agriculture to include "fish, without regard as to whether such fish are harvested in aquacultural operations" in its export assistance activities 1/ ; in addition, the same legislation included fisheries products in the international Food For Peace program (P.L. 480).

Another statute, the "Lacey Act" (16 U.S.C. 3371), provides for criminal and civil penalties for the importation of and trade in wildlife products that were obtained in foreign countries in violation of the U.S., State, or foreign country's laws. For example, the trade in shrimp that is harvested illegally in Mexican waters by U.S.-flag craft is a violation of the Lacey Act.

There has been an upsurge in convictions of U.S. Gulf Coast shrimpers in violation of the Lacey Act in recent years, a result both of increased illegal fishing activity and of stepped-up enforcement by the U.S. Coast Guard and the National Marine Fisheries Service (NMFS). According to one report, NMFS and Coast Guard agents have been working "day and night" at various Gulf locations to apprehend shrimpers suspected of violating the Lacey Act. 2/ Between June 1 and July 19, 1984, a period of only 7 weeks, more than 310 violations of the Lacey Act by Gulf Coast shrimpers in Mexican waters were reported by the NMFS enforcement division. The maximum civil penalty for a violation (usually served upon a first-time offender) is \$10,000 per violation, while the maximum criminal penalty is \$20,000 or 5 years imprisonment, with possible forfeiture of the craft and equipment.

#### INDUSTRIES OF OTHER MAJOR SHRIMP SUPPLYING NATIONS

##### Mexico

Mexico, with 98,916 metric tons of shrimp (live weight basis) harvested in 1983, is second only to the United States as a producer of shrimp in the Western Hemisphere. Shrimp is the single most important fishery in Mexico in terms of dollar value, and constitutes that country's most important nonpetroleum export product. Most of Mexico's shrimp production, as much as 90 percent, is exported, primarily to the United States.

##### Number of vessels and employment

The total number of shrimp-fishing vessels in Mexico has been slowly increasing in recent years, as shown in the following tabulation (Government of Mexico data):

<u>Year</u>	<u>Shrimp vessels</u>
1980-----	15,042
1981-----	15,249
1982-----	15,302
1983-----	15,531

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1/ P.L. 98-623, 98 Stat. 3409.

2/ Notice of Enforcement Situation, National Marine Fisheries Service, Enforcement Division, September 4, 1984.

From 1980 to 1983 (the latest year for which data are available), the total number of shrimp fishing vessels increased by 3 percent, from 15,042 vessels in 1980 to 15,531 vessels in 1983. The vast majority of these shrimp vessels are small boats, many under 10 tons, which fish within a few miles of shore, or in estuaries and lagoons.

The following tabulation presents data on employment in Mexican fisheries (including shrimp) during 1980-1983 (Government of Mexico data)

<u>Year</u>	<u>Pacific</u>	<u>Gulf</u>	<u>Total</u>
1980----	60,554	32,757	93,311
1981----	68,747	36,591	105,338
1982----	75,275	39,501	114,776
1983----	78,854	42,722	121,576

During 1980-83, employment in Mexican fisheries increased by 30 percent, from 93,311 persons in 1980 to 121,576 persons in 1983. Data on employment in the shrimp fishery in particular are not available. Most fisheries activity is carried out on the Pacific side of Mexico, as the employment data show. In 1983, 78,854 persons, or 64 percent of the total fisheries employment, were located in the Pacific coast States.

All shrimp harvesting activity in Mexico must, by law, be carried out only by cooperatives (co-ops), or Government-licensed associations of fishermen, which since the early 1970's have had exclusive ownership rights to shrimp vessels. The co-ops, which are many in number and usually several to a port, hire individuals as crews and captains for their vessels, paying them a share of the vessel's gross revenue, in much the same way as U.S. fishermen are compensated. These co-ops then market the shrimp to processors and exporters, at least theoretically obtaining a higher price for their product than if the vessels were individually owned and operated. However, press reports indicate that many co-ops are in serious financial trouble. For example, the collective debt of the co-ops in Mazatlan, Mexico's largest shrimp port, located on the Pacific coast, is reported to total approximately 500 million pesos (about \$1.8 million as of June 1985). <sup>1/</sup>

The financial difficulties of Mexico's shrimp co-ops are due to a number of factors. First, as noted below, production in 1984 and early 1985 declined after several years of a general upward trend in shrimp harvests. Weak markets, coupled with poor resource availability, are putting a squeeze on shrimp harvesters. Second, a considerable portion (anywhere from one-quarter to one-half) of Mexico's shrimp harvesting capacity is idle, reportedly owing to lack of vessel maintenance, old age of many vessels, and unprofitability. In Mazatlan, out of 402 registered shrimp vessels, 140 were inactive as of March 1985, according to one press report <sup>2/</sup>; unprofitability was cited as the cause. In Campeche, on the Gulf coast, only 160 out of 232 registered

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<sup>1/</sup> El Universal, Mexico City, March 19, 1985.

<sup>2/</sup> El Universal, March 31, 1985.

shrimp vessels are reported to be operating normally, the remainder suffering from disrepair or other maintenance difficulties. 1/ Third, the financing of new vessels acquired by the co-ops, particularly U.S.-built vessels, has been rising over the years as the Mexican peso dropped in value; moreover, these vessels are financed with low-cost Government funds that are becoming increasingly expensive since the Government has been closing the gap between the interest rate charged to the co-ops and market rates in an attempt to control expenditures. Fourth, other costs, such as diesel fuel for the vessels (a vessel's greatest operating cost), are also rising. Fifth, Mexican trawlers are reported to employ somewhat larger crews than comparable U.S. vessels. This may have increased the co-ops' labor costs excessively. The combined result has been a severe financial strain on co-op operations.

Appendix L contains a cost analysis of a typical Mexican 75-foot shrimp trawler. Total cost per trip amounts to 3,112,237 pesos (about \$12,250 in May 1985), including 585,930 pesos paid to co-op members. This latter cost item is the return to the vessel owner (the co-op) from operating the vessel, out of which is paid an indeterminable sum for the vessel cost and interest charges. Excluding this item as a cost component, total costs per trip are 2,526,307 pesos, or about 2,020 pesos per kilogram of shrimp on the basis of a typical trip catch of 1,250 kilograms, equivalent to about \$7.96 per kilogram or \$3.61 per pound of whole shrimp frozen, packed, and delivered to the buyer. Revenue received for a trip amounts to 3,125,000 pesos, or about \$12,300, equivalent to about \$4.46 per pound of shrimp, leaving \$0.85 to cover the cost of the vessel and a net return to the co-op. 2/

### Production

Annual shrimp harvests in Mexico have been increasing irregularly since the 1970's, as shown in the following tabulation on shrimp harvests (Government of Mexico data; in metric tons, live weight):

<u>Year</u>	<u>Shrimp harvest</u>
1976-1979 average-----	70,180
1980-----	77,458
1981-----	72,010
1982-----	78,657
1983-----	98,916
1984-----	72,000

The Mexican shrimp harvest increased from a 1976-79 average of 70,180 metric tons to 98,916 metric tons in 1983, before dropping off to an estimated 72,000 metric tons in 1984. The 1984 decline was attributed in Mexican press reports to declining resource availability, particularly on the Pacific coast,

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1/ El Heraldo de Mexico, Mexico City, March 16, 1985.

2/ A new trawler in Mexico can cost anywhere from \$110,000 to \$300,000, and has a useful life of 10 years.

where most Mexican shrimp harvesting takes place. This decline is continuing in 1985, with press reports indicating the Pacific catch during the first few months of 1985 is running 40 to 50 percent lower than the corresponding period in 1984. <sup>1/</sup>

Mexican production of processed shrimp products has generally increased in recent years, following the trend in shrimp harvests. The following tabulation presents production of shrimp products during 1976-1983 (Government of Mexico data, in metric tons, product weight):

<u>Year</u>	<u>Processed shrimp production</u>
1976-1979 average-----	46,572
1980-----	51,726
1981-----	48,972
1982-----	52,539
1983-----	67,555
1984-----	48,250

In 1984, production of processed shrimp products totaled 48,250 metric tons, a decrease of 29 percent over the 67,555 metric tons produced in 1983, and a 4-percent increase over the 1976-1979 average of 46,572 metric tons.

The bulk of Mexico's shrimp production comes from vessel-harvested shrimp; aquaculture is still an infant industry. The co-ops, as noted, have exclusive control over vessel activities, and have tied up many vessels recently, as a result of weak markets and reduced resource availability. Partly as a result, 1984 and 1985 production levels are below those of previous years.

Mexican Government officials have stated that future growth of the Mexican shrimp industry will likely be dependent upon the development of aquaculture, a segment of the shrimp industry now restricted to co-ops, which could eventually double Mexico's shrimp production. <sup>2/</sup> At present, however, conflicts between those who support aquaculture development, such as many in the Government, and those who oppose such development, including many of the co-ops, have stalled attempts at expansion of shrimp aquaculture. Estimated 1984 production of shrimp from aquaculture operations totaled 300 metric tons <sup>3/</sup>, less than one-half of one percent of total Mexican shrimp production. However, future growth of this segment of the industry will require cooperation between the Government and the co-ops, not only because

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<sup>1/</sup> El Sol de Mexico, February 21, 1985. This decline in resource availability is attributed by a Mexican co-op official to a 7-year cycle in shrimp resource availability in Mexican Pacific waters, though there are no data available to support this claim.

<sup>2/</sup> D. Weidner, Latin American Shrimp Culture Industry, IFR-84/80, USDC/NOAA/NMFS, Office of International Fisheries, Foreign Fisheries Analysis Branch, Washington, DC, November 1984.

<sup>3/</sup> D. Weidner, Latest Developments in Latin American Fisheries, IFR-84/75, USDC/NOAA/NMFS, Office of International Fisheries, Foreign Fisheries Analysis Branch, Washington, DC, September 1984.

occasional attempts to revoke the law restricting shrimp activities to co-ops continue to fail, but also because the co-ops will require extensive support, both financial and technical, from the Government.

The Mexican co-ops operate shrimp farms, some on an experimental basis, in the Gulf States of Tabasco, Veracruz, and Tamaulipas, and the Pacific States of Sinaloa and Nayarit, among others. The operations have been financed by the Mexican Government's Banco Nacional Portuario y Pesquero, at a cost for a typical farm of \$200,000. Each farm is expected to eventually produce about 450 pounds of shrimp per acre, or over 100,000 pounds annually, and employ 30-35 persons. From a technological point of view, the potential for aquaculture of shrimp in Mexico is very high, as the Mexican coasts include some of Latin America's largest and most productive shrimp spawning grounds; thus far, political disputes and lack of investment capital have been the principal barriers to aquaculture development.

### Marketing

The following tabulation presents data on Mexican shrimp production, consumption, and exports during 1980-1983 (Government of Mexico data, in metric tons, product weight): 1/

<u>Year</u>	<u>Production</u>	<u>Exports</u>	<u>Apparent consumption</u>
1980----	51,726	34,170	17,556
1981----	48,972	33,093	15,879
1982----	52,539	32,928	19,611
1983----	67,555	35,399	32,156

Mexico's shrimp-vessel co-ops market their catches through processors or directly to importers in the United States. There are typically several co-ops in each of the larger ports, with as many as 20 to 30 vessels owned by each co-op. Only Government-licensed co-ops may deal in shrimp.

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1/ The above official Mexican statistics are considered unreliable-- particularly with respect to export data. It is generally acknowledged by Mexican and U.S. Government officials that fisheries statistics kept by the Mexican Government are suspect because recent Mexican Government administrations have inflated the data. (The present administration is reported to be working to rectify reporting inaccuracies). Adding to the reporting problem is the ongoing "smuggling" of shrimp--the unregistered catch and sale of shrimp by fisherman, brokers, and exporters--that is reported to amount to anywhere between 33 percent and 60 percent of the total shrimp trade. New export regulations are being designed to try to alleviate this problem.



As shown in the above tabulation, a large part of the shrimp produced in Mexico is exported. Almost all of such exports are to the U.S. market owing to lower transportation and other marketing costs relative to other major markets. 1/

The largest firm marketing Mexican shrimp in the United States is Ocean Garden Products, Inc., a wholly owned Mexican Government corporation based in San Diego, California, which, according to U.S. industry sources, accounts for 90 percent of total sales of Mexican shrimp in the United States. Numerous other private Mexican competitors exist, with more entering the market each year, to which the co-ops are reported to be eager to sell, apparently because of worsening business relations between them and Ocean Garden. This development relates to the marketing practices of Ocean Garden, which sells the co-ops' shrimp on a consignment basis, paying an initial "down payment" to the co-ops, with an adjustment (on rare occasions, negative) based on the actual selling price once the shrimp is sold. 2/ Allegations from the co-ops against Ocean Garden range from the claim that Ocean Garden takes too much commission off the selling price to the complaint that excessive inventories are held by Ocean Garden, delaying final payment to the co-ops by delaying the sale of the product. Representatives of Ocean Garden, in responding to the latter claim, informed Commission staff that the co-ops fail to note that the firm's sales volume is very high (without saying how high) and that inventories considered "excessive" by the co-ops are merely normal levels for a firm the size of Ocean Garden. Nevertheless, more and more of the co-ops' business is being taken by new rivals of Ocean Garden, which pay higher prices to the co-ops than did Ocean Garden, according to Mexican press reports.

#### Ecuador

The shrimp industry of Ecuador can be divided into two categories--the traditional ocean fishery and the more recently developed aquaculture or shrimp-farming fishery. The traditional fishery is located primarily in the Gulf of Guayaquil, an arm of the southeastern Pacific, and is made up mostly of small boats, 5 tons or less, which catch not only a significant portion of the total shrimp harvest destined for domestic consumption and export, but also provide much of the "seed" (shrimp larvae) used in shrimp farming operations. In 1984, the traditional fishing sector produced an estimated 8,000 metric tons of shrimp, an increase of 3 percent from the 7,800 tons caught in 1980.

One of the most significant developments in world shrimp fishing is the emergence of shrimp aquaculture in Ecuador. This sector of the Ecuadorean fishing industry is perhaps the world's largest shrimp aquaculture operation and is growing rapidly, expanding by 56 percent annually between 1980 and 1983, before declining in 1984. Shrimp production from Ecuadorean shrimp farms in 1984 totaled an estimated 23,400 metric tons, compared with 9,180 metric tons in 1980.

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1/ Commission staff fieldwork and conversations with importers of shrimp from Mexico.

2/ El Universal, December 2, 1984.

### Production

The following tabulation presents the Ecuadorean shrimp harvest, both ocean caught and from aquaculture, during 1980-1984 (data from the Government of Ecuador, in metric tons, live weight):

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Ocean caught-----	7,800	8,000	8,000	7,500	8,000
Aquaculture-----	<u>9,180</u>	<u>12,100</u>	<u>21,500</u>	<u>29,100</u>	<u>23,400</u>
Total-----	16,980	20,100	29,500	36,600	31,400
Percent aquaculture---	54	60	73	80	75

The total Ecuadorean harvest of shrimp increased by 85 percent overall during 1980-84, from 16,980 metric tons in 1980 to a peak of 36,600 metric tons in 1983, before declining to 31,400 metric tons in 1984. This increase is completely attributable to increased aquaculture production, which increased by 155 percent overall during 1980-1984, from 9,180 metric tons in 1980 to a peak of 29,100 metric tons in 1983, before dropping to 23,400 metric tons in 1984. During the period, aquacultured shrimp production grew as a proportion of total shrimp production from 54 percent in 1980 to 80 percent in 1983, before declining to 75 percent in 1984.

In 1984, according to the Government of Ecuador, there were 266 large shrimp vessels in operation in Ecuador, producing an estimated 8,000 metric tons (live weight) of shrimp, a total harvest that reflects maximum yield from Ecuador's ocean shrimp fisheries. Both total effort and total catch in 1984 were approximately unchanged from fifteen years earlier, according to testimony of an Ecuadorean industry representative. 1/

Recently, production of shrimp in both aquaculture operations and ocean fishing may have been affected by an oceanographic phenomenon known as "El Nino," which wreaked havoc on ocean fisheries throughout the southeastern Pacific during 1982-1983. An irregularly occurring phenomenon over the last few years, El Nino occurs when warm tropical water displaces colder water normally transported northward by the so-called Humboldt ocean current along the western coast of South America. This warm water is nutritionally inferior to the colder water and causes a chain-reaction in the marine food supply, with decreased numbers of phytoplankton eventually disrupting stocks of commercially important fish species that feed on the plankton. The most recent El Nino may be the most powerful ever recorded, lasting approximately a year and dramatically disrupting numerous fisheries in South America. Principally affected have been stocks of sardines, anchovies, and herring. The decline in Ecuador's ocean catch of shrimp from 8,000 metric tons in both 1981 and 1982 to 7,500 metric tons in 1983, may also be at least partly a result of this phenomenon.

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1/ Testimony of Mr. Emilio Parodi, president, Ecuador Chamber of Shrimp Producers, hearing transcript, pp. 239, 240.

The shrimp aquaculture operations of Ecuador and nearby countries, however, may well have been enhanced by El Nino. This is because, in addition to the warm ocean water, El Nino brings heavy rainfall, which washes massive amounts of nutrients into rivers and coastal estuaries, where juvenile shrimp mature. As a result, following El Nino, shrimp availability in at least the following year is improved, especially that associated with shrimp aquaculture, since the "seed" shrimp used in aquaculture operations consist largely of larvae and juvenile shrimp found in the wild and harvested for such use. The boon to the aquaculture sector created by the latest episode of El Nino (aquaculture production increased by 35 percent, from 21,500 metric tons in 1982 to 29,100 metric tons in 1983) was partially offset by damage to aquaculture ponds caused by flooding from the heavy rains.

### Aquaculture

The emergence of shrimp aquaculture in Ecuador in recent years has been swift and of major importance to the Ecuadorean industry and world shrimp trade. In 1976, only 13 percent of the total shrimp production in Ecuador was farm raised; by 1983, the figure was 80 percent. An estimated 195,000 acres have been devoted to shrimp farming (not all of it fully utilized). Moreover, the impetus for the growth in aquaculture development has been export opportunities, primarily in the United States. In 1981, 44 percent of Ecuador's fish exports, or \$84 million, were composed of farm-raised shrimp.

Acreage allocated to Ecuadorean shrimp aquaculture has also grown rapidly in recent years as shown in the following tabulation (Government of Ecuador data, in acres):

<u>Year</u>	<u>Acreage allotted</u>
1980-----	37,000
1981-----	88,000
1982-----	122,000
1983-----	157,000
1984-----	195,000

During the same time (1980-1984) that aquaculture shrimp production increased by 155 percent, acreage allotted to such production increased by 427 percent, from 37,000 acres in 1980 to 195,000 acres in 1984. Substantial amounts of this acreage, however, as much as one-third, is unused and represents idle capacity that will, nevertheless, soon be put into production if recent production growth rates continue. The Government of Ecuador projects that aquacultured shrimp production will reach 45,000 metric tons annually by 1990, with some 125,000-150,000 acres of pond area actually in production.

Most shrimp farms in Ecuador are located in the Provinces of Guayas and El Oro. Approximately 20,000 people are employed in shrimp farming, with an additional 90,000-120,000 involved in the harvest of "seed" shrimp to stock the farms. Considerable investment by U.S. firms has been made in Ecuadorean shrimp farming. The total amount is estimated by industry sources at between \$20 million and \$30 million. U.S. firms currently or recently involved in

shrimp farming and export in Ecuador include International Protein Corporation, Morrison International, Baltek Corporation, Cathay International, Continental Milling Corporation, and Castle & Cook. <sup>1/</sup> U.S. investment, found at all levels of the Ecuadorean shrimp industry from farms and hatcheries to exporters, is a major source of technical assistance, skilled personnel, and equipment. <sup>2/</sup>

The recent rapid growth of shrimp aquaculture carries several implications for the future growth of the sector. Because, for small-scale operations, capital requirements are low (often just a properly situated pond and some rudimentary equipment are necessary) many relatively unskilled persons are entering the industry. In some cases, the flooding of a mangrove swamp to make a shrimp pond destroys the local breeding ground for shrimp larvae. This forces the entrepreneur to seek "seed" shrimp from other sources, perhaps at higher cost. Further, the increasing demand for "seed" shrimp, growing exponentially as aquaculture acreage increases, may run up against an uncertain supply, which hitherto has come from "wild" sources. This will stimulate the need for shrimp hatcheries, which are costly operations that are quite susceptible to diseases and contamination. Preliminary research by some U.S. observers indicates that as much as 8 billion post larval shrimp would be required annually to meet potential Ecuadorean demand--far more than the 40 million to 50 million larval shrimp produced in Ecuadorean hatcheries in 1983.

Another consideration for future growth is the negative interaction between the two sectors of the Ecuadorean shrimp industry, aquaculture and the traditional ocean fishery. Because the traditional fishermen operate an "inshore" fishery (most shrimp is harvested within several miles of shore), they are in direct conflict with harvesters of the "seed" shrimp collected in bays and estuaries for use in aquaculture. These seed shrimp harvesters, it is claimed by traditional fishermen, deplete the resources available for traditional fishing by harvesting the shrimp as larvae or juveniles, before they have had a chance to spawn or to be "recruited," or developed in size, into the traditional ocean fishery. Thus, the traditional fishermen feel they are hurt twice by this competition; not only do they suffer lower prices than would exist absent the supplies of farm-raised shrimp in the market place, but also their resource is depleted by the same farming operations. However, the effect of this negative interaction, at least on the input side, may be exaggerated. As much as 95 percent of the seed shrimp harvested for aquaculture is of the species *P. vannamei*, while this species accounts for 10 percent or less of the total shrimp catch of traditional fishermen.

Productivity among Ecuadorean shrimp aquaculture operations, as measured by yield of shrimp per acre, varies widely, and such operations appear to exhibit substantial economies of size. Yield per acre depends on several factors, including the region of the country, size of the pond, species of shrimp, and whether the shrimp are artificially fed. The average yield per acre for a relatively sophisticated operation (e.g., one using industrial feed and harvesting thrice yearly) is about 500-800 pounds (heads-off weight) annually. However, the largest operations can achieve as much as 1,800 pounds of shrimp meats per acre per year, while the smallest operations may yield

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<sup>1/</sup> Bob Rosenberry (publisher), *Aquaculture Digest*, Vol. 10, No. 2 (February 1985), San Diego, California, p. 5.

<sup>2/</sup> Testimony of Emilio Parodi, hearing transcript, p. 238.

only 200 pounds of meat per acre per year. By one estimate, as much as 30 percent of the market is supplied by the 10 largest operations. The productivity of the typical Ecuadorean aquaculture operation is expected to be significantly enhanced by the development of shrimp hatcheries.

Investment in a 200-hectare shrimp farm requires \$1 million-\$1.5 million in capital. <sup>1/</sup> A 200-hectare farm can be expected to produce 500,000-600,000 pounds of shrimp during each of its first 2 years of operation. Production costs for a farm this size are as follows:

Production costs per pound of shrimp

Labor:	
Supervisor-----	\$0.10
Direct labor-----	.04
Indirect labor-----	.01
Depreciation and amortization--	.72
Delivery to processing plant--	.02
Fuel/lubricants-----	.18
Maintenance-----	.04
Electricity-----	.08
Seedstock-----	.20
Feed-----	1.16
Contingency costs-----	.20
Production costs-----	\$2.75
Processing/packaging-----	\$0.25
Total cost-----	\$3.00

The single largest operating expense is feed, which amounts to \$1.16 per pound of output, or 54 percent of total costs. Labor is a relatively minor expense, totaling \$0.15 per pound, or 5 percent of total costs. Fuel, which increased from \$0.14 per U.S. gallon in 1980 to \$0.45 per gallon in 1984 <sup>2/</sup>, amounts to \$0.18 per pound, and seedstock expenses equal \$0.20 per pound. The total cost of \$3.00 per pound is probably on the high end of the cost range for Ecuadorean shrimp farming, since many farms are of a smaller scale than the one described above, with less reliance on artificial feed and less depreciable capital; industry sources indicate that smaller farms may produce shrimp for as low as \$2.00 per pound.

Marketing

Almost all shrimp production in Ecuador is destined for export markets: of the 36,600 metric tons of shrimp harvested in 1983, approximately 94 percent, or 34,473 metric tons (whole weight) was exported, valued at \$183 million. In recent years, 95-99 percent of these exports have gone to the U.S. market.

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<sup>1/</sup> Bob Rosenberry, op. cit.

<sup>2/</sup> Testimony of Emilio Parodi, hearing transcript, p. 241.

There were 62 firms registered as shrimp exporters in Ecuador in 1983, up from 46 in 1982 and 21 in 1980. Because expansion has been rapid among these firms and because farm-raising shrimp in Ecuador is reportedly more profitable than packing and exporting it, it is expected that in the future the number of firms involved in packing and exporting will decline, perhaps to less than a dozen. Stimulating this exit is a Federal quality improvement program, which has recently temporarily closed some plants that failed to meet the program's standards.

Exporters in Ecuador are reportedly dissatisfied with the Federal Government policy requiring them to convert 70 percent of their export earnings to sucres (the Ecuadorean currency) at the official rate, while the remaining 30 percent can be converted at the free market rate. As of early 1985, the official exchange rate vis-a-vis the U.S. dollar was 63 sucres to the dollar, while the free market (financial) rate was 92 sucres to the dollar. From the exporter's perspective, exchanging 70 percent of a firm's earnings in dollars to sucres at the official rate instead of the entire sum at the free market rate amounts to a tax of 22 percent on gross revenues. This policy more than completely offsets the favorable effects of the 20 percent export subsidy provided by Ecuador to its shrimp exporters. Cushioning the effect of the foreign exchange policy is the presumed widespread practice of underinvoicing by shrimp firms of their production.

#### Panama

Panama is the third largest supplier, by value, of shrimp to the United States, with 7,400 metric tons, valued at \$62 million, entering the United States from that country in 1984. Shrimp represents Panama's second most important export commodity, after bananas. Exports of fresh and frozen shrimp (both ocean and aquaculture produced) contributed \$51 million to the Panamanian economy in 1983.

#### Production

The 1983 shrimp harvest from ocean fishing was down somewhat from 1982, as shown in the following tabulation (Government of Panama data; in metric tons, landed weight):

<u>Year</u>	<u>Ocean-caught</u>	<u>Aquaculture</u>
1980-----	5,563	<u>1/</u>
1981-----	7,051	<u>1/</u>
1982-----	7,693	<u>1/</u>
1983-----	6,758	1,300

1/ Not available.

Ocean-caught shrimp harvests rose from 5,563 metric tons in 1980 to a record 7,693 metric tons in 1982, then declined to 6,758 metric tons in 1983, for an overall increase of 21 percent during the 4-year period. In addition to the ocean harvest, Panamanian supplies of shrimp in 1983 included 1,300 metric tons of shrimp produced by aquaculture operations.

The decline in the ocean-caught shrimp harvest in 1983 to 6,758 metric tons has led to concern in Panama that the ocean fishery may be over-exploited, particularly since catch rates in the 1980's have been higher than the relatively stable annual catch rates during 1973-1979, which averaged 5,204 metric tons. The industry is reportedly harvesting virtually every individual shrimp that can be taken; moreover, there is concern that the harvest of shrimp larvae and juveniles in Panama, as in Ecuador, for use in aquaculture operations is endangering the future prospects of the ocean fishery.

### Aquaculture

There are few data on production of shrimp by aquaculture operations in Panama. The official statistic for 1983 production of 1,300 metric tons is believed by Panama industry members and Government officials to be too low, 1/ but accurate figures are impossible to obtain, since producers of aquacultured shrimp sell directly to processors of ocean-caught shrimp, who report their production figures without distinguishing between the two sources. Thus, at the same time that aquaculture production figures are believed to be underestimated, it is likely that statistics on ocean harvests and also the reported decline in catch in 1983, are overestimated.

The aforementioned negative effects on ocean fishing of the harvest of shrimp larvae for aquaculturists may be reduced in the future by the further development of shrimp hatcheries. With more hatcheries, the dependence on natural sources for "seed" shrimp will be lessened, and control over aquaculture operations enhanced, since seed shrimp availability is crucial to a successful aquaculture operation. Such hatchery development is being supported by the Panama Government through financial assistance and research and development activities.

### Marketing

The United States is, by far, the principal market for Panamanian shrimp products, as shown in the following tabulation (Government of Panama data; in metric tons, live weight equivalent):

<u>Year</u>	<u>Production</u>	<u>Exports</u>	<u>Exports to United States</u>
1980-----	<u>1/</u> 5,563	6,155	<u>2/</u>
1981-----	<u>1/</u> 7,051	6,426	<u>2/</u>
1982-----	<u>1/</u> 7,693	6,813	<u>2/</u>
1983-----	8,062	6,919	6,629

1/ Excludes production from aquaculture operations.

2/ Not available.

Exports of shrimp products in 1983 totaled 6,919 metric tons, or 86 percent of total production. Of these, 96 percent were exported to the United States.

### Brazil

U.S. imports of shrimp products from Brazil in 1984 totaled 8,987 metric tons, an increase of 126 percent from the 1980 import volume of 3,977 metric tons. The value of imports in 1984 was \$61.1 million, an increase of 201 percent over the \$20.3 million worth of shrimp imported in 1980, making Brazil the fourth largest foreign supplier of shrimp to the U.S. market in 1984. Shrimp represents the single most important fisheries export product for Brazil, in terms of value, contributing to an overall balance of trade surplus for fisheries products of \$150 million in 1983, an important development for this country which is much concerned about its international trade position.

### Production

The Brazilian shrimp fleet consists of a total of 502 large fishing vessels (including 95 foreign vessels) in excess of 20 gross register tons, and numerous smaller boats. The inshore fleet (for all fisheries) consists of nearly 50,000 boats, of which an indeterminable, but undoubtedly significant, number are shrimpers.

The total catch of shrimp in Brazil has declined somewhat in the last several years, as shown in the following tabulation (from official data of the Government of Brazil):

<u>Year</u>	<u>Catch (metric tons)</u>
1975-79 average-----	47,096
1980-----	33,716
1981-----	34,195
1982-----	35,767
1983-----	30,132

The total shrimp catch (all species) in 1983 amounted to 30,132 metric tons, representing a 16 percent decrease from the 1982 catch of 35,767 metric tons, and a decline of 36 percent from the average annual catch during 1975-79 of 47,096 metric tons.

Production of processed shrimp in Brazil consists mostly of fresh and frozen products (table 29). Total production of shrimp products in 1982, the latest year for which data are available, amounted to 30,147 metric tons, of which 99 percent was either fresh or frozen peeled or shell-on shrimp. Since 1979, there has been a general decline in processed shrimp production; between 1979 and 1982, output fell 8 percent, from 32,895 metric tons in the former year to 30,147 metric tons in the latter year. The entire decline occurred in fresh production, which declined from 20,447 metric tons in 1979 to 17,339 metric tons in 1982.



Table 29.--Production of shrimp in Brazil, by product forms, 1979-82

(In metric tons, product weight)					
Year	Fresh	Frozen	Other <u>1/</u>	Total	
1979-----	20,477	12,181	237	32,895	
1980-----	17,761	11,009	232	29,002	
1981-----	22,309	9,899	109	32,317	
1982-----	17,339	12,750	58	30,147	

1/ Includes salted, smoked, and canned shrimp.

Source: Compiled from official statistics of the Government of Brazil.

### Aquaculture

Production of shrimp by aquaculture operations in Brazil received a boost in 1982 when Government financial support of this sector first got underway. During 1982-84, more than \$13 million in Government loans were provided to finance 16 aquaculture projects. No data exist to differentiate between ocean- and aquaculture-production of shrimp in Brazil. The principal species produced by these aquaculture operations include P. japonicus, M. rosenbergii, P. vannamei, P. aztecus, and P. brasiliensis.

Aquaculture of shrimp in Brazil is currently limited but has great potential. It is a new sector of the shrimp industry, and efficient technology is reportedly not yet developed or being implemented. However, climate and environmental conditions are very favorable to shrimp aquaculture in Brazil, and in the future such activities should increase in scale and efficiency.

### Marketing

More than two-thirds of the shrimp produced in Brazil is consumed internally; exports of shrimp in 1982 amounted to 9,156 metric tons, valued at \$72.3 million, or only 30 percent, by volume, of total production. The following tabulation shows exports of shrimp from Brazil during 1979-83 (from official statistics of the Government of Brazil):

<u>Year</u>	<u>Quantity</u> (Metric tons)	<u>Value</u> (Thousands of U.S. dollars)	
		<u>Total</u> <u>exports</u>	<u>Exports to the</u> <u>United States</u>
1979-----	7,169	55,376	27,772
1980-----	7,498	44,957	17,823
1981-----	8,836	51,645	26,885
1982-----	9,156	72,264	42,229
1983-----	8,984	68,468	43,790

The volume of Brazilian shrimp exports increased during 1979-82, from 7,169 metric tons in 1979 to a peak of 9,156 metric tons in 1982, then declined slightly to 8,984 metric tons in 1983. On a value basis, 64 percent (\$43.8 million) of Brazil's shrimp exports were destined for the United States in 1983, a proportion that has been increasing in recent years. The other principal market for Brazilian shrimp was Japan, which took \$22.8 million, or 33 percent of Brazil's exports in 1983. Japan is the market for the highest quality Brazilian shrimp; the average price for Japanese purchases of Brazilian shrimp in 1983 was \$10.18 per kilogram, while the average price for U.S.-bound shrimp from Brazil was \$6.71 per kilogram.

#### India

India has traditionally been a major foreign supplier to the U.S. shrimp market. Indian exports of shrimp to the United States are almost exclusively frozen, but small quantities of canned shrimp are also included.

The following tabulation shows Indian exports of frozen shrimp to the United States and the world, and Indian shrimp exports as a share of total fisheries exports--for Indian fiscal years (April-March) 1982 and 1983 and the first half of 1984 (Government of India data; in metric tons):

<u>Fiscal year</u>	<u>Exports</u>	<u>Exports to the United States</u>	<u>Exports as a share of total fisheries exports (percent)</u>
1981/82-----	51,900	<u>1/</u>	74
1982/83-----	54,700	<u>1/</u>	70
1982/83:			
April-Sept---	26,100	5,900	76
1983/84:			
April-Sept---	25,200	7,383	63

1/ Not available.

Frozen shrimp is the principal export item for the Indian fishing industry, accounting for 63 percent of the 39,766 metric tons of fisheries products exported during April-September 1983, and because of its high unit value, an even higher proportion of export value. Of some 1.7 billion rupees worth of fisheries exports during April-September 1983, frozen shrimp contributed 1.48 billion rupees, or 86 percent.

The principal market for Indian shrimp exports is Japan, which took 55 percent of the total export volume in the first half of Indian fiscal year 1983/84. However, for a variety of reasons, this market is becoming less important, and exports to the United States, Western Europe, and other destinations increased between 1982/83 and 1983/84. These reasons include: (1) heavy stocks of high-priced shrimp in Japan; and (2) weak markets in Japan for the principal product forms of Indian shrimp, which include small-sized, peeled and undeveined shrimp. These factors have acted to depress average prices of Indian shrimp in Japan and caused Indian exporters to channel more product into U.S. and European markets, where prices were stronger.

In addition to market problems, it is also reported that Indian fishermen are suffering from stagnant catch rates, although no recent data are available to support this. India has limited aquaculture production and so relies heavily on "natural" sources of shrimp, which, it is feared by Indian authorities, may be over exploited in light of the recent stagnant harvests. The Indian Government is currently considering implementation of various management schemes to restrict harvesting effort, particularly by nontraditional, mechanized vessels, which may adversely affect the condition of the small-scale, traditional inshore fishery.

#### Other Countries

Other important sources of imported shrimp in U.S. markets include Thailand, Taiwan, Norway, and Peru, which collectively accounted for 25,367 metric tons of U.S. imports in 1984, or 16 percent of the total. These imports were valued at \$23.9 million (13 percent of the total import value). In some of these countries, aquaculture is an important sector of the shrimp industry. For all of them, the United States is, or promises to be, an important market for their shrimp production.

#### Thailand

Thailand's production of shrimp has increased significantly in recent years, although with less emphasis on aquaculture than in other warm-water shrimp producing nations. The following tabulation shows shrimp production in Thailand, by type of production, during 1980-82 (compiled from statistics of the Government of Thailand):

<u>Year</u>	<u>Ocean</u>	<u>Type of production</u>		<u>Total</u>
		<u>Freshwater</u>	<u>Aquaculture</u>	
		<u>(Metric tons)</u>		
1980-----	133,312	3,669	8,063	145,044
1981-----	148,266	3,600	10,728	162,594
1982-----	187,460	3,547	10,091	201,098

Total shrimp production in Thailand in 1982 amounted to 201,098 metric tons, a 24 percent increase over production in 1981 of 162,594 metric tons, and a 39 percent increase over production in 1980 of 145,044 metric tons. The vast bulk of shrimp output in 1982 (93 percent) was accounted for by ocean fisheries, from which 187,460 metric tons of shrimp were caught in that year. This sector of the Thai shrimp industry has seen the most rapid growth in recent years, in both absolute and relative terms, with production increasing by 41 percent, from 133,312 metric tons between 1980 and 1982.

It is apparent from the above tabulation that Thailand is one important shrimp-producing nation in which aquaculture has not yet taken a firm hold. The shrimp farms in Thailand are very small, averaging 20 acres in 1982, and suffer from quite low levels of productivity, with an average per-acre yield of only about 290 pounds of shrimp meats in 1982. Nevertheless, productivity is on the rise, and with increased investment in shrimp hatcheries (in 1982

there were less than 10 private and 2 public hatcheries), future development of this sector of the Thailand shrimp fishery may be enhanced.

Japan and the United States are the two major markets for Thailand's fishery products exports, accounting for 28 percent and 24 percent, respectively, of the total value of such exports in 1983. Thailand exported some 20,150 metric tons, worth \$138 million, of shrimp and lobster in 1983, of which 6,149 metric tons, valued at \$38 million, were shipped to the United States. The majority of Thailand's shrimp production, particularly the highest quality products, are shipped to the Japanese market.

### Taiwan

Exclusive of aquaculture shrimp production, the Taiwanese shrimp industry has grown from 67,327 metric tons of whole shrimp in 1981 to 78,597 metric tons in 1983, an increase of 17 percent. The following tabulation shows shrimp production, by type of fishery, for 1983 (compiled from statistics of the Government of Taiwan):

<u>Type of fishery</u>	<u>Production (metric tons)</u>
Inshore fishery-----	62,697
Deepsea fishery-----	11,538
Coastal fishery-----	4,362

The inshore fishery accounts for the greatest amount of shrimp production, and it was in that fishery that the greatest change in shrimp production occurred during 1981-83. Inshore production rose by 8,615 metric tons, or 16 percent, during the period.

There has been extensive investment in shrimp aquaculture in Taiwan in recent years, augmenting the supply of shrimp for both domestic consumption and export trade. Acreage allotted to shrimp aquaculture in 1983 totaled 10,100 acres, a 46 percent increase over the 6,900 acres in use in 1980, and a more than 450 percent increase over the 1,800 acres available in 1976. Production of aquacultured shrimp, according to industry reports, grew to 16,000 metric tons in 1983, more than 5 times the 1979 production level of 3,000 metric tons. In all, an estimated 94,600 metric tons of shrimp were produced from ocean and aquaculture sources in Taiwan in 1983.

As with shrimp exports from Thailand, a principal market for Taiwan's shrimp is Japan. This is due in part to its proximity to Japan and to Japan's preference for the particular "exotic" species harvested in the Western Pacific. For shrimp of somewhat lesser value, the United States is an important market. Taiwan's total shrimp exports in 1983 amounted to 25,352 metric tons, of which 9,027 metric tons (36 percent) were destined for the United States.

Norway

The emergence in recent years of Norway as an important shrimp producer and exporter is due to a number of factors, the most important of which has been the weakened condition of other more traditional Norwegian fisheries such as cod. The Norwegian economy and labor force, particularly in rural areas, is heavily dependent upon the fishing industry, and with the depressed traditional fisheries there occurred a shift toward exploitation of new fishery resources such as cold-water prawns (shrimp). An additional stimulus to the development of the Norwegian shrimp fishery has been the growth in recent years of markets for shrimp in Western Europe and the United States.

The production of shrimp in Norway has increased significantly in recent years, as shown by the following tabulation (compiled from data of the Organization for Economic Cooperation and Development):

<u>Year</u>	<u>Catch</u> (Metric tons)
1977-80 average-----	28,000
1981-----	40,600
1982-----	51,300
1983-----	73,800
1984-----	82,000

The Norwegian shrimp catch in 1984 totaled 82,000 metric tons, an increase of 11 percent over the previous year's catch of 73,800 metric tons, and an increase of 193 percent over the 1977-80 average annual catch of 28,000 metric tons. The Norwegian shrimp harvest is almost exclusively composed of northern prawn (Pandalus borealis), a cold-water shrimp found in the waters of the North Atlantic all the way from Canada to Scandinavia. The catch is also all, or virtually all, ocean caught; while there is extensive aquaculture of fish in Norway, it consists mostly of salmon and trout farms, with little or no farming of shrimp.

Most shrimp produced in Norway is exported, primarily to other Western European nations, but also increasingly to the United States, as shown in the following tabulation (total exports compiled from data of the Organization for Economic Cooperation and Development; exports to the United States compiled from official data of the U.S. Department of Commerce (U.S. imports); in metric tons, product weight):

<u>Year</u>	<u>Total exports</u>	<u>Exports to the</u> <u>United States</u>	<u>Share of total exports</u> <u>to exports to the</u> <u>United States</u> (percent)
1980-----	15,693 <u>1/</u>	725	5
1981-----	12,400	554	4
1982-----	18,200	1,290	7
1983-----	23,600	4,928	21

1/ Includes all shellfish products

In 1983, Norway exported 23,600 metric tons (product weight) of shrimp products, of which 4,928 metric tons, or 21 percent, were shipped to the United States. The latter figure represents a 280 percent increase over exports to the United States in 1982 of 1,290 metric tons. Almost all of this shrimp was in fresh or frozen form. Norwegian shrimp made up 3 percent of the foreign supply of shrimp in the U.S. market in 1983, and promises to be even more important in the near future if the Norwegian government continues to increase the number of shrimp trawler licenses, as it has done in the recent past to compensate for declines in other fisheries.

### Peru

U.S. imports of shrimp products from Peru in 1984 totaled 2,975 metric tons, valued at \$23.9 million, more than 4 times the volume and 6 times the value imported in 1980 (669 metric tons, valued at \$4 million). Much of this increase in Peru's exports has come from increased shrimp production in aquaculture facilities.

Peru has one of South America's smallest ocean shrimp fisheries; only 454 metric tons were landed in 1982. However, aquaculture operations produced an estimated 1,996 metric tons of shrimp in the same year. There is concern that the rapid growth of Peruvian shrimp aquaculture will adversely affect the future of the ocean shrimp fishery. In particular, the demand for shrimp larvae for seed stock has grown tremendously compared with available natural supply. Since no shrimp hatcheries currently exist in Peru, the development of such facilities could act to prevent the stalling or decline of the Peruvian shrimp industry.

The principal market for Peru's shrimp production is the United States. The following tabulation shows U.S. imports of shrimp from Peru during 1980-84 (compiled from official statistics of the U.S. Department of Commerce):

<u>Year</u>	<u>Quantity</u> (metric tons)	<u>Value</u> (1,000 dollars)
1980-----	646	3,999
1981-----	871	5,716
1982-----	1,338	9,568
1983-----	4,244	35,879
1984-----	2,975	23,525

The decline in imports in 1984 was due principally to the aftermath of the 1983 El Nino, which hit Peru harder than any other country. Some of the worst flooding in that country's history heavily damaged numerous shrimp ponds, dramatically decreasing shrimp production in 1984. It may be several years before some of the aquaculture operations are restored to normal condition. Another factor explaining the 1983-84 decline could be inflation of the 1983 import figure due to illegal shrimp trade. It is believed by officials of the U.S. Department of Commerce that a large volume of shrimp was smuggled into Peru from Ecuador for export to the United States in an attempt by Ecuadorean exporters to avoid that country's export regulations (see discussion on Ecuador).

## THE U.S. MARKET FOR SHRIMP

The United States is the world's largest consumer of shrimp. Shrimp is consumed throughout the United States and is one of the most popular seafood items. The major U.S. shrimp markets are concentrated in large, metropolitan areas such as New York, Los Angeles, and Chicago. Shrimp is mainly consumed in restaurants, and shrimp products marketed through retail outlets are mainly in the frozen, canned, and specialty forms.

### Products

Shrimp is marketed in several product forms. The principal forms, in descending order of value, are raw, heads-off, shell-on; breaded; peeled; and canned. Most raw, heads-off, shell-on shrimp, breaded shrimp, and peeled shrimp are marketed frozen. Various shrimp specialty products such as dried shrimp, stuffed shrimp, shrimp burgers, and shrimp bisques are also marketed.

### Channels of Distribution

Shrimp is marketed to consumers through a variety of channels. Figure 4 shows major U.S. marketing channels for shrimp products. Domestic shrimp is first marketed by shrimp fishermen. Shrimp fishermen market most of their catch to dealers and packinghouses (also referred to as shrimp houses or fish houses). Shrimp fishermen also may sell their catch directly to wholesalers and/or processors, although this is less common. Fresh shrimp are also marketed off the boat and at roadside markets by recreational and commercial (usually part-time) shrimp fishermen; data on the quantity marketed in this manner are not available.

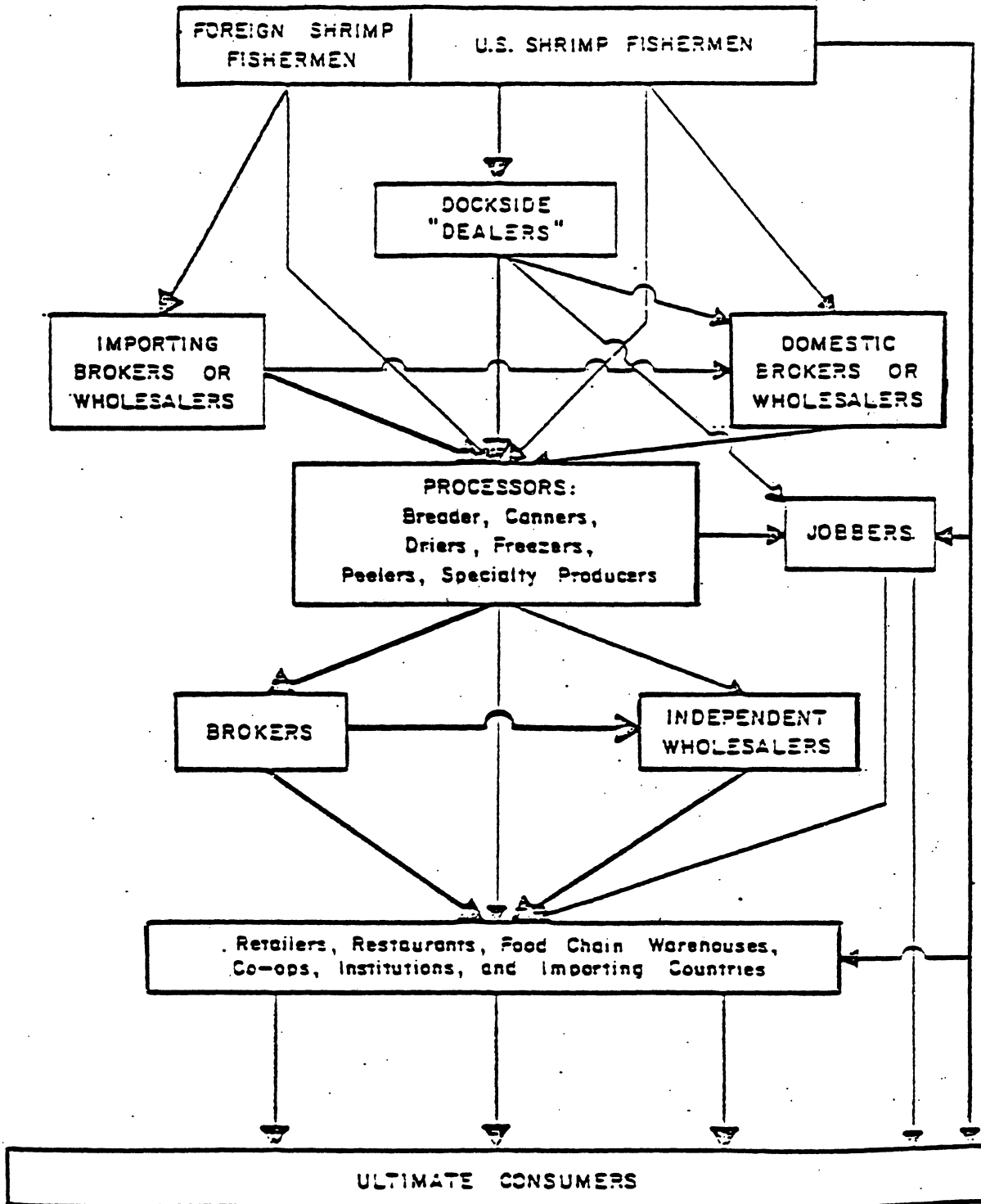
Packinghouses generally purchase shrimp dockside and pack it for sale to wholesalers, brokers, or further processors. Packinghouses may process shrimp to a limited extent such as heading, washing, and grading.

Shrimp processors generally obtain their shrimp directly from vessels, from dealers and packinghouses, and from wholesalers and importers. Processors market their products through brokers, wholesalers, or may market directly to end users. Many shrimp processors have supplier relationships with end users and may produce shrimp under contract or to specifications of the customer.

Imported shrimp are marketed through similar channels as are domestic shrimp. Importers may market shrimp directly to wholesalers, institutions, or retailers, or may market through brokers and/or wholesalers. A substantial amount of imported shrimp is utilized by U.S. shrimp processors as raw material and, once processed, is marketed as domestic shrimp in its final product form.

The bulk of U.S. shrimp supplies reach the ultimate consumer through the institutional trade. This includes restaurants, hotels, cafeterias, schools, the military, and hospitals. It is estimated that about 80 percent of U.S.

Figure 4.--Major U.S. marketing channels for shrimp products.



———— Bold lines indicate most heavily used channels.

Source: Gulf of Mexico Fishery Management Plan for Shrimp.



shrimp supplies are marketed through these institutions. <sup>1/</sup> The remainder is marketed through retail outlets, including retail fish markets, supermarkets and grocery stores, and convenience food stores.

The relative amount of shrimp marketed through these channels varies somewhat by product form. For example, heads-off, shell-on shrimp and breaded shrimp are utilized principally by the institutional sector, whereas canned shrimp and shrimp specialty products go mainly to the retail sector.

#### Price Determination

Shrimp prices to the fishermen (ex-vessel prices) generally are determined on a daily basis and are quoted on the basis of shrimp size and species. Price differences may exist for the same size and species, owing to factors such as the condition of the shrimp, the length of time the boat has been at sea, the reputation of the individual shrimp fisherman, and buyer-seller relationships. In general, shrimp prices throughout the Gulf and South Atlantic region are influenced by the price established at Brownsville-Port Isabel, Texas, the leading U.S. shrimp port in terms of the value of shrimp landings. Shrimp prices in Brownsville-Port Isabel are determined daily by bid for each size, with the highest bid setting the price for each size. Prices in other ports may be set differently, but the price set at Brownsville-Port Isabel generally is used as a reference for most ex-vessel prices in the Gulf and South Atlantic region. <sup>2/</sup> The basis for determining shrimp ex-vessel prices may also differ according to the system by which the shrimp are unloaded and sold. The price may be based on whether the shrimp is landed heads-on or heads-off. Also, the price may be based on a graded (sorted by size) weight or on an "average (box) weight." Graded weight refers to shrimp that has actually been mechanically sorted by size. Average (box) weight refers to shrimp that is randomly sampled (usually by taking a small amount as it is being unloaded), weighed, and counted. These systems vary considerably from port to port. In general, shrimp harvesters are price takers, as their catch is perishable and the number of buyers in a single port is usually limited.

Shrimp processors generally set their price based on prevailing market conditions. Processors will offer ex-vessel prices based on the market price for their product less production costs and possibly, a margin. If the market price is below an acceptable level to the processor, the processor may hold shrimp in inventory until a more favorable price is obtained. Wholesale shrimp market price quotes are reported for the New York area in the New York Fishery Market News Report (or the "green sheet") (also reported in the New Orleans Market News Report) each Friday. These quotes generally represent prices offered to shrimp processors and importers by primary wholesalers.

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<sup>1/</sup> The U.S. Shrimp Industry, An Economic Profile For Policy and Regulatory Analysis, National Fisheries Institute and the National Marine Fisheries Service, January 1983, p. I-50.

<sup>2/</sup> Testimony of Mr. William Zimmerman, hearing transcript, p. 98; and Mr. Jonathon Sleik, hearing transcript, p. 220.

Some shrimp industry sources indicate that the green sheet price influences wholesale prices for shrimp throughout the United States 1/, while other sources discount the importance of the green sheet price 2/. Shrimp processors generally are price takers (i.e., they do not set wholesale prices); however, processors may withhold their product from the market in inventory until market prices strengthen. In general, shrimp prices are set in competitive markets where conditions are determined by supply and demand factors.

#### Supply Factors

The supply of shrimp in the U.S. market is determined by the level of the domestic catch, imports, and changes in inventory. U.S. exports of shrimp are relatively minor. As discussed earlier, the size of the domestic catch of shrimp has been relatively fixed for a long period of time. Factors influencing the supply of domestic-caught shrimp are largely outside of market forces, as the U.S. shrimp harvest has been at maximum-sustainable yield for many years. 3/ Factors influencing the supply of imported shrimp in the U.S. market include U.S. market conditions as well as market conditions in competing markets (mainly Japan and the European Community) and supply conditions in major shrimp producing nations.

#### Demand Factors

The demand for shrimp in the U.S. market is affected by a variety of factors. The principal factors are the number of consumers, the level of their disposable income, the price of shrimp and competing goods, and consumer preferences. The number of potential U.S. shrimp consumers can be determined by the population of the United States. The U.S. population was 227 million persons in 1980, up from 203 million in 1970. 4/ The population is projected to increase to 249 million by 1990. Most of the population is concentrated around major metropolitan areas. The top 10 U.S. metropolitan areas (by population) as of 1980 were New York, Los Angeles, Chicago, Philadelphia, San Francisco, Detroit, Boston, Washington, D.C., Houston, and Dallas. 5/ These areas are among the major U.S. shrimp markets.

Along with the population, the level of consumers' disposable personal income is a major factor influencing the demand for shrimp in the U.S. market. Shrimp is relatively expensive and is often referred to as a "luxury" food item. The following tabulation shows the aggregate level of disposable personal income as well as per-capita disposable personal income, in both real

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1/ Testimony of Mr. Jonathan Sleik, hearing transcript, p. 220.

2/ Information gathered during fieldwork.

3/ Testimony of Mr. Tee John Mialjevich, transcript of hearing, p. 53.

4/ Statistical Abstract of the United States 1984, U.S. Department of Commerce.

5/ Ibid. Based on Metropolitan Statistical Areas.

and nominal terms, in 1970 and during 1980-84 (compiled from official statistics of the U.S. Department of Commerce):

<u>Year</u>	<u>Disposable personal income</u>			
	<u>Aggregate</u>		<u>Per capita</u>	
	<u>Nominal</u>	<u>Real 1/</u>	<u>Nominal</u>	<u>Real 1/</u>
	<u>(billions)</u>			
1970-----	\$695	\$752	\$3,390	\$3,665
1980-----	1,829	1,022	8,032	4,487
1981-----	2,048	1,055	8,906	4,587
1982-----	2,177	1,060	9,377	4,567
1983-----	2,340	1,095	9,966	4,670
1984 <u>2/</u> -----	2,578	1,152	11,054	4,941

1/ 1972 dollars.

2/ Preliminary.

At the aggregate level, disposable personal income rose in nominal terms from \$695 billion in 1970 to \$1,829 billion in 1980, or by 163 percent. In real terms, the increase was from \$752 billion in 1970 to \$1,022 billion in 1980, or by 36 percent. During the same period, per-capita disposable personal income rose in nominal terms from \$3,390 to \$8,032, or by 137 percent, and in real terms from \$3,665 to \$4,487, or by 22 percent. This period also saw a significant rise in U.S. shrimp supplies and consumption.

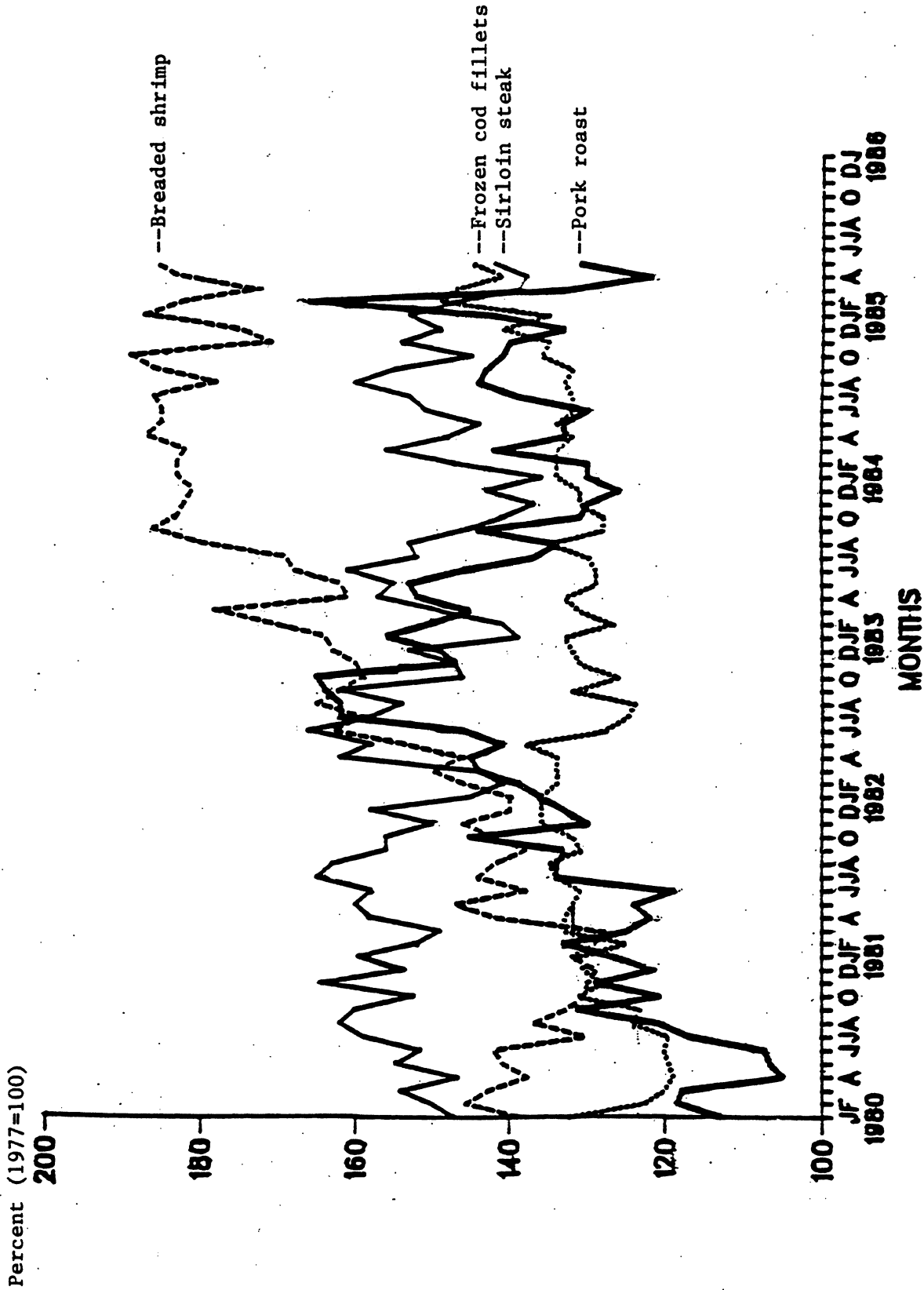
During 1980-84, aggregate disposable personal income rose from \$1,829 billion in 1980 to \$2,578 billion in 1984, or by 41 percent. In real terms, such income rose 13 percent, from \$1,022 billion in 1980 to \$1,152 billion in 1984. Per-capita disposable personal income rose in nominal terms from \$8,032 in 1980 to \$11,054 in 1984, or by 38 percent. In real terms, the increase was from \$4,487 in 1980 to \$4,941 in 1984, or by 10 percent. The general rise in disposable personal income has strengthened the demand for shrimp in the U.S. market, both during the period under review and in the longer run.

Consumers' decisions to purchase shrimp are also influenced by the prices of shrimp and competing food items. However, this factor is not generally believed to be as important as the level of disposable personal income, since the bulk of shrimp is consumed in restaurants. Figure 5 shows the retail-price index for selected fish, meat and poultry items. These items were chosen because they are likely to be served in restaurants in competition with shrimp. As shown by the figure, the retail price index for breaded shrimp was significantly higher than for all other items since the last quarter of 1982.

There are general consumer preferences for shrimp in the U.S. market that influence demand. West Coast consumers generally prefer white shrimp, while East Coast consumers mainly consume brown shrimp. Different sizes may be preferred for particular uses, such as larger shrimp are usually preferred as an entre item and smaller shrimp are preferred as an ingredient in dishes such as salads, casseroles, and appetizers.

Demand elasticities for shrimp have been estimated by several researchers over the years. A discussion of the results of various price and income elasticities of demand studies for shrimp is presented in appendix M.

Figure 5.--Retail price index of selected fish, meat, and poultry items.



Source: Operation Price Watch, U.S. Department of Commerce, National Marine Fisheries Service.

Historically, most analyses of the U.S. shrimp market have found the demand for shrimp to be price inelastic and income elastic. These elasticities mean that the demand for shrimp is responsive to changes in consumers' income, and relatively unresponsive to changes in the price of shrimp. This difference in response may be because, in the United States, a significant amount of shrimp is consumed in restaurants where shrimp usually constitutes a small portion of the price of the meal. Thus, the demand for shrimp would vary more with changes in consumers' income and the frequency of dining out than in response to changes in the price of shrimp.

More recent studies suggest the demand for shrimp may be income inelastic, largely based on structural changes in the shrimp industry that have occurred that were not accounted for by previous studies. In support of this result, some shrimp industry representatives argue that shrimp is no longer a "luxury" good, as a new generation of seafood dinnerhouse restaurants are offering "moderately-priced seafood to broader categories of consumers at more convenient locations (particularly suburban locations)," with shrimp as a leading menu item. 1/ Also, there has been an increase in the inclusion of shrimp on the menu of nonseafood restaurants. 2/ These changes, it may be argued, have made the demand for shrimp less sensitive to variations in consumers' income than before.

## Prices

### Ex-vessel prices

Shrimp ex-vessel prices have risen significantly in the long run. The following tabulation shows annual average ex-vessel prices for the Gulf and South Atlantic region during 1970-84 as compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service (Dollars per pound, heads-on basis, all species and size counts):

<u>Year</u>	<u>Ex-vessel price</u>
1970-----	0.48
1971-----	.61
1972-----	.72
1973-----	.96
1974-----	.73
1975-----	1.07
1976-----	1.31
1977-----	1.13
1978-----	1.31
1979-----	1.85
1980-----	1.49
1981-----	1.52
1982-----	2.06
1983-----	2.16
1984-----	1.73

1/ Submission by Red Lobster Inns of America, p.4.

2/ Testimony of Mr. Jonathan Sleik, transcript of hearing, p. 208.

During 1970-84, annual average shrimp ex-vessel prices in the region rose 260 percent. During 1980-84, ex-vessel prices rose irregularly by 16 percent.

Data on monthly ex-vessel prices, by selected size counts, during 1980-85 are presented in table 30 (also see fig. 6). These prices are weighted averages for all species, heads-off basis, at Western Gulf ports. Ex-vessel shrimp prices fluctuate month-to-month. However, the general trend is toward higher prices during the second quarter of each year (April-June), with prices typically peaking in May.

Most of the size counts examined followed a similar trend during 1980-85. Prices declined during 1980-81; in 1982, prices strengthened to the highest levels during the five years examined and stayed strong throughout 1983. In 1984, however, price levels declined dramatically; in some size counts ex-vessel prices fell below the 1980 levels. The downward trend in ex-vessel prices stabilized during the final 4 months of 1984, and ex-vessel prices have remained steady through March 1985. For most sizes, the price level during January-March 1985 was at the lowest level for the 5-year period examined.

Large shrimp (16-20 count range) did not follow the same long-run price trends as closely as the other size counts examined. Ex-vessel prices rose steadily from an annual average of \$4.37 per pound in 1980 to \$6.02 per pound in 1982, a 38 percent increase (table 30). Prices increased slightly in 1983 to \$6.03 per pound before falling by less than 2 percent per pound to \$5.93 in 1984. During January-March 1985, prices declined by approximately 9 percent for the 16-20 size count.

Shrimp in the medium-size counts (26-30, 31-35, and 36-40) decreased in price from 1980 to 1981, and then increased sharply in 1982. Size 26-30 shrimp decreased in price slightly from 1980 to 1981 before prices increased 38 percent from \$3.82 per pound in 1981 to \$5.26 per pound in 1982. Shrimp prices in the 26-30 count then stabilized at the same level in 1983 before prices declined 19 percent to \$4.28 per pound in 1984, and an additional 10 percent to \$3.87 per pound in January-March 1985.

Shrimp ex-vessel prices for size count 31-35 also decreased during 1980-81, from \$3.65 per pound in 1980 to \$3.32 per pound in 1981, or by about 9 percent. In 1982, prices rose to \$4.80 per pound, approximately a 45 percent increase. Prices steadied during 1983 before beginning a large decline in 1984. The price decline for the 31-35 size count continued into 1985. The price level for the 31-35 count was \$3.03 per pound in January-March 1985, which was 37 percent below the 1982 annual average.

Ex-vessel prices for shrimp in the 36-40 size count initially decreased in 1980-81 from \$3.21 per pound in 1980 to \$2.98 per pound in 1981, a 7 percent decrease. Price levels in 1982 were then extremely strong. Prices increased to \$4.25 per pound in 1982, a 42 percent increase over the 1981 level. Average annual prices remained high in 1983; however, these prices also took a sharp downturn in mid-1984. Prices in the first 3 months of 1985 have remained low at approximately \$2.80 per pound.

Small shrimp (51-60 count range) did not exactly follow the trends of the medium-size shrimp. Average prices for this count were fairly stable during 1980-81. Prices then increased from \$2.50 per pound in 1981 to \$3.31 per pound in 1982, a 32 percent rise. Although this size count also had a strong

Table 30.--U.S. western Gulf ex-vessel prices for shrimp (weighted averages), by size counts, by year and month, 1980-1985

Period	(Per pound)				
	Size count				
	16-20	26-30	31-35	36-40	51-60
1980:					
January-----	\$4.97	\$4.68	\$4.38	\$3.60	\$2.71
February-----	4.76	4.56	4.16	3.47	2.34
March-----	4.64	4.41	3.95	3.43	2.51
April-----	4.26	3.94	3.77	3.25	2.47
May-----	4.22	3.78	3.62	3.25	2.50
June-----	4.36	4.02	3.69	3.38	2.36
July-----	4.34	4.07	3.71	3.35	2.35
August-----	4.71	3.90	3.72	3.27	2.60
September-----	4.38	3.44	3.39	2.94	2.55
October-----	3.97	3.32	3.18	2.89	2.50
November-----	3.81	3.26	3.05	2.74	2.27
December-----	4.04	3.56	3.23	2.93	2.33
Average-----	4.37	3.91	3.65	3.21	2.46
1981:					
January-----	4.38	3.86	3.47	3.15	2.47
February-----	4.87	4.19	3.69	3.37	2.68
March-----	5.11	4.34	3.76	3.50	2.69
April-----	5.23	4.41	3.77	3.47	3.08
May-----	5.54	4.29	3.60	3.33	2.83
June-----	5.47	4.11	3.26	2.88	2.44
July-----	5.06	3.36	2.67	2.34	2.14
August-----	4.50	2.78	2.51	2.27	2.03
September-----	5.05	3.39	3.05	2.74	2.35
October-----	4.77	3.41	3.17	2.73	2.39
November-----	5.31	3.87	3.45	2.97	2.47
December-----	5.28	3.81	3.51	2.98	2.48
Average-----	5.05	3.82	3.33	2.98	2.50
1982:					
January-----	5.62	4.29	3.99	3.42	2.60
February-----	6.07	4.93	4.82	4.10	3.06
March-----	6.02	5.08	4.68	4.01	3.21
April-----	5.93	5.39	5.35	4.69	3.68
May-----	6.05	5.83	5.67	5.25	3.98
June-----	5.71	4.89	4.21	3.70	3.21
July-----	5.67	5.02	4.29	3.75	2.65
August-----	6.08	5.30	4.60	4.07	3.18
September-----	6.39	5.50	4.96	4.49	3.48
October-----	5.94	5.23	4.82	4.31	3.45
November-----	6.33	5.66	5.10	4.57	3.62
December-----	6.38	6.00	5.17	4.71	3.65
Average-----	6.02	5.26	4.81	4.26	3.31

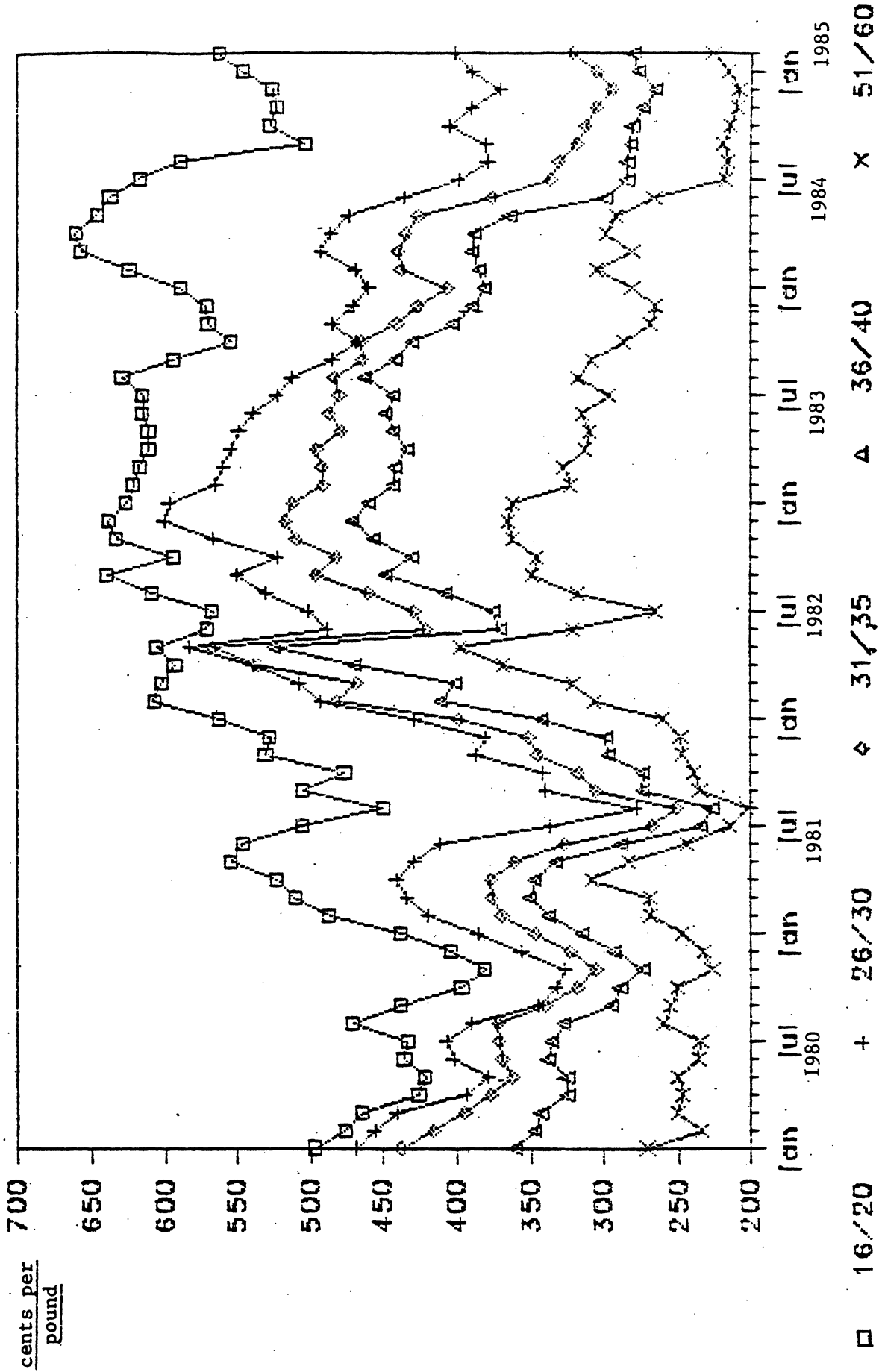
Table 30.--U.S. western Gulf ex-vessel prices for shrimp (weighted averages), by size counts, by year and month, 1980-1985--Continued

(Per pound)					
Period	Size count				
	16-20	26-30	31-35	36-40	51-60
1983:					
January-----	\$6.26	\$5.97	\$5.12	\$4.60	\$3.62
February-----	6.21	5.65	4.91	4.43	3.22
March-----	6.17	5.60	4.92	4.42	3.27
April-----	6.11	5.54	4.96	4.34	3.12
May-----	6.11	5.49	4.79	4.43	3.09
June-----	6.15	5.39	4.87	4.48	3.15
July-----	6.15	5.23	4.80	4.43	2.96
August-----	6.29	5.13	4.84	4.63	3.17
September-----	5.94	4.85	4.64	4.42	3.08
October-----	5.54	4.68	4.65	4.31	2.86
November-----	5.70	4.85	4.41	4.02	2.68
December-----	5.71	4.71	4.27	3.89	2.65
Average-----	6.03	5.26	4.77	4.37	3.07
1984:					
January-----	5.89	4.60	4.06	3.81	2.81
February-----	6.24	4.69	4.38	3.85	3.04
March-----	6.57	4.93	4.40	3.89	2.81
April-----	6.61	4.86	4.35	3.88	2.98
May-----	6.46	4.74	4.26	3.64	2.91
June-----	6.37	4.36	3.76	2.99	2.66
July-----	6.17	3.99	3.36	2.84	2.18
August-----	5.89	3.79	3.30	2.84	2.16
September-----	5.04	3.80	3.18	2.82	2.19
October-----	5.28	4.05	3.12	2.81	2.14
November-----	5.24	3.90	3.05	2.73	2.10
December-----	5.26	3.70	2.94	2.65	2.09
Average-----	5.92	4.28	3.68	3.23	2.51
1985:					
January-----	5.47	3.90	3.05	2.77	2.16
February-----	5.63	4.01	3.21	2.81	2.27
March-----	5.30	3.91	3.05	2.81	2.21

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.



Figure 6.--U.S. Western Gulf ex-vessel prices.



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

price increase in 1982, prices did not hold at this level in 1983 as did prices in the medium sizes. During 1983, average prices for shrimp in this size count fell 7 percent to \$3.07 per pound and continued downward throughout 1984 and during January-March 1985, to about \$2.12 per pound. This price was well below 1980 levels.

Ex-vessel prices for a particular size count of shrimp are affected by price movements in alternative size counts. During 1980-82, ex-vessel prices were either steady or increasing and prices moved in a common direction and magnitude for the 26-30, 31-35, 36-40, and 51-60 size counts. Beginning in mid-1983, and continuing through 1984 and into 1985, price trends moved steadily downward and the historic price relationships between size counts began changing. Naturally, there is some parallel price relationship between size counts; analysis of ex-vessel price data indicate that the price of 31-35 count shrimp is strongly correlated to price movements of 36-40 count shrimp. The relationship between the price for these two size counts is stronger than any other relationship examined. During the period under review, the gap between the price of shrimp in the 31-35 and 36-40 size counts remained intact, but the difference between the price for shrimp in the 31-35 size count and higher price for shrimp in the 26-30 count widened. The relative price declines for the 31-35, 36-40, and 51-60 counts were much more severe than for the 26-30 count. There are a number of reasons why these changes may have occurred. The quantity of shrimp imports was rising throughout the period; however, the unit value of imports declined from 1983 to 1984. Although this could imply lower overall prices for imported shrimp, this shift may indicate a change in the size composition of the imports, from larger more expensive shrimp to the smaller less costly shrimp in the 31-35, 36-40 and 51-60 size counts. The increased supply of smaller shrimp would depress the price for those size counts.

Another reason for the change in relative prices may be the emergence of aquacultured shrimp. According to industry sources, the 31-35 and 36-40 size counts are the most common size for imported aquacultured shrimp. 1/ As pond-raised shrimp accounted for an increasing share of U.S. imports, the quantity of 31-35 and 36-40 count shrimp may have risen. This increase in supply would depress the price for the 31-35 and 36-40 size counts. Also, the strong correlation between the 36-40 size count and the 31-35 size count may have pulled down the price of the 31-35 count further away from the 26-30 size count, with which it has a weaker historic relationship.

Another explanation for these changes in the shrimp size count ex-vessel price structure may be the Texas closure. 2/ The closing of Texas waters is designed to increase the shrimp size to more profitable levels. A result of this resource management policy is that more shrimp are now allowed to grow to the 31-40 size count range before being harvested. 3/ As mentioned earlier, the size counts, 31-35, 36-40, are common sizes for imported shrimp. The Texas closure may have altered historic supply relationships between size counts, and thus altered historic price relationships. Another, more seasonal, problem associated with the Texas closure occurs when the season

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1/ Testimony of Mr. T.J. Mialjevich, transcript of hearing, p. 17, and submission by Mr. Emilio Parodi, President, Chamber of Shrimp Producers, p. 34.

2/ See earlier discussion of Texas Closure in Resource Management section.

3/ Testimony of Mr. Julius Collins, transcript of hearing, p. 81.

reopens. Shrimpers from around the Gulf know that shrimp will be abundant and they therefore migrate to Texas waters when the season reopens. The landings peak for 2 to 3 weeks after the closure ends. A high proportion of the shrimp landed are in the 31-35 and 36-40 size counts. Increased landings added to the imports of these size counts already present in the market further pushes the supply for these sizes to high levels. Thus, the price falls and causes a seasonal variation for size count price relationships.

### Wholesale prices

Wholesale price data for U.S. (domestic) Gulf, Mexican and Ecuadorian shrimp have been collected for the same five size counts (16/20, 26/30, 31/35, 36/40 and 51/60) as were presented for ex-vessel shrimp prices. Data were collected from the New York Market News Report published by the National Marine Fisheries Service and represent simple monthly averages of weekly quotations. Prices for brown shrimp have been compiled for all three countries for each size count. Prices for white shrimp are available in each size count for Mexico and Ecuador only. For domestic Gulf whites, a comprehensive price series exists only for 26/30 count shrimp. All prices are for frozen, raw, heads-off, shell-on shrimp.

In general, wholesale shrimp prices have been falling from record highs set late in 1982 (tables 31-36). Generally, 1982 was a year for a dramatic recovery of shrimp prices from August 1981 lows, with some prices nearly doubling within 12 months. However, prices for extra large shrimp (16/20 count) did not follow this trend. Since 1982, prices for these shrimp were firm to very modestly increasing until mid-1984. Prices for 16/20 count brown shrimp struck a low in October, 1980, from which point a gradual rise in price followed until February, 1982. Only during the last 6 months of 1984 and into 1985 did prices fall for 16/20 count shrimp. The rates of decline varied by country of origin, with prices of Mexican shrimp falling most rapidly and prices of Ecuadorian shrimp dropping most slowly.

Figures 7-11 show wholesale price movements by country and species, for each of the five size counts studied. It is evident from each of these figures that shrimp prices for the intermediate size counts are falling, in relative terms, vis-a-vis the prices of both extra large (16/20) and small (51/60 count) shrimp. In fact, price differences have recently become very narrow between the three highest size counts selected for study. For example in December 1984, domestic Gulf browns were quoted at \$3.62, \$3.44 and \$3.04, for 31/35, 36/40, and 51/60 counts, respectively. For a comparison, December wholesale prices in that month were \$6.49 for 16/20 count shrimp and \$4.87 for the 26/30 count shrimp.

Although comparisons of domestic and foreign shrimp prices, given a particular species and size count, reveal them not to be identical, a general similarity in their movements could be discerned (see figures 12-17). These figures also show that for each size of brown shrimp, wholesale prices tend to be highest for Mexican shrimp and lowest for Ecuadorian, with domestic Gulf shrimp prices usually lying between. During the last 6 months of 1984,

Table 31.--New York wholesale prices for domestic Gulf brown shrimp,  
by size counts, by year and month, 1980-1985

Period	(Per pound)				
	Size count				
	16-20	26-30	31-35	36-40	51-60
1980:					
January-----	\$5.72	\$5.46	\$5.05	\$4.18	\$3.29
February-----	5.54	5.31	4.91	4.11	3.28
March-----	5.24	4.99	4.67	3.93	3.18
April-----	4.85	4.48	4.29	3.58	3.03
May-----	4.81	4.25	4.06	3.62	2.93
June-----	4.94	4.35	3.89	3.70	2.98
July-----	5.13	4.56	3.87	3.74	2.99
August-----	5.34	4.61	4.10	3.81	3.13
September-----	5.13	4.44	3.95	3.68	3.13
October-----	4.71	4.25	3.72	3.56	3.12
November-----	4.74	4.23	3.69	3.51	3.10
December-----	4.83	4.25	3.61	3.48	3.13
Average-----	5.08	4.60	4.15	3.74	3.11
1981:					
January-----	5.30	4.40	3.74	3.58	3.20
February-----	5.68	4.64	3.78	3.60	3.28
March-----	5.93	4.75	3.89	3.74	3.41
April-----	6.16	4.83	3.93	3.75	3.35
May-----	6.32	4.90	4.10	3.84	3.46
June-----	6.38	4.79	3.93	3.69	3.18
July-----	6.28	4.21	3.52	3.19	2.74
August-----	5.83	3.55	3.24	2.95	2.60
September-----	6.10	3.84	3.66	3.29	2.79
October-----	5.73	4.05	3.80	3.36	2.88
November-----	6.29	4.49	4.15	3.58	3.04
December-----	6.21	4.48	4.43	3.58	3.07
Average-----	6.02	4.41	3.85	3.51	3.08
1982:					
January-----	6.44	4.78	4.60	4.08	3.36
February-----	6.80	5.41	5.29	4.75	3.78
March-----	6.86	5.93	5.80	5.29	4.11
April-----	6.72	6.16	6.00	5.63	4.42
May-----	6.76	6.33	6.20	5.83	4.45
June-----	6.70	6.22	5.87	5.47	3.99
July-----	6.57	5.79	4.90	4.46	3.35
August-----	6.91	6.19	5.28	4.68	3.75
September-----	7.17	6.57	5.67	5.09	4.11
October-----	6.90	6.43	5.61	5.10	4.15
November-----	7.26	6.65	5.83	5.34	4.38
December-----	7.42	6.70	5.85	5.43	4.48
Average-----	6.88	6.10	5.56	5.10	4.03

Table 31.--New York wholesale prices for domestic Gulf brown shrimp,  
by size counts, by year and month, 1980-1985--Continued

Period	(Per pound)				
	Size count				
	16-20	26-30	31-35	36-40	51-60
1983:					
January-----	\$7.38	\$6.64	\$5.80	\$5.40	\$4.44
February-----	7.35	6.51	5.73	5.39	4.38
March-----	7.28	6.25	5.60	5.33	4.32
April-----	7.15	6.08	5.55	5.25	4.18
May-----	7.35	6.10	5.63	5.31	4.05
June-----	7.58	6.24	5.84	5.56	4.02
July-----	7.46	5.95	5.60	5.30	3.50
August-----	7.39	5.78	5.56	5.30	3.70
September-----	7.20	5.72	5.48	5.23	3.78
October-----	6.90	5.59	5.34	5.04	3.71
November-----	7.04	5.55	5.35	5.02	3.74
December-----	7.12	5.46	5.15	4.80	3.72
Average-----	7.27	5.99	5.55	5.24	3.96
1984:					
January-----	7.16	5.41	5.10	4.74	3.79
February-----	7.38	5.48	5.07	4.35	3.77
March-----	7.62	5.66	5.25	4.55	3.90
April-----	1/	5.68	5.30	4.51	3.93
May-----	7.75	5.45	5.17	4.35	3.80
June-----	7.73	5.35	5.10	4.33	3.80
July-----	7.48	5.20	4.71	3.81	3.16
August-----	7.25	4.90	4.32	3.47	3.14
September-----	6.16	4.75	4.07	3.55	3.15
October-----	6.67	5.07	4.08	3.57	3.17
November-----	6.54	5.03	3.89	3.55	3.10
December-----	6.49	4.87	3.62	3.44	3.04
Average-----	7.11	5.24	4.64	4.02	3.48
1985:					
January-----	6.60	5.00	3.63	3.48	3.05
February-----	6.72	5.10	3.63	3.48	3.06
March-----	6.47	4.88	3.60	3.52	3.09

1/ Data not available.

Source: Compiled from official statistics of the U.S. Department of  
Commerce, National Marine Fisheries Service.

Table 32.--New York wholesale prices for Mexican #1 brown shrimp,  
by size counts, by year and month, 1983-1985

Period	(Per pound)				
	Size count				
	16-20	26-30	31-35	36-40	51-60
1983:					
January-----	\$7.45	\$6.85	\$5.90	\$5.65	\$4.65
February-----	7.45	6.85	5.90	5.65	4.65
March-----	7.45	6.85	5.75	5.65	4.65
April-----	7.23	6.44	5.55	5.50	4.35
May-----	7.48	6.45	5.60	5.45	4.15
June-----	1/	6.55	5.65	5.55	1/
July-----	7.65	6.40	5.55	5.40	3.75
August-----	7.58	6.12	5.53	5.32	3.72
September-----	7.28	5.85	5.48	5.28	3.78
October-----	7.00	5.70	5.45	5.18	3.80
November-----	7.05	5.65	5.45	5.15	4.00
December-----	7.13	5.60	5.37	5.04	4.00
Average-----	7.34	6.28	5.60	5.40	4.14
1984:					
January-----	7.25	5.55	5.25	4.85	4.00
February-----	7.35	5.65	5.25	4.85	4.00
March-----	7.59	5.71	5.31	4.64	3.94
April-----	7.85	5.75	5.35	4.60	3.95
May-----	8.00	5.75	5.35	4.60	3.95
June-----	8.15	5.74	5.33	4.53	3.87
July-----	8.03	5.53	5.15	4.24	3.62
August-----	7.55	5.03	4.51	3.69	3.34
September-----	6.73	4.88	4.28	3.53	3.26
October-----	6.68	5.18	4.25	3.50	3.25
November-----	6.75	5.25	4.28	3.58	3.25
December-----	6.65	4.25	4.15	3.60	3.25
Average-----	7.38	5.36	4.87	4.18	3.64
1985:					
January-----	6.68	5.28	4.15	3.63	3.25
February-----	6.70	5.39	4.11	3.70	3.29
March-----	6.75	5.45	4.15	3.75	3.35

1/ Data not available.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Table 33.—New York wholesale prices for Ecuadorean brown shrimp,  
by size counts, by year and month, 1983-1985

Period	(Per pound)				
	Size count				
	16-20	26-30	31-35	36-40	51-60
1983:					
January-----	\$7.23	\$6.35	\$5.55	\$5.20	\$4.20
February-----	7.20	6.17	5.53	5.20	4.18
March-----	7.11	6.00	5.33	5.15	4.18
April-----	6.96	5.58	5.25	5.00	3.90
May-----	6.98	5.58	5.32	4.98	3.82
June-----	7.23	5.85	5.45	5.08	3.68
July-----	7.28	5.67	5.34	4.97	3.33
August-----	7.25	5.64	5.25	4.83	3.23
September-----	7.20	5.59	5.25	4.96	3.48
October-----	7.01	5.38	5.06	4.80	3.51
November-----	7.03	5.35	5.00	4.73	3.55
December-----	7.10	5.28	4.89	4.53	3.55
Average-----	7.13	5.70	5.27	4.95	3.72
1984:					
January-----	7.02	5.20	4.70	4.08	3.55
February-----	7.05	5.22	4.68	4.05	3.53
March-----	7.27	5.40	4.88	4.12	3.63
April-----	7.55	5.38	4.93	4.12	3.65
May-----	7.55	5.15	4.91	4.08	3.59
June-----	7.51	5.09	4.85	3.95	3.53
July-----	7.51	5.05	4.79	3.85	3.46
August-----	7.40	4.89	4.44	3.62	3.25
September-----	7.35	4.80	4.30	3.59	3.14
October-----	1/	4.97	4.22	3.65	3.12
November-----	7.10	5.04	3.90	3.54	3.11
December-----	7.01	4.96	3.56	3.43	3.08
Average-----	7.30	5.10	4.51	3.84	3.39
1985:					
January-----	6.88	4.88	3.48	3.38	3.05
February-----	6.66	4.74	3.38	3.30	2.95
March-----	6.48	4.49	3.31	3.23	3.00

1/ Data not available.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Table 34.--New York wholesale prices for Ecuadorean white shrimp,  
by size counts, by year and month, 1983-1985

(Per pound)						
Period	Size count					
	16-20	26-30	31-35	36-40	51-60	
1983:						
January-----	\$7.43	\$6.55	\$5.72	\$5.35	\$4.35	
February-----	7.37	6.25	5.64	5.33	4.35	
March-----	7.28	6.20	5.55	5.26	4.29	
April-----	7.11	5.75	5.39	5.13	4.07	
May-----	7.28	5.80	5.50	5.20	3.90	
June-----	7.48	6.20	5.62	5.33	3.82	
July-----	7.46	5.90	5.46	5.17	3.33	
August-----	7.39	5.78	5.39	5.08	3.51	
September-----	7.35	5.73	5.41	5.15	3.65	
October-----	7.24	5.63	5.31	4.99	3.71	
November-----	7.33	5.55	5.30	4.90	3.75	
December-----	7.33	5.45	5.14	4.65	3.75	
Average-----	7.34	5.90	5.45	5.13	3.87	
1984:						
January-----	7.23	5.28	4.90	4.23	3.72	
February-----	7.23	5.38	4.85	4.22	3.68	
March-----	7.48	5.57	5.06	4.28	3.76	
April-----	7.70	5.54	5.10	4.27	3.83	
May-----	7.75	5.35	5.10	4.21	3.76	
June-----	7.73	5.30	5.08	4.19	3.69	
July-----	7.75	5.25	4.95	4.11	3.64	
August-----	7.68	5.18	4.65	3.91	3.45	
September-----	7.58	5.15	4.56	3.86	3.31	
October-----	7.50	5.23	4.47	3.85	3.33	
November-----	7.35	5.30	4.25	3.79	3.31	
December-----	7.24	5.25	3.88	3.66	3.30	
Average-----	7.52	5.32	4.74	4.05	3.57	
1985:						
January-----	7.08	5.12	3.70	3.58	3.27	
February-----	6.93	4.98	3.55	3.50	3.19	
March-----	6.71	4.70	3.53	3.48	3.15	

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.



Table 35.--New York wholesale prices for Mexican #1 white shrimp,  
by size counts, by year and month, 1983-1985

(Per pound)					
Period	Size count				
	16-20	26-30	31-35	36-40	51-60
1983:					
January-----	\$7.63	\$7.10	\$6.15	\$5.75	\$4.75
February-----	7.63	7.15	6.15	5.75	4.75
March-----	7.65	7.15	6.15	5.75	4.75
April-----	7.41	6.48	5.81	5.60	4.38
May-----	7.50	6.58	5.75	5.55	4.20
June-----	1/	6.75	5.85	5.65	1/
July-----	7.75	6.75	5.85	5.65	3.95
August-----	7.85	6.75	5.85	5.65	3.95
September-----	7.52	6.05	5.71	5.45	3.92
October-----	7.40	6.05	5.68	5.38	3.93
November-----	7.55	6.30	5.85	5.55	4.10
December-----	7.55	5.10	5.73	5.43	4.10
Average-----	7.59	6.52	5.88	5.60	4.25
1984:					
January-----	7.65	5.95	5.45	5.15	4.10
February-----	7.75	6.05	5.45	5.15	4.10
March-----	7.85	5.92	5.37	4.93	4.04
April-----	8.00	5.90	5.45	4.90	4.05
May-----	8.20	5.90	5.45	4.90	4.05
June-----	8.39	5.90	5.51	4.78	3.97
July-----	8.45	5.85	5.53	4.60	3.75
August-----	8.45	5.80	5.51	4.42	3.57
September-----	7.48	5.53	4.88	4.13	3.30
October-----	7.15	5.40	4.65	4.00	3.30
November-----	7.23	5.45	4.43	3.90	3.40
December-----	7.25	5.45	4.35	3.90	3.45
Average-----	7.82	5.76	5.17	4.56	3.76
1985:					
January-----	7.25	5.55	4.35	3.90	3.45
February-----	6.98	5.58	4.16	3.86	3.46
March-----	7.03	5.68	4.15	3.95	3.46

1/ Data not available.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Table 36.--New York wholesale prices for Ecuadorean, domestic Gulf, and Mexican white shrimp, 26-30 size count, by year and month, 1980-1985

(Per pound)				
Period	Ecuador	Domestic	Mexico	
1980:				
January-----	\$5.45	\$5.51	\$5.70	
February-----	5.50	5.34	5.48	
March-----	5.15	5.13	<u>1/</u>	
April-----	4.35	4.54	4.95	
May-----	4.25	4.34	<u>1/</u>	
June-----	4.40	4.55	5.35	
July-----	4.55	4.63	5.00	
August-----	4.60	4.72	5.35	
September-----	4.70	4.45	4.85	
October-----	4.50	4.34	4.84	
November-----	4.40	4.30	4.85	
December-----	4.45	4.31	4.30	
Average-----	4.69	4.68	5.07	
1981:				
January-----	4.35	4.67	4.80	
February-----	4.55	4.70	4.91	
March-----	4.75	4.84	5.02	
April-----	4.80	5.01	5.15	
May-----	4.80	5.03	5.37	
June-----	4.75	4.85	5.50	
July-----	4.55	4.60	<u>1/</u>	
August-----	4.00	<u>1/</u>	<u>1/</u>	
September-----	4.15	4.13	<u>1/</u>	
October-----	4.25	4.16	4.40	
November-----	4.40	4.49	4.60	
December-----	4.50	4.52	4.93	
Average-----	4.49	4.64	4.96	
1982:				
January-----	4.65	4.89	5.30	
February-----	5.50	5.50	5.77	
March-----	5.75	5.94	<u>1/</u>	
April-----	5.95	6.19	6.15	
May-----	6.15	6.36	<u>1/</u>	
June-----	6.15	6.24	<u>1/</u>	
July-----	<u>1/</u>	5.90	<u>1/</u>	
August-----	6.05	<u>1/</u>	<u>1/</u>	
September-----	6.65	6.63	6.75	
October-----	6.50	6.50	6.85	
November-----	6.55	6.71	7.00	
December-----	6.70	6.80	7.05	
Average-----	6.05	6.15	6.41	

See footnote at end of table.

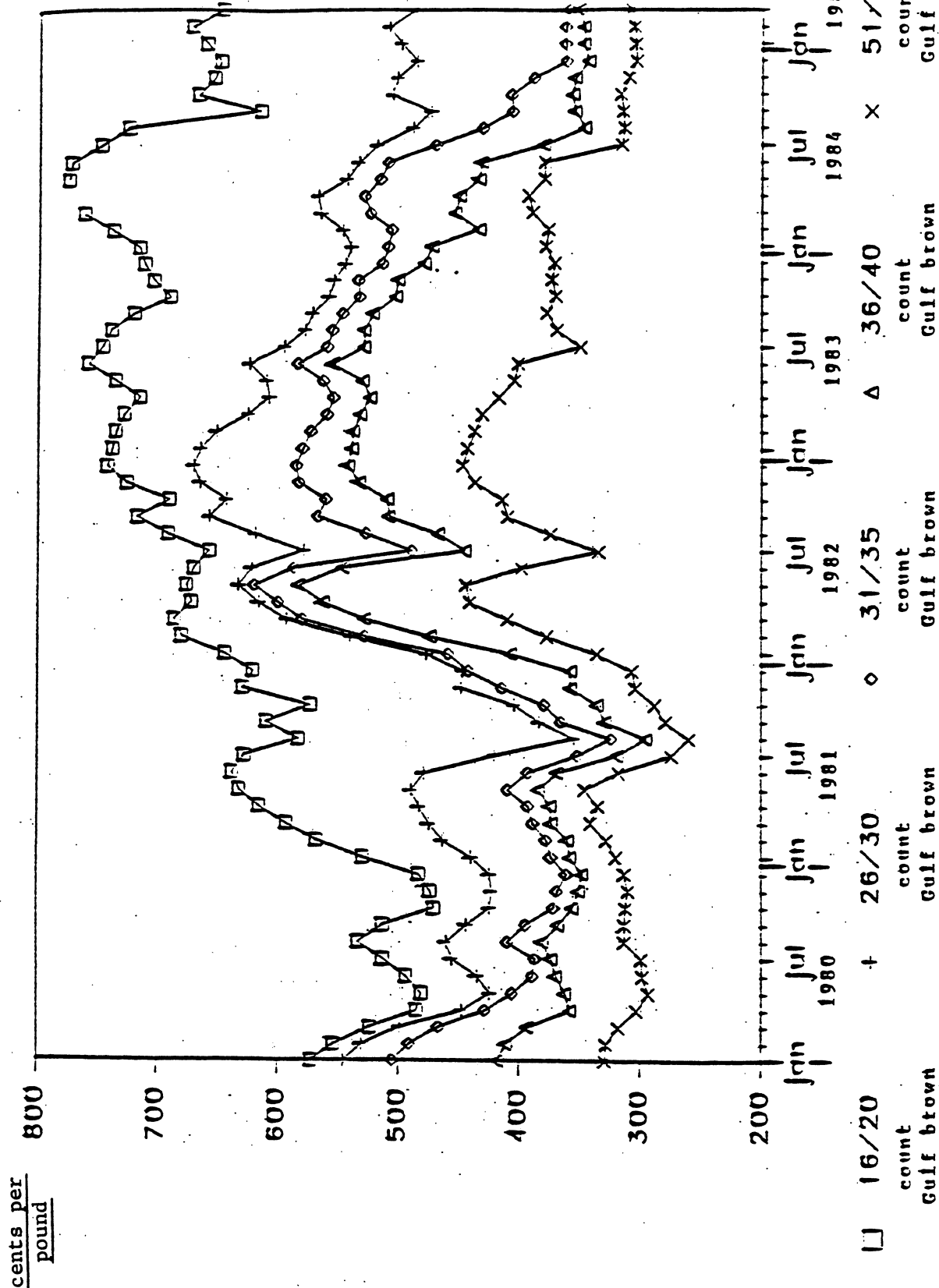
Table 36.--New York wholesale prices for Ecuadorean, domestic Gulf, and Mexican white shrimp, 26-30 size count, by year and month, 1980-1985--Continued

(Per pound)			
Period	Ecuador	Domestic	Mexico
1983:			
January-----	\$6.55	\$6.70	\$7.10
February-----	6.25	6.58	7.15
March-----	6.20	6.43	7.15
April-----	5.75	6.22	6.48
May-----	5.80	6.18	6.58
June-----	6.20	6.32	6.75
July-----	5.90	6.00	6.75
August-----	5.78	5.85	6.75
September-----	5.73	1/	6.05
October-----	5.63	5.60	6.05
November-----	5.55	5.75	6.30
December-----	5.45	5.50	5.10
Average-----	5.90	6.10	6.52
1984:			
January-----	5.28	5.50	5.95
February-----	5.38	5.75	6.05
March-----	5.57	5.75	5.92
April-----	5.54	1/	5.90
May-----	5.35	1/	5.90
June-----	5.30	1/	5.90
July-----	5.25	1/	5.85
August-----	5.18	1/	5.80
September-----	5.15	4.95	5.53
October-----	5.23	5.15	5.40
November-----	5.30	5.08	5.45
December-----	5.25	4.92	5.45
Average-----	5.32	5.30	5.76
1985:			
January-----	5.12	5.09	5.55
February-----	4.98	5.16	5.58
March-----	4.70	4.94	5.68

1/ Data not available.

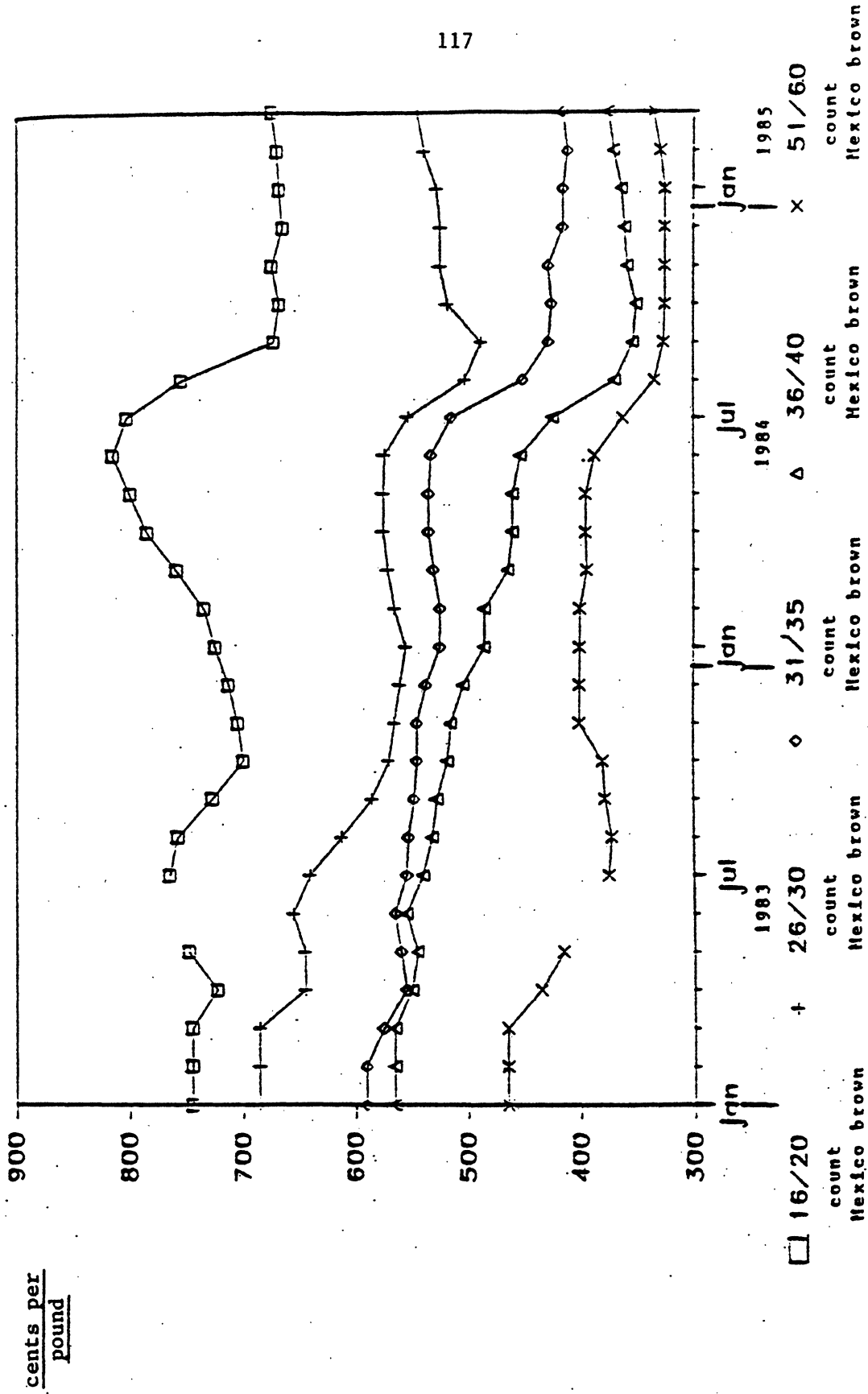
Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 7.--New York wholesale price, U.S. Gulf brown shrimp (raw, heads-off, shell-on).



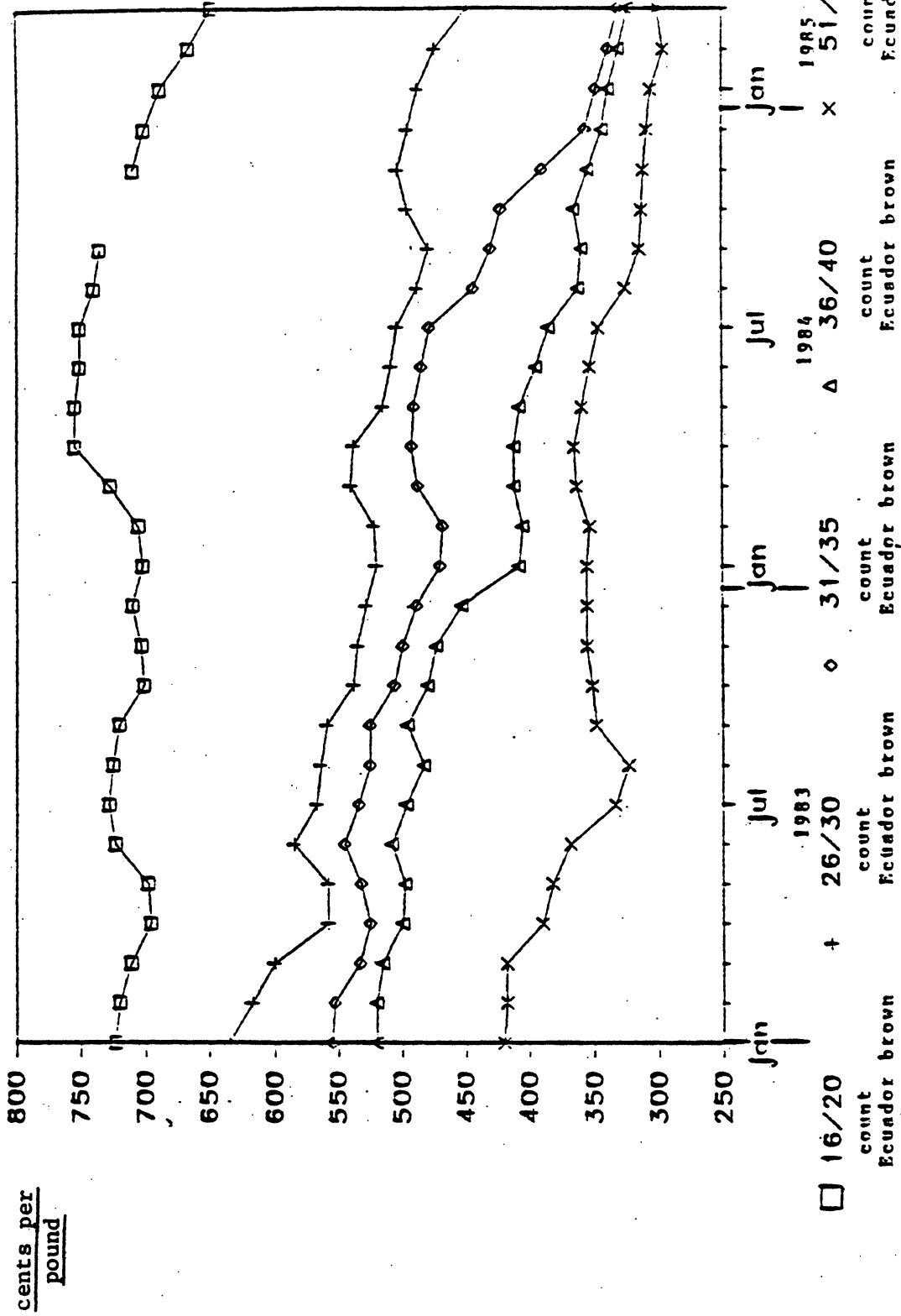
Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 8.--New York wholesale price, Mexico brown shrimp (raw, heads-off, shell-on).



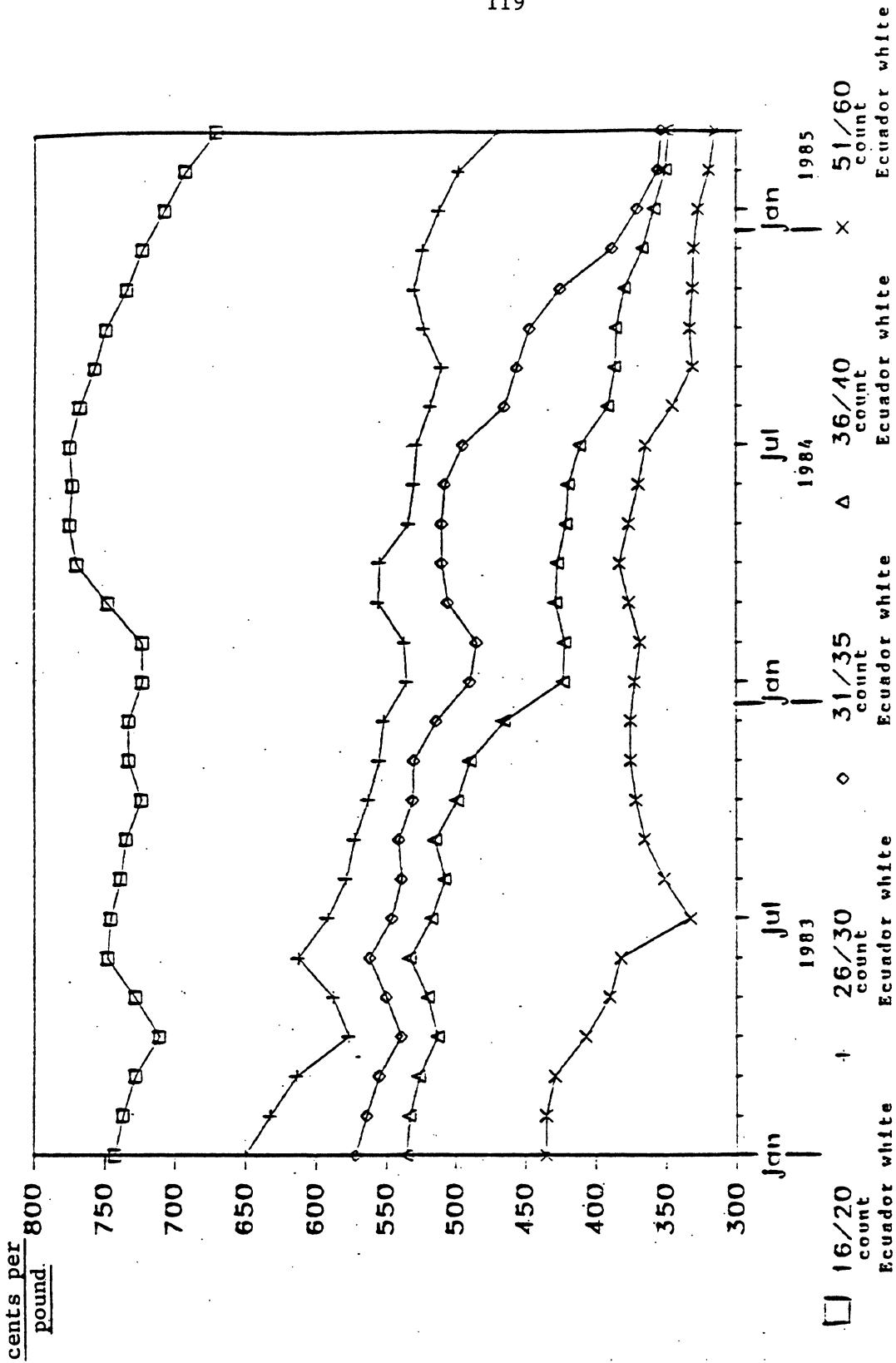
Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 9.---New York wholesale price, Ecuador brown shrimp (raw, heads-off, shell-on).



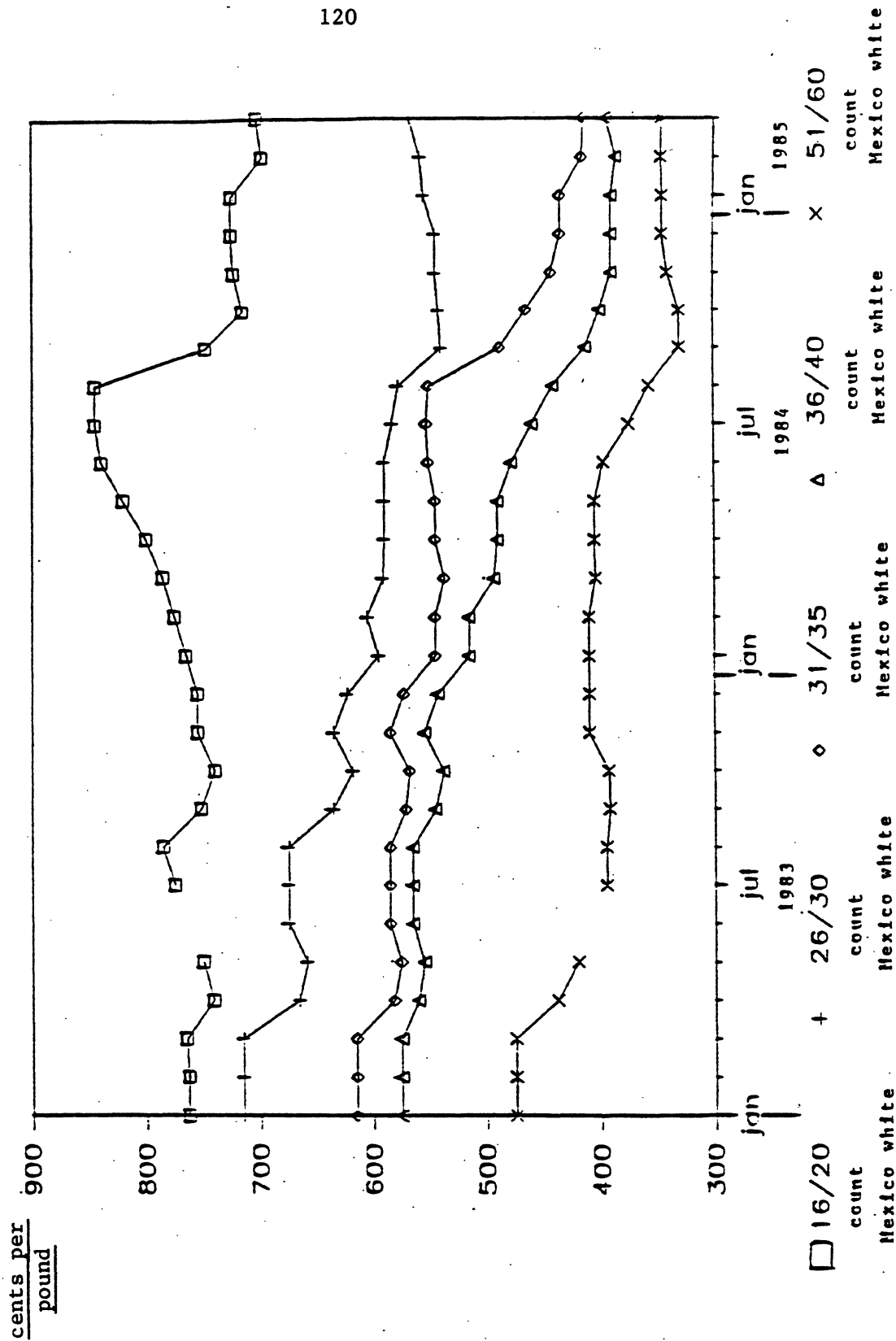
Sourced: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 10.--New York wholesale price, Ecuador white shrimp (raw, heads-off, shell-on).



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

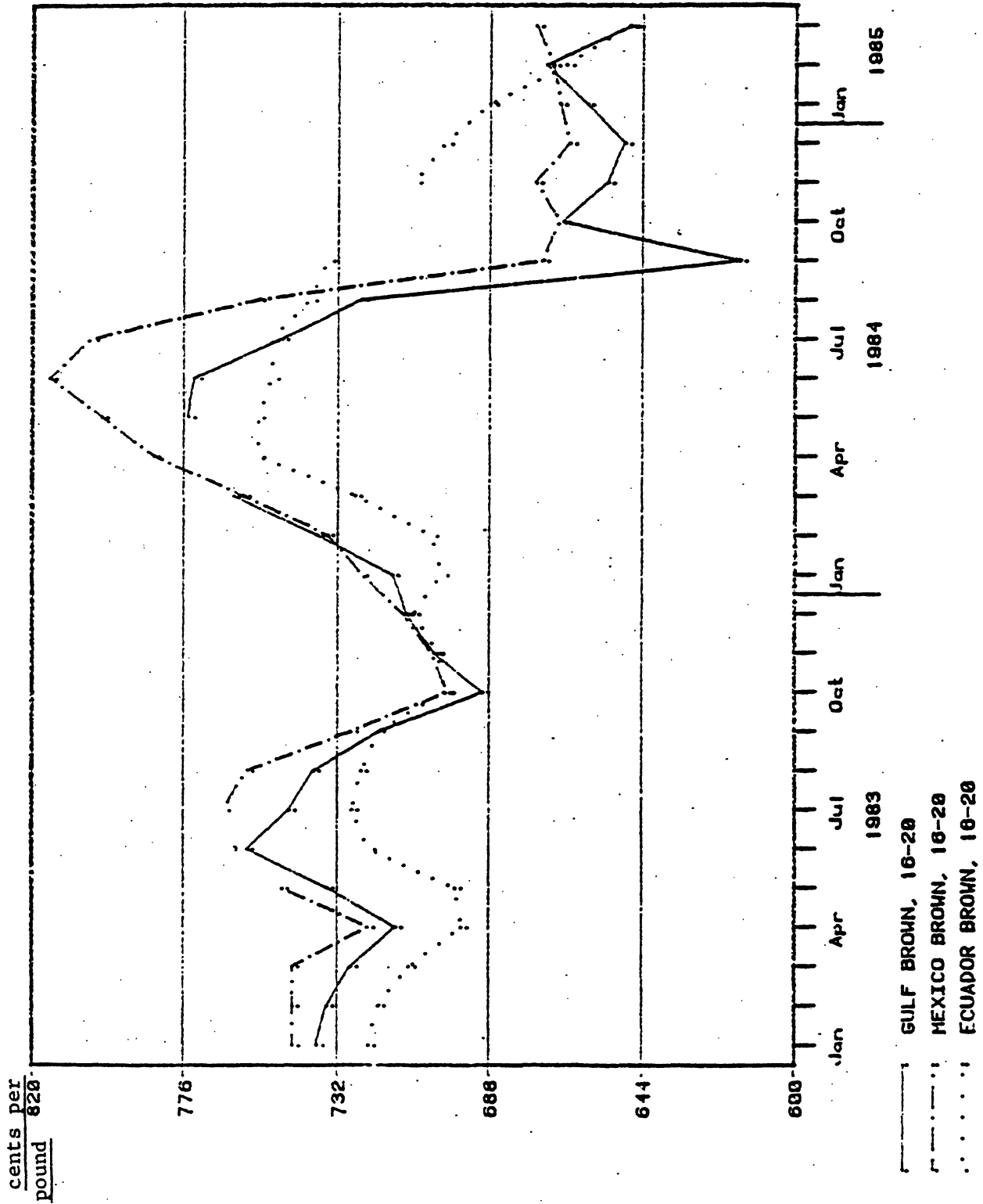
Figure 11.--New York wholesale price, Mexico white shrimp (raw, heads-off, shell-on).



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.



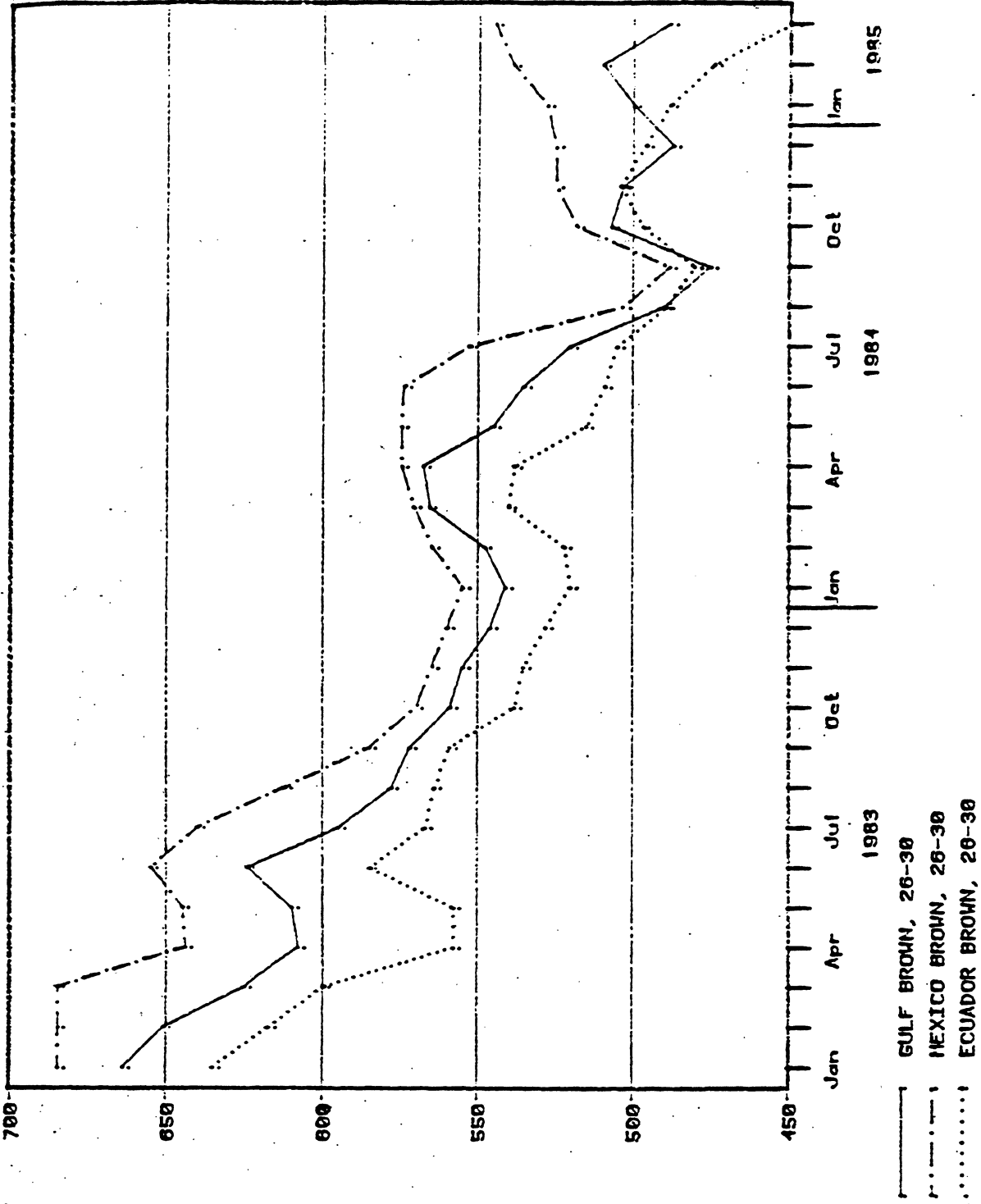
Figure 12. New York wholesale price, brown shrimp (raw, heads-off, shell-on) 16-20 count per pound.



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

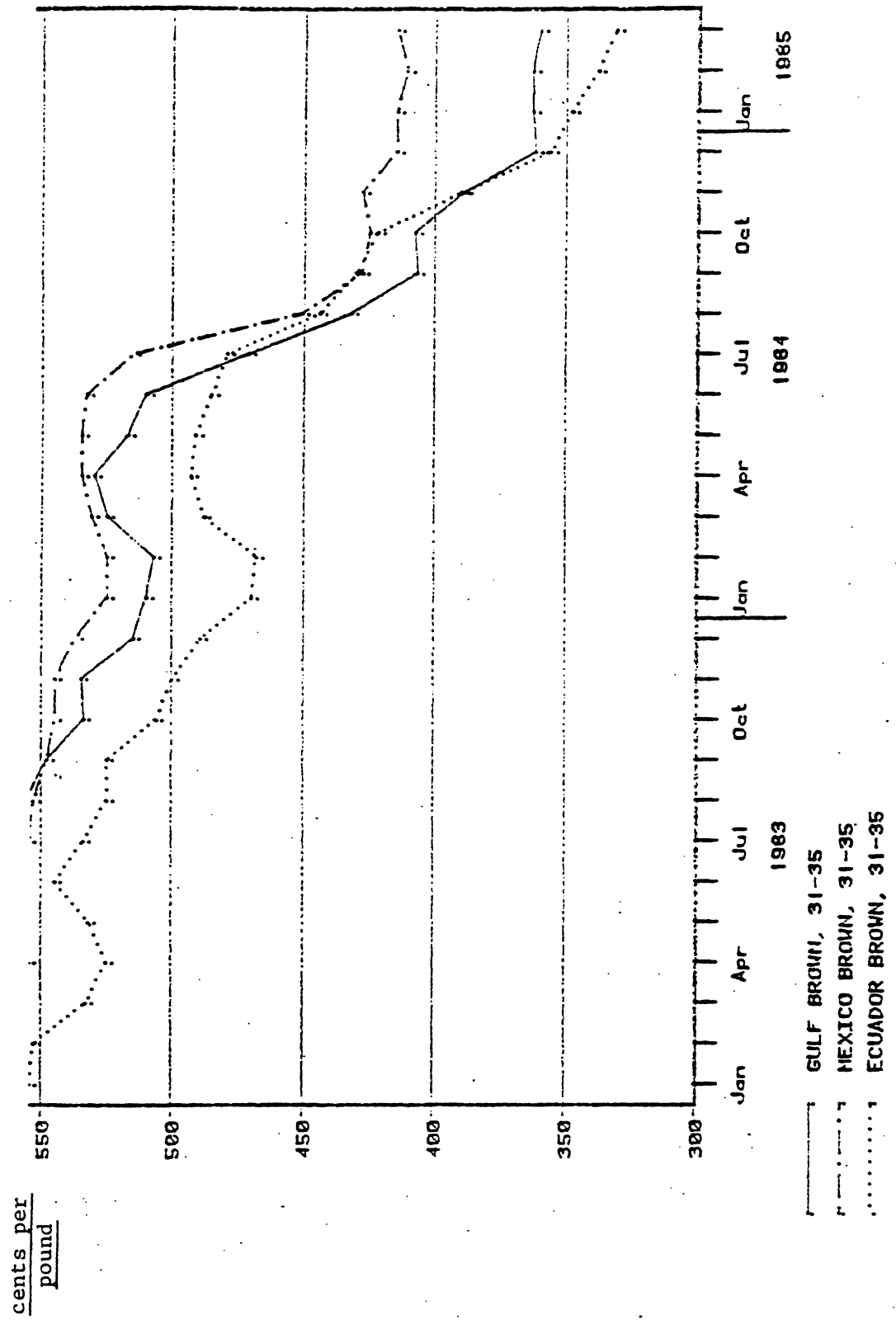
Figure 13.--New York wholesale price, brown shrimp (raw, heads-off, shell-on) 26-30 count per pound.

cents per  
pound



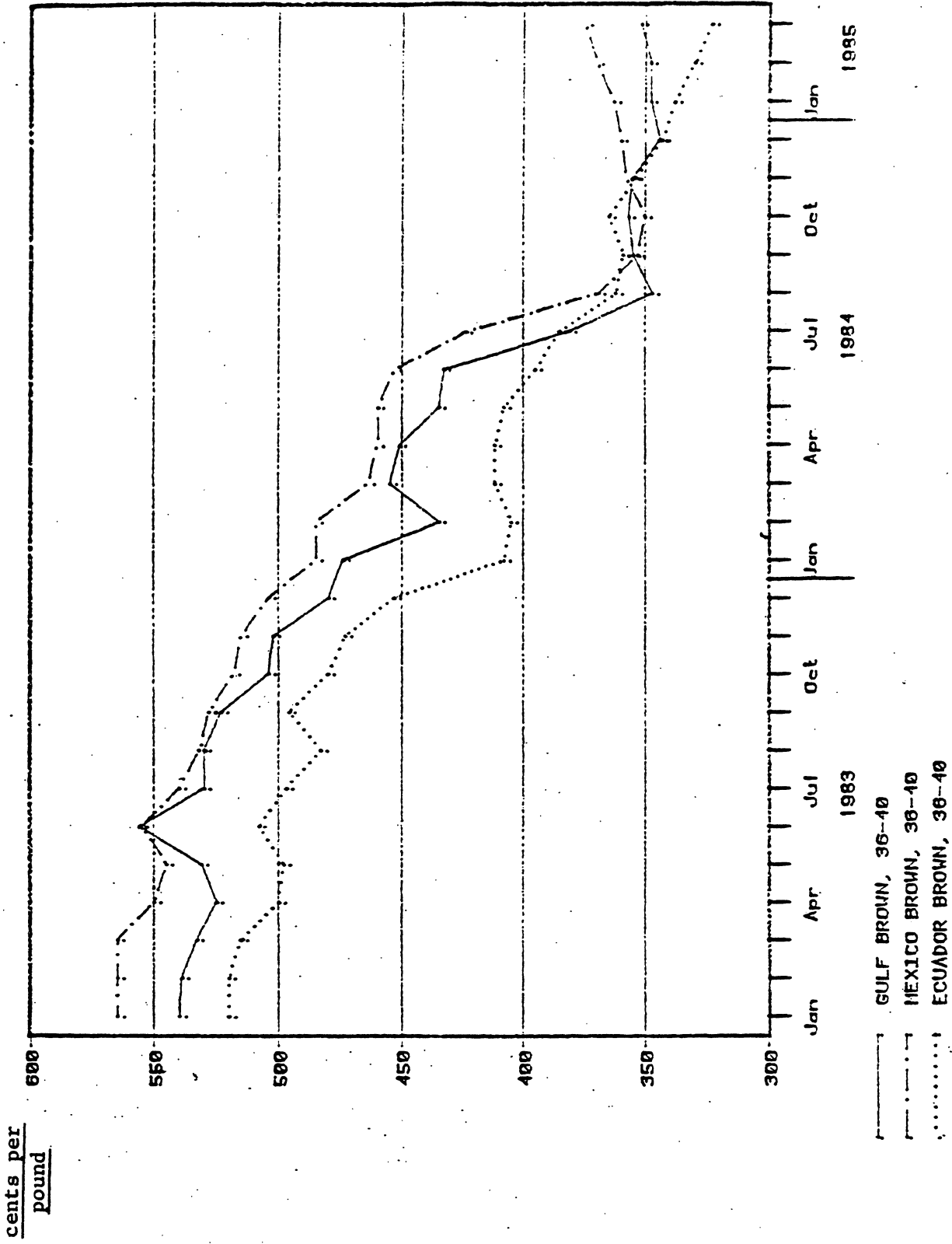
Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 14.--New York wholesale price, brown shrimp (raw, heads-off, shell-on)  
31-35 count per pound.



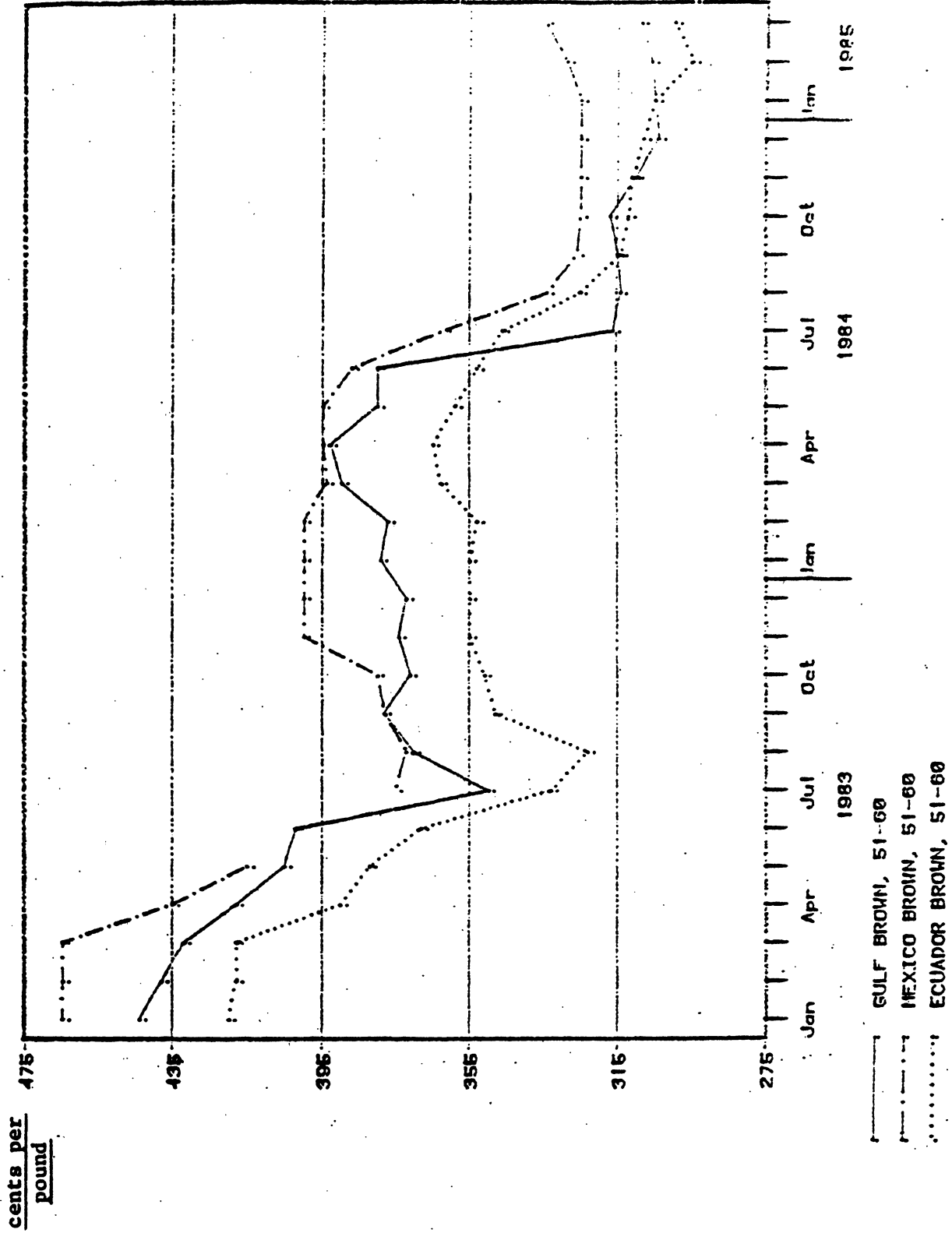
Source: Compiled from official statistics of the U.S. Department of Commerce,  
National Marine Fisheries Service.

Figure 15.---New York wholesale price, brown shrimp (raw, heads-off, shell-on)  
36-40 count per pound.



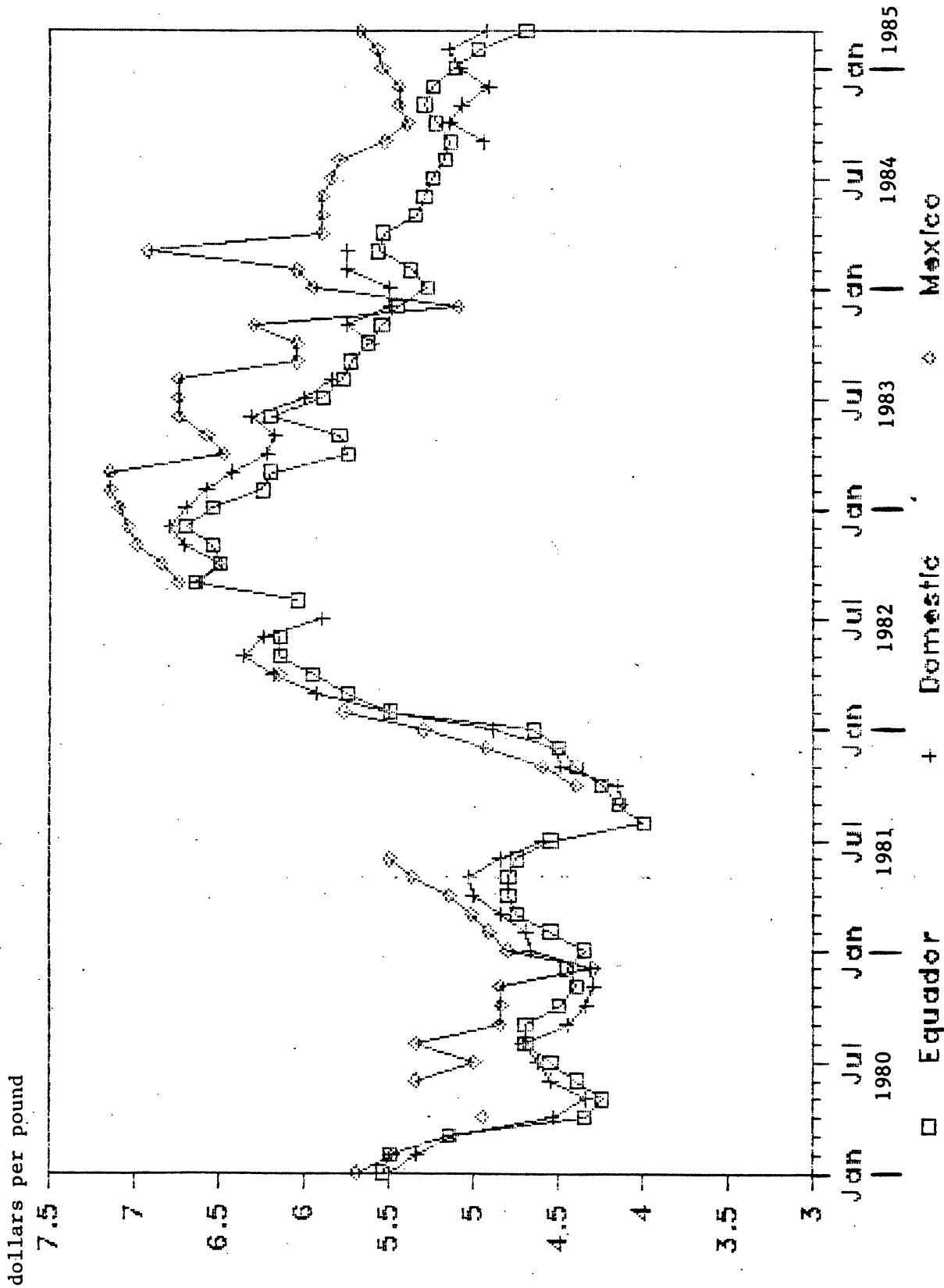
Source: Compiled from official statistics of the U.S. Department of Commerce,  
National Marine Fisheries Service.

Figure 16.--New York wholesale price, brown shrimp (raw, heads-off, shell-on) 51-60 count per pound.



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 17.--Wholesale prices white shrimp 26-30 count per pound.



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

however, prices for domestic Gulf browns were frequently beneath those of comparable Ecuadorian shrimp, as well as below Mexican shrimp.

Table 31, complemented by figure 7, presents movements for domestic Gulf brown-shrimp wholesale prices. For 16/20 count browns, prices generally moved upward from an October 1980 low of \$4.71 per pound to \$6.80 per pound in February 1982, at which level a plateau was established. New peaks were set in the early summer of 1983 (\$7.38 per pound) and again in 1984 (\$7.75 per pound), followed each time by seasonal lows in succeeding early autumns (\$6.90 per pound and \$6.16 per pound, respectively). Prices for 16/20 count shrimp in March 1985 were holding relatively stable around \$6.50 per pound, after falling by \$1.09 per pound between August and September of 1984 to \$6.16 per pound.

Wholesale prices for domestic Gulf brown shrimp for the higher size counts (smaller shrimp) here under study each experienced lows in August 1981 (26/30 at \$3.55 per pound, 31/35 at \$3.24 per pound, 36/40 at \$2.95 per pound and 51/60 at \$2.60 per pound). For each of these size counts, all-time highs were reached just 9 months later (May 1982), followed by harvest season slumps and autumn recoveries. New all-time highs were recorded in December, 1982 for the 26/30 and 51/60 counts. Generally, declines in price have been registered for each size count over the course of the 1983-1985 period. December 1984 prices represented 3-year lows for the three highest size counts; for the two lower size counts, September 1984 prices were the three-year lows. New lows were subsequently set in March 1985 for the 16/20 and 31/35 size counts.

For the 26/30 count shrimp, wholesale prices rose steadily from \$3.55 per pound in August 1981 up to \$6.70 per pound in December 1982. They have since fallen steadily, excepting for brief and modest rallies in the spring of 1983 and 1984. A low of \$4.75 per pound occurred in September 1984; the March 1985 price was \$4.88 per pound.

For the 31/35 and 36/40 counts, wholesale price movements were essentially parallel. From their August 1981 lows, prices recovered to all-time highs in May 1982 (\$6.20 per pound and \$5.83 per pound, respectively), followed by summer harvest season slumps. Prices recovered to June 1982 levels by the end of the year, but January 1983, saw the beginning of a 2-year drop to a March 1985 low of \$3.62 per pound for 31/35 count and a December 1984 low of \$3.44 per pound for 36/40 count. Very modest spring rallies in 1983 and 1984 briefly interrupted each of these price declines.

Starting from an August 1981 low of \$2.60 per pound, the wholesale price of 51/60 count domestic gulf brown shrimp reached an all-time high in May 1982 of \$4.45 per pound. After a 2-month slide, prices resumed their upward movement, capped by an all-time high of \$4.48 per pound in December 1982. During the first half of 1983, the price fell to \$3.50 per pound but ultimately recovered to \$3.93 per pound in April 1984. The price fell to a 3-year low in December 1984 of \$3.04 per pound, although a slight recovery to \$3.09 per pound in March 1985, has occurred.

Table 32, accompanied by figure 8, displays monthly wholesale price movements for Mexican #1 brown shrimp, by size count. 1/ Data for 1983-85

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1/ #1 is a quality designation.

show that, excepting for the 16/20 size count, Mexican gulf brown prices have trended downward over this period. Prices on all of the size counts registered 2-year lows during the last 4 months of 1984; the price of 31/35 fell even further in 1985. The price of 16/20 count Mexican brown shrimp moved generally higher over the period to a record \$8.15 per pound in June 1984, followed by a steep 2-month descent. The price settled in September, although the December 1984 quote was the 2-year low of \$6.65 per pound. A slight upward movement in the price of 16/20 count shrimp was evident by March 1985, when the price reached \$6.75 per pound.

Wholesale prices for the 26/30 and 31/35 counts behaved identically over most of the 1983-85 period. Prices in January 1983 were \$6.85 per pound and \$5.90 per pound, respectively, and proceeded to move downward for 12 months, followed by a slight reversal into April 1984. Further declines continued for each size count, with the lowest prices occurring in September 1984 for 26/30 count shrimp at \$4.88 per pound, and in February 1985 for 31/35 count at \$4.11 per pound.

Prices for 36/40 count Mexican brown shrimp began 1983 at \$5.65 per pound but dropped steadily throughout 1983 and most of 1984, reaching a low in October of \$3.50 per pound. A modest recovery to \$3.75 per pound by March 1985 followed.

Prices for small Mexican brown shrimp (51/60 count) dropped from \$4.65 per pound in January 1983 to \$3.25 per pound in October 1984. The drop was interrupted, however, by a modest recovery of 28 cents per pound in late 1983, followed by firm prices that carried into June 1984. By March 1985, the price had edged upwards to \$3.35 per pound.

Ecuadorian brown shrimp wholesale price movements, shown in table 33 and figure 9, echoed those of domestic Gulf and Mexican browns. Prices for 16/20 count shrimp opened 1983 at \$7.23 per pound, moved erratically to a high of \$7.55 per pound in April 1984, but then dropped to \$6.48 per pound by March 1985. For each of the higher size counts, January 1983 prices were 2-year highs, while March 1985 prices were at or near 2-year lows. Prices for 26/30 count shrimp fell from \$6.35 per pound in January 1983 to \$4.49 per pound in March 1985, interrupted by two weak upturns. Prices for 31/35 count and 36/40 count shrimp fell from \$5.55 per pound and \$5.20 per pound, respectively, to lows of \$3.31 per pound and \$3.23 per pound. Two short upturns interrupted each secular decline. The pattern for 51/60 shrimp prices was similar in that the January 1983 price (\$4.20 per pound) was at a 2-year high, while the low (\$2.95 per pound) occurred in February 1985. However, after falling until August 1983, 51/60 count prices recovered and then held firm from September through July 1983 before resuming the decline.

Table 34, accompanied by figure 10, presents data on prices for Ecuadorian white shrimp for 1983-1985. Prices for 16/20 count shrimp declined slightly over the period, although prices ranged narrowly. A peak price of \$7.75 per pound was reached in July 1984. Three-year low prices were set in 1985, with the March figure at \$6.71 per pound. For remaining size counts, prices moved substantially downward from their period-high January 1983 quotes. For the 26/30 category, prices dropped from \$6.50 per pound to \$4.70 per pound by March 1985. Prices for 31/35 and 36/40 count shrimp moved in parallel, dropping from \$5.72 per pound and \$5.35 per pound, respectively, to lows of \$3.53 per pound and \$3.48 per pound in March 1985. Three brief and



coincident upturns punctuated these declines. For the 51/60 group, prices fell from a high of \$4.35 per pound in January 1983 to a low of \$3.15 per pound in March 1985. Prices held firm at or above \$3.64 per pound from September 1983 to July 1984 before falling again.

Table 35, along with figure 11, supplies price data for Mexican #1 white shrimp during 1983-1985. Prices for 16/20 count shrimp opened 1983 at \$7.63 per pound, moving generally higher until August 1984, when the price reached a record \$8.45 per pound. Then the price plummeted; by October it had fallen to \$7.15 per pound. The March 1985 price was \$7.03 per pound. Prices for 26/30 count shrimp dropped from \$7.15 in January 1983 to \$5.40 per pound in September 1984, rising to \$5.68 per pound by March 1985. Prices for 31/35 and 36/40 count shrimp fell from January 1983 highs of \$6.15 per pound and \$5.75 per pound, respectively, to lows of \$4.15 per pound and \$3.86 per pound in early 1985. Prices for 51/60 count shrimp fell from \$4.75 per pound in January 1983 to \$3.30 per pound in September 1984, with half of the overall decline occurring after June 1984. The price then rose to \$3.46 per pound by March 1985.

Table 36, illustrated by figure 17, shows a comparison of domestic Gulf, Mexican, and Ecuadorian white shrimp in the 26/30 size count range during 1980-85. This was the only size count for which there were sufficient price data reported for domestic white shrimp during the period. Throughout the period, the price for Mexican shrimp was the highest, the price for Ecuadorian shrimp was the lowest, and the price for domestic Gulf shrimp was in between.

Tables 37 through 45 contain wholesale price data provided by respondents to Commission questionnaires. <sup>1/</sup> Generally the price trends for heads-off, shell-on shrimp follow the same pattern as those discussed earlier--steady

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<sup>1/</sup> The Commission sent questionnaires to approximately 272 importers, processors, and purchasers of shrimp products. However, only 48 were returned with usable price data. Questionnaires were originally drafted to include 5 years of price data, broken down by species, as well as by size count. Also, different size counts were chosen for different product forms according to their common usage. The draft questionnaires were modified, after consultations with industry and Government representatives, in order to decrease the burden on respondents. As a result, specification of shrimp species was eliminated, the reporting period was shortened to 3 years, and size counts were standardized across product forms (see letter amending the original request for the investigation in app. A). These changes limited the usefulness of the data. Because the published New York wholesale price breaks down the data by species, country, and size count, these series were used as primary data. However, the questionnaire data generally followed the same trend as the New York wholesale price presented as primary data in tables 31 through 36. The questionnaire data also provided usable price data for imports of shrimp from a number of countries that are not normally reported by the New York Market News Report on a regular basis. Importers and purchasers reported buying shrimp from 16 different countries. The quantities involved, however, were too small for a number of countries to allow analysis of the pricing data. Prices were provided in great enough quantities to allow adequate analysis of price trends for imports from seven countries (Brazil, Ecuador, French Guiana, Guatemala, Mexico, Panama, and Peru).

Table 37.--Prices reported by importers of Brazilian raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.65	\$5.41	\$5.38	\$3.86
April-June-----	6.61	5.82	5.57	4.38
July-September-----	6.72	5.15	4.66	3.63
October-December-----	1/	5.49	5.06	4.25
1983:				
January-March-----	1/	5.55	4.84	3.45
April-June-----	1/	5.44	5.16	3.75
July-September-----	1/	5.30	5.04	3.54
October-December-----	1/	4.79	4.47	3.36
1984:				
January-March-----	1/	5.00	4.29	3.71
April-June-----	1/	5.06	4.42	3.77
July-September-----	1/	3.88	3.30	3.02
October-December-----	1/	3.79	3.30	2.99

1/ Insufficient number of firms reporting.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 38.--Prices reported by importers of Ecuadorean raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.87	\$4.90	\$4.11	\$3.37
April-June-----	6.99	6.00	5.75	3.92
July-September-----	7.02	5.72	4.90	3.84
October-December-----	7.33	5.74	5.35	4.41
1983:				
January-March-----	7.28	5.60	5.42	4.42
April-June-----	7.47	5.55	5.34	3.91
July-September-----	7.36	5.42	5.15	3.69
October-December-----	7.19	5.32	4.90	3.92
1984:				
January-March-----	7.46	5.05	4.35	3.80
April-June-----	7.75	5.06	4.34	3.71
July-September-----	7.40	4.45	3.77	3.31
October-December-----	6.70	4.41	3.64	3.29

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 39.--Prices reported by importers of French Guiana raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.97	\$5.70	\$5.20	\$4.00
April-June-----	6.90	6.00	5.70	4.21
July-September-----	6.74	5.49	5.29	3.80
October-December-----	7.35	5.90	5.65	4.36
1983:				
January-March-----	7.51	6.00	5.60	4.50
April-June-----	7.50	5.94	5.49	4.50
July-September-----	7.73	6.00	5.50	4.39
October-December-----	7.65	5.90	5.60	4.31
1984:				
January-March-----	7.71	5.64	4.90	4.01
April-June-----	7.77	5.32	4.41	4.16
July-September-----	7.81	5.40	4.20	3.98
October-December-----	7.35	4.40	3.90	3.30

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 40.--Prices reported by importers of Guatemalan raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.40	\$5.75	\$5.20	\$3.40
April-June-----	6.65	5.00	5.65	4.30
July-September-----	7.30	5.70	4.00	4.05
October-December-----	7.45	5.80	5.05	4.15
1983:				
January-March-----	7.50	5.65	5.35	4.40
April-June-----	7.30	5.55	5.15	4.25
July-September-----	7.35	5.50	5.25	3.35
October-December-----	7.15	5.60	5.30	3.75
1984:				
January-March-----	7.80	5.20	4.40	3.80
April-June-----	7.85	5.20	4.45	3.70
July-September-----	7.55	4.75	3.90	4.30
October-December-----	6.95	3.80	3.70	3.30

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 41.--Prices reported by importers of Mexican raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.67	\$4.64	\$4.28	\$3.79
April-June-----	6.90	5.43	5.67	4.22
July-September-----	6.74	4.70	4.19	3.60
October-December-----	7.35	5.85	5.49	4.44
1983:				
January-March-----	7.22	5.65	5.50	4.31
April-June-----	7.45	5.51	5.25	4.22
July-September-----	7.41	5.47	5.11	3.73
October-December-----	7.30	5.45	4.80	3.94
1984:				
January-March-----	7.45	5.10	4.50	3.85
April-June-----	8.04	5.16	4.64	3.85
July-September-----	7.03	4.20	3.77	2.94
October-December-----	7.00	4.15	3.62	3.35

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 42.--Prices reported by importers of Panamanian raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.75	\$5.08	\$4.60	\$3.26
April-June-----	6.67	5.85	5.41	4.01
July-September-----	6.84	4.98	4.47	3.43
October-December-----	1/	5.49	5.07	4.08
1983:				
January-March-----	1/	5.68	5.30	4.20
April-June-----	1/	5.32	5.06	3.81
July-September-----	1/	5.36	5.08	3.44
October-December-----	1/	5.27	4.97	3.69
1984:				
January-March-----	1/	4.78	4.11	3.58
April-June-----	1/	5.00	4.04	3.57
July-September-----	1/	4.60	3.78	3.22
October-December-----	1/	3.84	3.67	3.13

1/ Insufficient number of firms reporting.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 43.--Prices reported by importers of Peruvian raw headless shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.60	\$5.20	\$4.60	\$3.30
April-June-----	6.60	5.80	5.40	4.10
July-September-----	7.10	5.65	5.20	4.10
October-December-----	7.45	5.60	5.30	4.35
1983:				
January-March-----	7.35	5.60	5.40	4.35
April-June-----	7.15	5.30	5.00	3.75
July-September-----	7.28	5.27	4.80	3.30
October-December-----	7.12	5.10	4.86	3.46
1984:				
January-March-----	7.60	5.10	4.20	3.55
April-June-----	7.81	4.69	4.15	3.65
July-September-----	7.75	5.05	4.15	3.65
October-December-----	7.35	3.55	3.71	3.27

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 44.--Prices reported by importers of Mexican IQF raw peeled shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$7.74	\$5.22	\$5.70	\$4.35
April-June-----	8.17	5.89	5.69	5.11
July-September-----	8.27	6.58	6.23	5.15
October-December-----	9.23	6.75	6.30	5.49
1983:				
January-March-----	8.69	7.16	6.43	5.54
April-June-----	8.58	6.98	6.11	5.63
July-September-----	8.48	6.79	6.42	5.08
October-December-----	9.41	6.69	5.65	5.23
1984:				
January-March-----	9.20	5.82	5.81	5.09
April-June-----	9.19	6.38	5.61	4.88
July-September-----	9.28	5.81	5.02	4.58
October-December-----	9.15	5.90	4.88	4.10

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 45.--Prices reported by importers of Thai IQF raw peeled shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.00	\$4.75	\$4.35	\$3.75
April-June-----	6.00	4.75	4.35	3.75
July-September-----	6.10	4.75	4.25	3.65
October-December-----	6.00	4.75	4.35	3.75
1983:				
January-March-----	7.39	4.65	4.25	3.65
April-June-----	5.95	5.26	4.10	3.55
July-September-----	6.67	1/	4.86	3.70
October-December-----	5.90	4.50	4.00	3.50
1984:				
January-March-----	6.61	4.35	3.95	3.30
April-June-----	5.60	4.50	4.05	3.45
July-September-----	6.45	4.45	4.00	3.25
October-December-----	1/	3.25	4.00	3.15

1/ Insufficient number of firms reporting.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

or slightly rising prices for 1982-83, a severe decline in mid-1983, which prevailed through 1984.

Also provided by a few importers were the prices of individually quick frozen (IQF) raw peeled shrimp. The data show that prices for this type of shrimp declined throughout the period for all size counts except the 16-20 count, which increased in price throughout 1982-84. The only two countries for which prices of shrimp in this form were reported are Mexico and Thailand. The prices reported show imports from Thailand being sold at a large discount compared with the imports from Mexico.

Tables 46 to 48 summarizes data received by domestic processors. Prices for domestic raw, heads-off, shell-on shrimp followed the same trends as the imported shrimp. Prices rose from 1982 to 1983 then declined in 1984. When compared with the prices reported by importers of shrimp from Mexico and Ecuador, the largest exporting countries, the domestic price tended to be lower for most size counts.

Domestic canners also provided information on prices for canned shrimp. Prices reported by canners tended to increase during the 3 years for which price data were requested.

Table 46.--Prices reported by domestic processors of heads-off, shell-on shrimp, by size counts, by year and quarter, 1982-84

(Per pound)				
Period	Size count			
	16-20	31-35	36-40	51-60
1982:				
January-March-----	\$6.67	\$4.77	\$4.18	\$3.57
April-June-----	6.52	5.75	5.15	3.37
July-September-----	6.52	5.07	4.51	3.50
October-December-----	6.82	5.49	5.06	4.24
1983:				
January-March-----	7.13	5.59	5.25	4.27
April-June-----	7.26	5.68	5.29	3.96
July-September-----	7.16	5.45	5.18	3.63
October-December-----	6.92	5.14	4.66	3.72
1984:				
January-March-----	7.24	5.10	4.30	3.73
April-June-----	7.33	4.61	3.82	3.26
July-September-----	6.84	4.02	3.43	2.94
October-December-----	6.06	3.81	3.32	3.05

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 47.--Prices reported by domestic processors of peeled and undeveined canned shrimp, by sizes, by year and quarter, 1982-84

(Per pound)				
Period	Size			
	Large	Medium	Small	Tiny
1982:				
January-March-----	\$5.88	\$5.58	\$4.57	\$4.27
April-June-----	6.16	5.44	4.71	4.35
July-September-----	5.99	5.91	4.73	4.72
October-December-----	6.76	6.36	5.28	5.01
1983:				
January-March-----	7.62	6.86	5.66	5.21
April-June-----	7.42	7.46	5.86	5.34
July-September-----	7.81	7.26	6.23	5.87
October-December-----	8.44	7.63	6.09	6.14
1984:				
January-March-----	8.87	7.77	6.45	5.91
April-June-----	8.38	6.46	6.43	5.84
July-September-----	6.22	6.76	5.62	5.36
October-December-----	7.68	7.41	5.48	4.90

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Table 48.--Prices reported by domestic processors of peeled and deveined canned shrimp, by sizes, by year and quarter, 1982-84

Period	(Per pound)			
	Size			
	Large	Medium	Small	Tiny
1982:				
January-March-----	\$8.06	\$6.27	\$5.64	\$4.71
April-June-----	7.87	6.26	5.60	4.71
July-September-----	7.37	6.51	5.45	4.71
October-December-----	6.75	7.10	4.71	4.71
1983:				
January-March-----	8.04	8.61	5.68	5.65
April-June-----	7.53	6.98	6.93	5.65
July-September-----	8.85	8.84	7.08	6.27
October-December-----	8.78	8.44	7.14	6.27
1984:				
January-March-----	9.83	8.66	7.48	6.27
April-June-----	9.11	8.51	7.44	5.65
July-September-----	9.61	8.58	7.18	6.27
October-December-----	9.39	8.92	6.99	5.65

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

### Retail prices

Retail prices for shrimp are presented in table 49. Retail price data were collected for: raw headless shrimp, peeled and deveined shrimp, canned shrimp in 4 1/2 ounce cans, and breaded shrimp. The retail prices presented are based on market surveys by the National Marine Fisheries Service of three retail food stores in each of 10 cities nationwide. <sup>1/</sup>

The retail shrimp market is a relatively small one in the marketing chain for shrimp. An estimated 80 percent of shrimp sales to consumers are sales made in the restaurant or institutional trade, where retail prices are not relevant. Only 20 percent of annual retail shrimp sales are made at the traditional retail food stores. Thus, retail prices are incomplete indicators of the cost of shrimp products to the ultimate consumer.

Retail prices for the four product forms examined fluctuated widely from month to month making cyclical trend analysis difficult. The average annual price for headless raw shrimp remained fairly constant for 1982-1984. Retail prices increased from \$7.33 per pound in 1982 to \$7.42 per pound in 1983 and again to \$7.46 per pound in 1984, or about a 2 percent gain overall. During January-March 1985, the average retail price fell slightly to \$7.43 per pound.

<sup>1/</sup> The 10 cities surveyed were Atlanta, GA; Little Rock, AK; Boston, MA; Galveston, TX; Los Angeles, CA; Pascagoula, MS; San Francisco, CA; St. Petersburg, FL; Seattle, WA; and Washington, DC.



Table 49.--Shrimp: U.S. retail prices, by year and month, 1980-1985

(Per pound)					
Period	Raw headless	Peeled and deveined	Canned	Breaded	
1980:					
January-----	1/	1/	1/	1/	
February-----	1/	1/	1/	1/	
March-----	1/	1/	1/	1/	
April-----	1/	1/	1/	1/	
May-----	1/	1/	1/	1/	
June-----	1/	1/	1/	1/	
July-----	\$5.96	\$5.93	\$7.41	\$4.68	
August-----	6.41	6.04	7.27	4.92	
September-----	5.67	5.87	7.47	4.77	
October-----	6.44	6.13	7.56	4.69	
November-----	4.39	6.10	7.59	4.67	
December-----	5.54	6.23	7.31	4.63	
Average-----	5.74	6.05	7.44	4.73	
1981:					
January-----	5.92	6.15	7.48	4.75	
February-----	5.76	5.57	7.20	4.64	
March-----	5.84	5.61	7.56	4.60	
April-----	5.29	5.59	7.42	5.10	
May-----	5.98	5.88	7.57	5.28	
June-----	5.34	6.00	7.43	4.97	
July-----	5.95	5.84	7.72	5.17	
August-----	5.80	5.87	7.49	5.12	
September-----	5.86	5.58	7.44	4.97	
October-----	5.91	5.67	7.42	5.11	
November-----	6.36	6.22	6.98	5.23	
December-----	5.72	6.35	7.43	5.03	
Average-----	5.81	5.86	7.43	5.00	
1982:					
January-----	5.83	6.22	7.31	5.02	
February-----	6.94	5.50	7.31	5.26	
March-----	6.50	5.81	7.39	5.39	
April-----	6.92	5.72	7.44	5.26	
May-----	7.02	6.29	7.10	5.54	
June-----	7.21	6.01	7.83	5.85	
July-----	7.43	5.70	8.21	5.72	
August-----	6.90	5.73	8.07	5.93	
September-----	7.61	5.83	7.63	5.83	
October-----	8.16	5.95	7.60	5.70	
November-----	7.72	6.17	7.86	5.74	
December-----	7.45	6.43	7.82	5.84	
Average-----	7.33	5.93	7.75	5.67	

See footnote at end of table.

Table H-49.--Shrimp: U.S. retail prices, by year and month,  
1980-1985--Continued

(Per pound)					
Period	Raw headless	Peeled and deveined	Canned	Breaded	
1983:					
January-----	\$7.35	\$6.80	\$7.66	\$5.88	
February-----	7.17	5.96	7.56	6.16	
March-----	6.67	5.25	7.89	6.40	
April-----	7.21	6.29	8.24	5.76	
May-----	8.06	6.40	8.31	5.81	
June-----	8.39	6.30	8.07	6.02	
July-----	7.56	6.48	8.42	6.07	
August-----	7.14	6.44	8.40	6.48	
September-----	6.72	6.39	8.48	6.68	
October-----	7.06	6.63	8.56	6.59	
November-----	7.92	6.13	8.56	6.55	
December-----	7.85	6.07	8.70	6.50	
Average-----	7.42	6.26	8.23	6.24	
1984:					
January-----	8.02	6.01	8.85	6.57	
February-----	7.04	6.36	8.34	6.59	
March-----	6.31	5.92	8.55	6.54	
April-----	7.17	6.43	8.45	6.71	
May-----	8.59	6.24	8.16	6.65	
June-----	9.00	6.35	8.02	6.65	
July-----	7.47	6.35	8.31	6.67	
August-----	7.21	6.05	8.26	6.37	
September-----	7.87	6.43	8.28	6.69	
October-----	8.04	6.47	8.24	6.78	
November-----	6.15	5.98	8.01	6.15	
December-----	6.70	5.64	7.96	6.27	
Average-----	7.46	6.18	8.28	6.55	
1985:					
January-----	6.71	6.41	8.07	6.71	
February-----	7.27	5.77	8.10	6.55	
March-----	8.32	5.84	8.14	6.20	
Average-----	7.43	6.01	8.10	6.49	

1/ Data not available.

Average annual prices for peeled and deveined shrimp initially increased by 5 percent, from \$5.93 per pound in 1982 to \$6.26 per pound in 1983. However, prices dropped by slightly over 1 percent to \$6.18 per pound in 1984 and then again to \$6.01 per pound during the first three months of 1985, for a net gain of only one percent.

Canned shrimp rose in price 7 percent, from \$7.75 per pound in 1982 to \$8.28 per pound in 1984. Prices then fell to an average of \$8.10 per pound in January-March 1985.

Annual average prices for breaded shrimp increased in price from \$5.67 per pound in 1982 to \$6.24 per pound in 1983 or about 10 percent. Prices for breaded shrimp continued to rise to an annual average price of \$6.55 per pound in 1984, or an additional 5 percent, before falling to \$6.45 per pound during the first three months of 1985.

### Price spreads

Figure 18 depicts movements of the ex-vessel price for U.S.-Western Gulf 26-30 count shrimp; the New York wholesale price for domestic Gulf brown 26-30 count shrimp; and the retail price for heads-off, shell-on shrimp reported by National Marine Fisheries' Operation Price Watch. The price spread between the wholesale and ex-vessel price measures were nearly constant during the entire period. Small monthly fluctuations in the ex-vessel price line were mirrored by movements in the wholesale price measure. Retail prices, however, fluctuated widely when compared with wholesale prices. Also, the spread between the retail price and the other two prices has widened recently.

One major problem associated with the retail prices reported is the channels of distribution through which shrimp is sold. Retail prices are collected from supermarkets in 10 cities nationwide, however only 20 percent of the total supply of shrimp is sold through these channels. The remainder is sold to restaurants and institutions. Also Operation Price Watch reports only an average price for all shrimp, both domestic and imported. The ex-vessel and wholesale prices are much more specific with regard to origin, size, and species, making them a much better indicator of general price movements.

### Price cycles

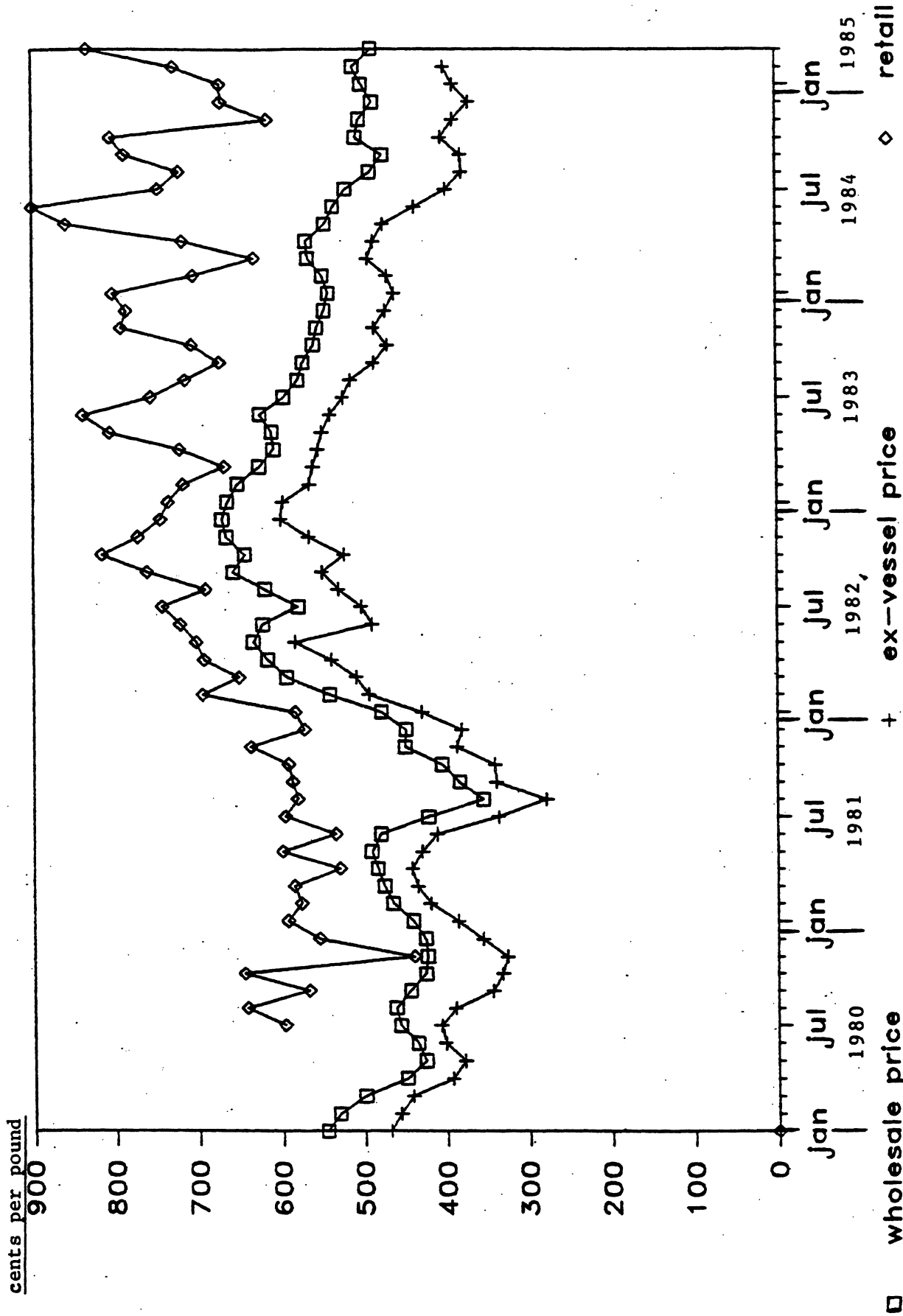
During 1970-84, ex-vessel and wholesale shrimp prices exhibited a definite cycle. This cycle consists of a peak every 3 years or so and is attributed to overall trends in the U.S. economy. <sup>1/</sup> Figure 19 shows average annual ex-vessel prices for the U.S. Gulf and South Atlantic region during 1970-84. This figure accentuates the 3-year cycle, as peaks in the ex-vessel price were reached in 1973, 1976, 1979, and 1983.

This cycle is also evident at the wholesale level. Figure 20 shows New York wholesale prices during December 1972-February 1985 for three size counts of domestic Gulf brown shrimp. Peaks were reached at about the same periods as with ex-vessel prices.

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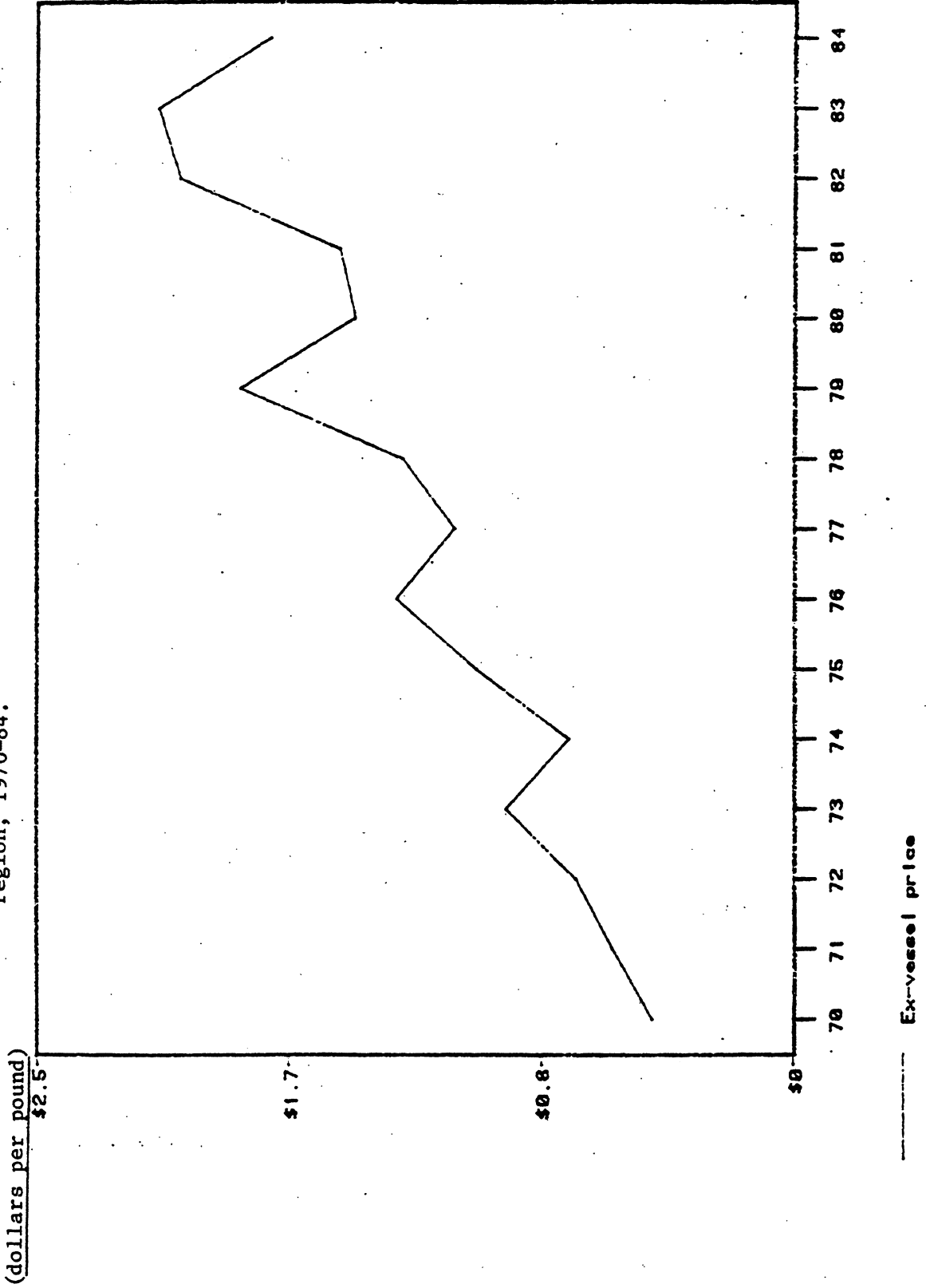
<sup>1/</sup> Testimony of Mr. Henry Branstetter, transcript of hearing, pp. 231-232, and information gathered during fieldwork.

Figure 18.--Price spread between the ex-vessel, wholesale, and retail price for 26-30 count shrimp.



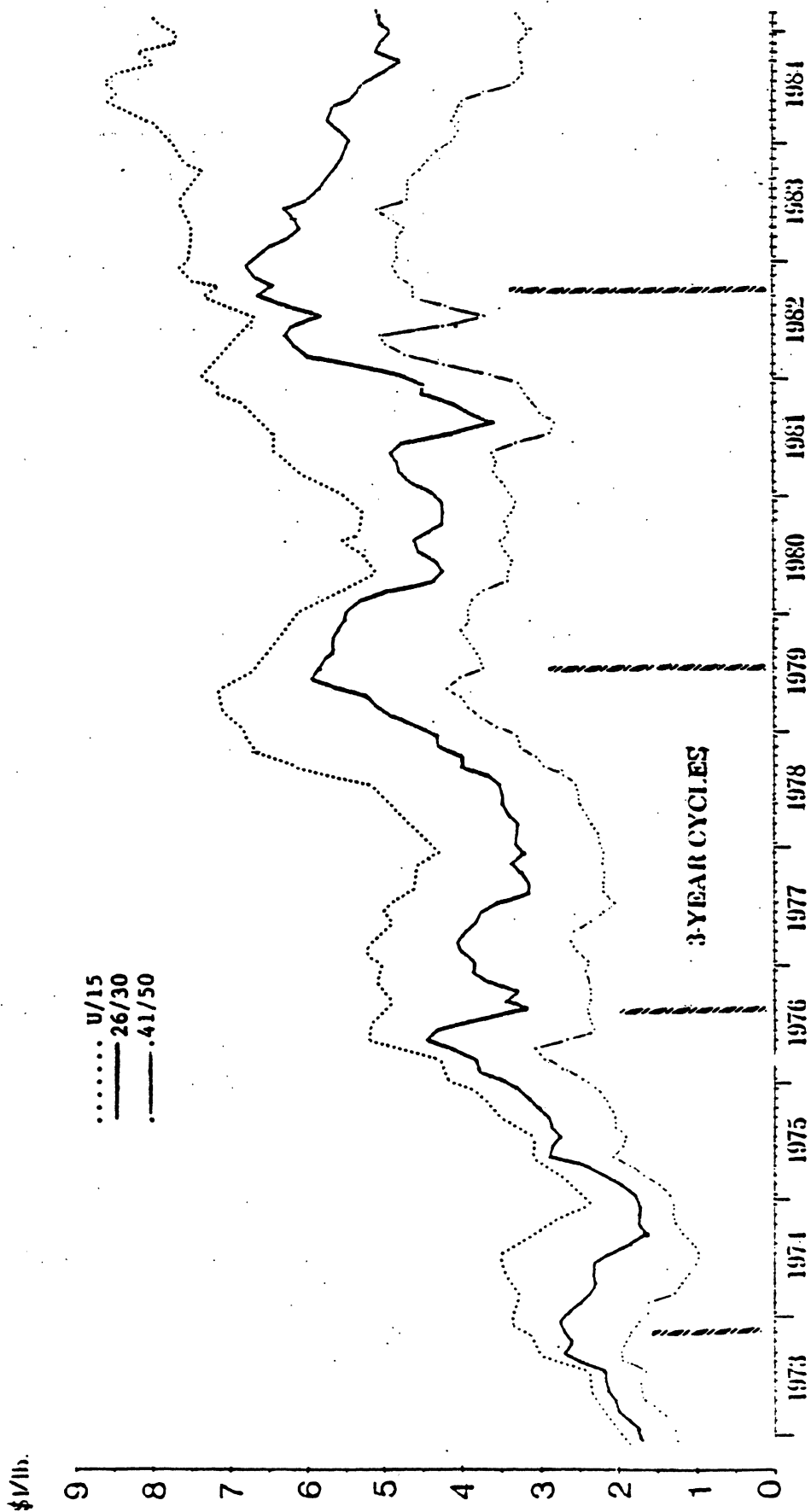
Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 19.--Average annual ex-vessel prices for the U.S. Gulf and South Atlantic region, 1970-84.



Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Figure 20.--New York wholesale prices of domestic Gulf brown shrimp, Dec. 1972- Feb. 1985.



Source: Submission to the U.S. International Trade Commission by the Association of Seafood Importers.

## Consumption

U.S. annual apparent consumption of shrimp (all forms, converted to a heads-off, shell-on basis) increased from 423 million pounds in 1980 to a record-high 604 million pounds in 1984, or by 30 percent (table 50). Such consumption consisted primarily of heads-off, shell-on shrimp and peeled shrimp. Lesser amounts of breaded shrimp and canned shrimp were consumed during the period. The share of apparent consumption supplied by imports increased from 57 percent in 1981 to a record-high 82 percent in 1983 before declining to 70 percent in 1984. This increase in market share is illustrated by figure 21, which shows U.S. shrimp landings, U.S. shrimp imports, and total U.S. shrimp supply during 1980-84.

U.S. apparent consumption of heads-off, shell-on shrimp increased from 216 million pounds in 1980 to 286 million pounds in 1983, or by 32 percent (table 51). <sup>1/</sup> The share of apparent consumption supplied by imports increased from 64 percent in 1980 to 76 percent in 1983.

Apparent consumption of peeled shrimp in the United States increased from 125 million pounds in 1980 to 163 million pounds in 1983, or by 31 percent (table 52). The share of consumption supplied by imports increased from 53 percent in 1981 to 67 percent in 1983.

U.S. apparent consumption of breaded shrimp increased from 84 million pounds in 1980 to 101 million pounds in 1983 (table 53). The increase was mainly the result of a rise in domestic production during the period, since imports were relatively minor (3 percent of apparent consumption during 1980-83).

U.S. apparent consumption of canned shrimp decreased from 14 million pounds in 1980 to 10 million pounds in 1982 before increasing to 19 million pounds in 1983 (table 54). The decline in apparent consumption between 1981 and 1982 was a result of a drop in domestic production. While domestic production increased somewhat in 1983, the sharp increase in apparent consumption that year was mainly caused by increased imports. The share of apparent consumption supplied by imports increased from 30 percent in 1980 to 71 percent in 1983.

The per-capita consumption of shrimp in the United States is shown in the following tabulation as compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service (in pounds of edible meat):

<u>Average</u> <u>1970-79</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
1.4	1.4	1.5	1.5	1.7	1.9

U.S. per-capita consumption of shrimp increased from 1.4 pounds in 1980 to a record-high 1.9 pounds in 1984, or by 36 percent.

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<sup>1/</sup> Data on specific product forms are not available for 1984.

Table 50.--Shrimp: U.S. production, beginning inventories, imports for consumption, exports, ending inventories, and apparent consumption, 1980-84

Year	Production 1/	Beginning inventories	Imports	Exports		Ending inventories	Apparent consumption	Ratio of imports to apparent consumption	Ratio of domestic exports to production
				Domestic	Foreign				
-----1,000 pounds-----									
-----Percent-----									
1980	207,869	109,634	255,957	30,558	10,502	109,509	422,891	61	15
1981	218,900	109,509	259,112	29,957	13,764	89,887	453,913	57	14
1982	175,613	89,887	319,596	24,414	12,784	76,645	471,253	68	14
1983	155,591	76,645	421,179	29,349	6,588	101,357	516,121	82	19
1984 2/	188,132	101,357	422,340	21,439	5,152	81,597	603,641	70	11

1/ Landings  
2/ Preliminary.

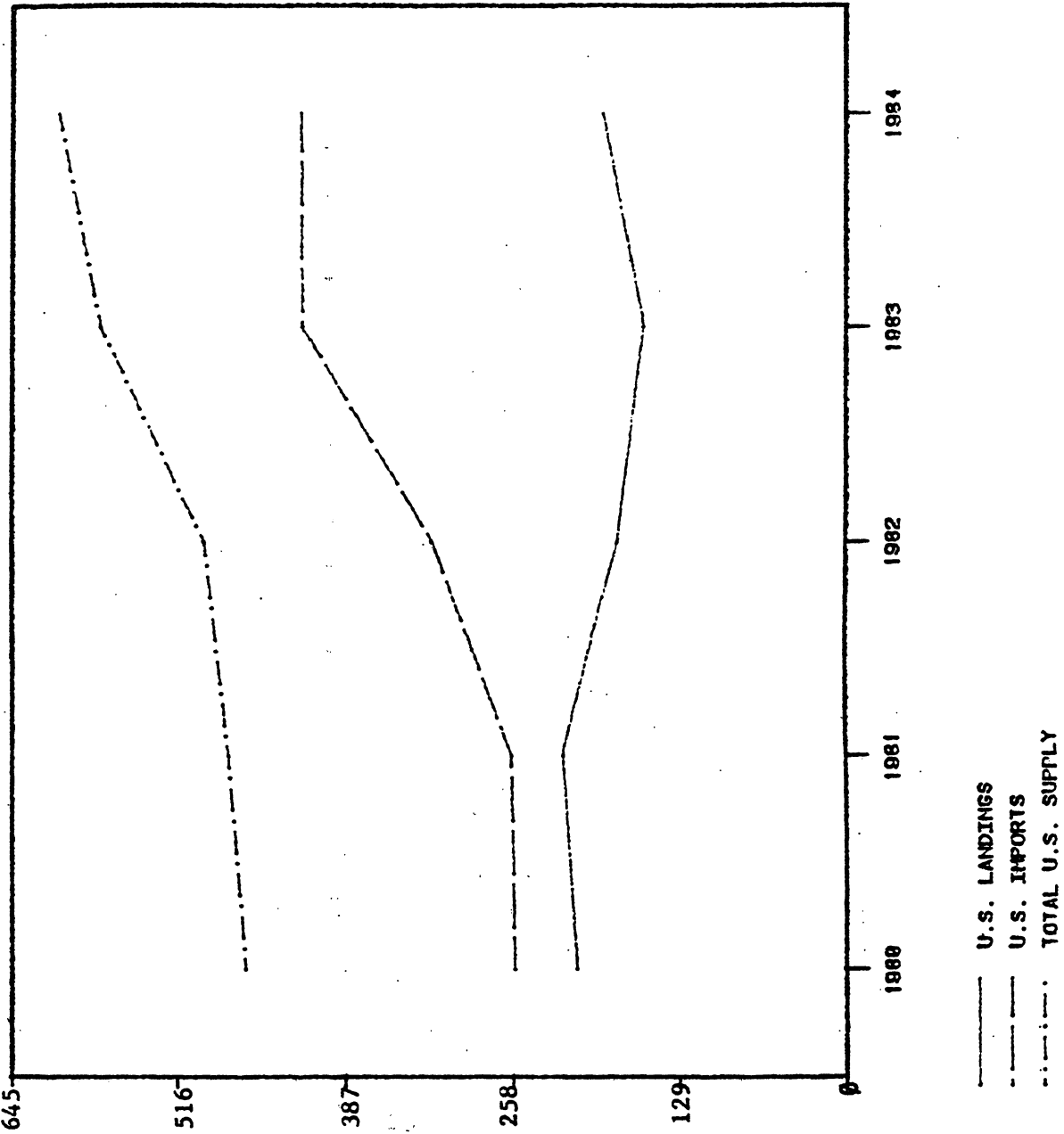
Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note.--Heads-off weight.



Figure 21.--U.S. Landings, U.S. Imports, and total U.S. supply of shrimp  
1980-84 (heads-off weight)

(In millions of  
pounds)



Source: Compiled from official statistics of the U.S. Department of Commerce,  
National Marine Fisheries Service.

Table 51.--Fresh and frozen shell-on shrimp: U.S. production, beginning inventories, imports for consumption, exports, ending inventories, and apparent consumption, 1980-84

Year	Pro- duction	Beginning inven- tories	Imports	Exports 1/		Ending inven- tories	Apparent con- sumption	Ratio of imports to apparent consumption	Ratio of domestic exports to production
				Domestic	Foreign				
-----1,000 pounds-----									
1980	79,218	46,866	138,750	7,897	7,999	31,612	216,326	64	10
1981	97,887	31,612	140,953	10,030	11,915	27,740	220,767	64	10
1982	82,829	27,740	181,329	8,122	10,844	24,580	248,352	73	10
1983	85,735	24,580	216,950	10,072	4,339	26,521	286,333	76	12
1984 2/	3/	26,521	225,696	6,627	3,690	31,062	3/	3/	3/

1/ Estimated by the staff of the U.S. International Trade Commission.

2/ Preliminary.

3/ Not available.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 52.--Peeled shrimp: U.S. production, beginning inventories, imports for consumption, exports, ending inventories, and apparent consumption, 1980-84

Year	Pro- duction	Beginning inven- tories	Imports	Exports 1/		Ending inven- tories	Apparent con- sumption	Ratio of imports to apparent consumption	Ratio of domestic exports to production
				Domestic	Foreign				
-----1,000 pounds-----									
1980	56,961	20,101	76,161	8,016	1,568	19,111	124,528	61	14
1981	70,552	19,111	74,430	7,578	1,771	15,265	139,479	53	11
1982	76,422	15,265	79,805	7,429	1,894	15,695	146,474	54	10
1983	68,805	15,695	108,618	8,382	2,221	19,865	162,650	67	12
1984 2/	3/	19,865	102,901	6,899	1,379	12,859	3/	3/	3/

1/ Estimated by the staff of the U.S. International Trade Commission.

2/ Preliminary.

3/ Not available.

Source: Compiled from official statistics of the U.S. Department of Commerce, except as noted.

Table 53.--Breaded shrimp: U.S. production, beginning inventories, imports for consumption, ending inventories, and apparent consumption, 1980-84 1/

Year	Production	Beginning inventories	Imports	Ending inventories	Apparent consumption	Ratio of imports to apparent consumption
	1,000 pounds					Percent
1980	83,182	6,838	172	6,360	83,832	2/
1981	85,177	6,360	2,995	5,577	88,955	3
1982	94,391	5,577	3,859	5,361	98,466	4
1983	98,430	5,361	2,685	5,002	101,474	3
1984 3/	4/	5,002	319	3,976	4/	4/

1/ Data are not available on exports; however, exports are believed to be negligible.

2/ Less than 0.5 percent.

3/ Preliminary.

4/ Not available.

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

Table 54.---Canned shrimp: U.S. production, imports for consumption, exports, and apparent consumption, 1980-84

Year	Production	Imports	Exports		Apparent consumption	Ratio (per-		Ratio of exports to domestic production
			Domestic	Foreign		imports to apparent consumption	to production	
1,000 pounds						Percent		
1980	15,890	4,224	5,832	371	13,911	30	37	
1981	12,339	4,383	4,545	31	12,146	36	37	
1982	7,938	5,332	3,002	18	10,250	52	38	
1983	9,140	13,176	3,749	11	18,556	71	41	
1984 <sup>1/</sup>	2/	13,580	2,712	33	2/	2/	2/	

1/ Preliminary.

2/ Not available.

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

### Exports

During 1980-84, U.S. exports of domestic and foreign shrimp (in all forms) ranged from a high of 36 million pounds, valued at \$112 million in 1981 to a low of 21 million pounds, valued at \$70 million, in 1984 (table 55). About 76 percent (by quantity) of the exports were of domestic origin in 1984. Exports of shrimp of foreign origin consisted mainly of shrimp from Mexico and other Latin American countries passing through the U.S. distribution system on the way to Canada, Japan, and Europe. The following discussion on exports concerns exports of domestic merchandise.

Annual U.S. exports of domestic shrimp remained relatively stable during 1980-83 at 19 million to 22 million pounds, but the value of annual exports during that period ranged from \$59 million in 1982 to \$79 million in 1983. In 1984 exports fell to 16 million pounds, valued at \$52 million (table 56). During 1980-84, exports to Canada, the major export market for U.S. domestic shrimp, declined from 12 million pounds, valued at \$36 million, in 1980, to 9 million pounds, valued at \$33 million, in 1984, or by 24 percent in quantity and 8 percent in value (table 56). Canada accounted for 54 percent of the quantity and 56 percent of the value of U.S. exports of domestic shrimp during 1980-84. Other leading U.S. export markets included Mexico and Japan. U.S. shrimp exports to Mexico during 1980-84 ranged from a high of 7 million pounds in 1981 and 1983 to a low of 4 million pounds in each of the other years (table 56). The value of these U.S. exports to Mexico during 1980-84 ranged from \$25 million in 1983 to \$10 million in 1980 and 1984. Mexico accounted for 26 percent of the quantity and 23 percent of the value of U.S. exports of domestic shrimp during 1980-84. U.S. annual exports of shrimp to Japan ranged between 1 million and 3 million pounds, valued at between \$4 million and \$12 million, during 1980-84.

Shrimp are exported from the United States in various product forms. These include fresh or chilled, frozen, and canned. The majority of shrimp exports from the United States are in the frozen form. Exports of frozen shrimp accounted for 60 percent of the quantity and 64 percent of the value of total U.S. shrimp exports during 1980-84. U.S. exports of frozen shrimp decreased from 13 million pounds, valued at \$42 million, in 1980 to 10 million pounds, valued at \$35 million, in 1982, then increased to 14 million pounds, valued at \$54 million, in 1983 before declining to 11 million pounds, valued at \$37 million, in 1984 (table 56). Annual exports to Canada, the major export market for U.S. frozen shrimp, remained fairly constant during 1980-84, ranging from 5 million pounds to 6 million pounds. The value of those exports ranged from \$18 million to \$24 million (table 56). Mexico was the second major export market during this period. U.S. exports of frozen shrimp to Mexico showed no discernible trend during 1980-84 and ranged from 3 million pounds, valued at \$7 million, in 1982 to 6 million pounds, valued at \$21 million, in 1983 (table 56). U.S. exports of frozen shrimp to Japan, the third principal market, declined from 3 million pounds, valued at \$11 million, in 1980 to 501,000 pounds, valued at \$2 million, in 1984 (table 56).

U.S. annual exports of canned shrimp during 1980-84 ranged from 6 million pounds in 1980 to 3 million pounds in 1982 and 1984 (table 56). The value of such annual exports declined irregularly from \$17 million in 1980 to \$8 million in 1984. Most U.S. canned shrimp exports were destined for Canada. During 1980-84, U.S. exports of canned shrimp to Canada declined from 4 million pounds, valued at \$13 million, in 1980 to 2 million pounds in 1982

Table 55.--Shrimp: U.S. exports of domestic and foreign merchandise, by product forms, 1980-84

Product form	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Frozen:					
Domestic-----	13,383	12,407	10,048	13,747	10,870
Foreign-----	7,616	7,343	6,716	2,972	2,915
Total-----	20,999	19,750	16,764	16,719	13,785
Fresh or chilled:					
Domestic-----	2,530	5,201	5,503	4,707	2,656
Foreign-----	1,951	6,343	6,022	3,588	2,154
Total-----	4,481	11,544	11,525	8,295	4,810
Canned:					
Domestic-----	5,832	4,545	3,002	3,749	2,712
Foreign-----	371	31	18	11	33
Total-----	6,203	4,576	3,020	3,760	2,745
Total shrimp:					
Domestic-----	21,745	22,152	18,553	22,204	16,238
Foreign-----	9,938	13,717	12,756	6,571	5,102
Total-----	31,683	35,869	31,309	28,775	21,340
Value (1,000 dollars)					
Frozen:					
Domestic-----	41,766	38,651	34,568	53,641	36,618
Foreign-----	26,902	24,560	29,362	14,147	11,154
Total-----	68,668	63,211	63,930	67,788	47,772
Fresh or chilled:					
Domestic-----	7,162	15,080	15,784	14,729	6,914
Foreign-----	7,094	19,856	20,086	10,779	7,512
Total-----	14,256	34,936	35,870	25,508	14,426
Canned:					
Domestic-----	17,207	13,954	8,559	10,520	8,040
Foreign-----	679	81	46	33	63
Total-----	17,886	14,035	8,605	10,553	8,103
Total shrimp:					
Domestic-----	66,135	67,685	58,912	78,889	51,572
Foreign-----	34,676	44,497	49,494	24,959	18,730
Total-----	100,811	112,182	108,406	103,848	70,302
Unit value (per pound)					
Frozen:					
Domestic-----	\$3.12	\$3.12	\$3.44	\$3.90	\$3.37
Foreign-----	3.53	3.34	4.37	4.76	3.83
Average-----	3.27	3.20	3.81	4.05	3.47
Fresh or chilled:					
Domestic-----	2.83	2.90	2.87	3.13	2.60
Foreign-----	3.64	3.13	3.34	3.00	3.49
Average-----	3.18	3.03	3.11	3.08	3.00
Canned:					
Domestic-----	2.95	3.07	2.85	2.81	2.96
Foreign-----	1.83	2.66	2.52	2.99	1.92
Average-----	2.88	3.07	2.85	2.81	2.95
Total shrimp:					
Domestic-----	3.04	3.06	3.18	3.55	3.18
Foreign-----	3.49	3.24	3.88	3.80	3.67
Average-----	3.18	3.13	3.46	3.61	3.29

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

Note.--Because of rounding, figures may not add to the totals shown.

Table 56.--Shrimp: U.S. exports of domestic merchandise, by product forms and markets, 1980-84

Product form and market	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Frozen:					
Canada-----	6,080	5,965	5,272	5,859	5,648
Mexico-----	3,582	4,085	2,881	5,874	3,885
Japan-----	2,619	1,359	740	1,042	501
All other-----	1,102	998	1,155	972	836
Total-----	13,383	12,407	10,048	13,747	10,870
Canned:					
Canada-----	4,282	3,644	2,385	3,073	2,417
All other-----	1,550	901	617	676	295
Total-----	5,832	4,545	3,002	3,749	2,712
Fresh or chilled:					
Canada-----	1,949	1,612	2,157	2,523	1,251
Japan-----	223	165	1,939	1,171	632
Mexico-----	141	3,205	1,002	787	461
All other-----	216	219	405	226	312
Total-----	2,529	5,201	5,503	4,707	2,656
Total, shrimp:					
Canada-----	12,299	11,221	9,814	11,455	9,316
Mexico-----	3,730	7,294	3,884	6,739	4,348
Japan-----	2,892	1,618	2,696	2,215	1,132
All other-----	2,824	2,019	2,159	1,795	1,442
Grand total-----	21,745	22,152	18,553	22,204	16,238
Value (1,000 dollars)					
Frozen:					
Canada-----	17,824	19,894	20,562	24,389	22,358
Mexico-----	10,047	10,656	7,363	21,371	8,600
Japan-----	10,925	4,919	3,040	4,805	2,296
All other-----	2,970	3,182	3,603	3,076	3,364
Total-----	41,766	38,651	34,568	53,641	36,618
Canned:					
Canada-----	12,771	10,711	6,755	8,534	7,107
All other-----	4,436	3,243	1,804	1,986	933
Total-----	17,207	13,954	8,559	10,520	8,040
Fresh or chilled:					
Canada-----	5,579	5,701	6,782	7,710	3,666
Japan-----	746	604	4,057	3,201	1,489
Mexico-----	369	8,108	3,646	3,003	940
All other-----	468	666	1,299	814	819
Total-----	7,162	15,079	15,784	14,728	6,914
Total, shrimp:					
Canada-----	36,174	36,306	34,101	40,633	33,132
Mexico-----	10,425	18,771	11,012	24,694	9,546
Japan-----	11,787	5,813	7,134	8,012	3,785
All other-----	7,749	6,795	6,665	5,550	5,109
Grand total-----	66,135	67,685	58,912	78,889	51,572
Unit value (per pound)					
Frozen:					
Canada-----	\$2.94	\$3.34	\$3.90	\$4.16	\$3.96
Mexico-----	2.81	2.61	2.56	3.64	2.21
Japan-----	4.17	3.62	4.11	4.61	4.59
All other-----	2.70	3.19	3.12	3.16	4.02
Average-----	3.12	3.12	3.44	3.90	3.37
Canned:					
Canada-----	2.98	2.94	2.83	2.78	2.94
All other-----	2.86	3.60	2.92	2.94	3.16
Average-----	2.95	3.07	2.85	2.81	2.96
Fresh or chilled:					
Canada-----	2.86	3.54	3.14	3.06	2.93
Japan-----	3.35	3.66	2.09	2.73	2.35
Mexico-----	2.62	2.53	3.64	3.82	2.04
All other-----	2.17	3.04	3.21	3.60	2.63
Average-----	2.83	2.90	2.87	3.13	2.60
Total, shrimp:					
Canada-----	2.94	3.24	3.47	3.55	3.56
Mexico-----	2.80	2.57	2.84	3.66	2.20
Japan-----	4.08	3.59	2.65	3.62	3.34
All other-----	2.74	3.37	3.09	3.09	3.54
Average-----	3.04	3.06	3.18	3.55	3.18

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

Note.--Because of rounding, figures may not add to the totals shown.



and 1984, valued at \$7 million in each of those years (table 56). U.S. exports of canned shrimp accounted for 20 percent of the quantity and 18 percent of the value of total U.S. shrimp exports during 1980-84.

U.S. exports of fresh or chilled shrimp increased from 3 million pounds, valued at \$7 million, in 1980 to 6 million pounds, valued at \$16 million, in 1982 but then declined to 3 million pounds, valued at \$7 million, in 1984 (table 56). Canada, Japan, and Mexico were the leading export markets during this period. Annual fresh or chilled shrimp exports to Canada ranged from 1 million to 3 million pounds and from \$4 million to \$8 million during 1980-84 (table 56). Annual U.S. exports to Japan ranged from 165,000 pounds to 2 million pounds and from \$604,000 to \$4 million during 1980-84 (table 56). Annual exports to Mexico ranged from 141,000 to 3 million pounds and from \$369,000 to \$8 million during 1980-84 (table 56). U.S. exports of fresh or chilled shrimp accounted for 20 percent of the quantity and 18 percent of the value of total U.S. shrimp exports during 1980-84.

During 1980-84, the major customs districts through which shrimp were exported were, in descending order of value, Laredo, TX; Buffalo, NY; Seattle, WA; Detroit, MI; Los Angeles, CA; and Ogdensburg, NY (table 57). These districts accounted for 73 percent of the total quantity of U.S. shrimp exports during 1980-84.

Most U.S. exports of frozen shrimp, the principal product form exported, passed through the Laredo customs district (table 58). Such exports consisted primarily of raw, shell-on shrimp and were exported to Mexico. Some U.S. processors shipped raw, shell-on shrimp across the border into Mexico to be further processed and then reentered the processed shrimp into the United States. 1/ Other leading export districts for frozen shrimp included Buffalo, Detroit, and Seattle. Such shrimp exports from these northern border districts are believed to have been mainly peeled shrimp, virtually all of which were destined for Canada.

Canned shrimp were exported mainly through the customs districts of Seattle, Ogdensburg, and Duluth (table 59). Canada was the principal market for such exports through these northern border districts.

The major customs districts through which U.S. exports of fresh or chilled shrimp are passed are Los Angeles, Laredo, Seattle, and Buffalo (table 60). Japan is the major market for such exports through Los Angeles. Mexico accounted for all such exports through Laredo, while Canada was the major market for such exports through Seattle and Buffalo.

#### Imports

Total U.S. imports of shrimp in all forms increased from 219 million pounds, 2/ valued at \$719 million, in 1980 to 342 million pounds, valued at \$1.2 billion, in 1984 (table 61). Mexico was the main supplier of shrimp in all forms during this period. U.S. shrimp imports from Mexico increased from 76 million pounds, valued at \$317 million, in 1980 to 85 million pounds,

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1/ Such shrimp generally are shipped under bond and are not subject to Mexican tariffs or import restrictions.

2/ This represents actual product weight.

Table 57.--Shrimp: 1/ U.S. exports of domestic merchandise, by customs districts and markets, 1980-84

District and market	1980	1981	1982	1983	1984
	Quantity (1,000 pounds, product weight)				
Laredo, TX:					
Mexico-----	3,639	7,092	3,760	6,696	4,239
All other-----	0	0	0	0	0
Total-----	3,639	7,092	3,767	6,696	4,239
Buffalo, NY:					
Canada-----	1,785	1,716	1,560	2,482	2,332
All other-----	0	0	0	0	0
Total-----	1,785	1,716	1,560	2,482	2,332
Seattle, WA:					
Canada-----	3,984	3,260	2,174	2,506	1,969
All other-----	267	454	166	59	24
Total-----	4,251	3,714	2,340	2,565	1,993
Detroit, MI:					
Canada-----	1,701	1,914	1,932	1,759	1,395
All other-----	0	39	0	0	0
Total-----	1,701	1,953	1,932	1,759	1,395
Los Angeles, CA:					
Japan-----	2,376	1,205	2,042	1,913	869
All other-----	171	83	29	199	153
Total-----	2,547	1,288	2,071	2,112	1,022
Ogdensburg, NY:					
Canada-----	1,615	1,220	1,294	1,190	1,074
All other-----	0	0	0	0	0
Total-----	1,615	1,220	1,294	1,190	1,074
All other districts-----	6,207	5,169	5,589	5,400	4,183
Grand total-----	21,745	22,152	18,553	22,204	16,238

See footnote at end of table.

Table 57.--Shrimp 1: U.S. exports of domestic merchandise, by customs districts and markets, 1980-84--Continued

District and market	1980	1981	1982	1983	1984
Value (1,000 dollars)					
Laredo, TX:					
Mexico-----	10,238	18,220	10,643	24,555	9,245
All other-----	0	0	29	0	0
Total-----	10,238	18,220	10,672	24,555	9,245
Buffalo, NY:					
Canada-----	4,617	5,425	5,328	7,933	8,134
All other-----	0	0	0	0	0
Total-----	4,617	5,425	5,328	7,933	8,134
Seattle, WA:					
Canada-----	11,764	10,404	6,778	8,707	6,521
All other-----	1,052	2,035	448	207	85
Total-----	12,816	12,439	7,226	8,914	6,606
Detroit, MI:					
Canada-----	5,783	6,411	7,377	7,360	5,264
All other-----	0	98	0	0	0
Total-----	5,783	6,509	7,377	7,360	5,264
Los Angeles, CA:					
Japan-----	9,818	4,538	4,965	6,644	2,855
All other-----	522	203	114	490	559
Total-----	10,340	4,741	5,079	7,134	3,414
Ogdensburg, NY:					
Canada-----	4,066	3,844	4,452	4,098	3,770
All other-----	0	0	0	0	0
Total-----	4,066	3,844	4,452	4,098	3,770
All other districts-----	18,275	16,507	18,778	18,895	15,139
Grand total-----	66,135	67,685	58,912	78,889	51,572

1/ All product forms.

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

Note.--Because of rounding, figures may not add to the totals shown.

Table 58.--Frozen shrimp: U.S. exports of domestic merchandise, by customs districts and markets, 1980-84

District and market	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Laredo, TX:					
Mexico-----	3,513	3,938	2,779	5,870	3,778
All other-----	0	0	7	0	0
Total-----	3,513	3,938	2,786	5,870	3,778
Buffalo, NY					
Canada-----	1,585	1,459	1,196	1,664	1,771
All other-----	0	0	0	0	0
Total-----	1,585	1,459	1,196	1,664	1,771
Detroit, MI:					
Canada-----	855	1,219	1,331	1,359	1,143
All other-----	0	39	0	0	0
Total-----	855	1,258	1,331	1,359	1,143
Seattle, WA:					
Canada-----	1,457	1,166	708	768	775
All other-----	198	200	112	53	23
Total-----	1,655	1,366	820	821	798
All other districts-----	5,775	4,386	3,915	4,033	3,380
Grand total-----	13,383	12,407	10,048	13,747	10,870
Value (1,000 dollars)					
Laredo, TX:					
Mexico-----	9,908	10,275	7,048	21,355	8,305
All other-----	-	-	29	-	-
Total-----	9,908	10,275	7,076	21,355	8,305
Buffalo, NY:					
Canada-----	3,927	4,480	4,312	5,845	6,668
All other-----	-	-	-	-	-
Total-----	3,927	4,480	4,312	5,845	6,668
Detroit, MI:					
Canada-----	2,913	4,204	5,670	6,171	4,508
All other-----	-	98	-	-	-
Total-----	2,913	4,302	5,670	6,171	4,508
Seattle, WA:					
Canada-----	4,273	4,025	2,537	3,297	3,044
All other-----	776	692	282	191	78
Total-----	5,049	4,717	2,819	3,488	3,122
All other districts-----	19,969	14,877	14,691	16,782	14,015
Grand total-----	41,766	38,651	34,568	53,641	36,618

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

Note.--Because of rounding, figures may not add to the totals shown.

Table 59.--Canned shrimp: U.S. exports of domestic merchandise, by customs districts and markets, 1980-84

District and market	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Seattle, WA:					
Canada-----	1,775	1,592	994	1,059	827
All other-----	56	254	28	6	0
Total-----	1,831	1,846	1,022	1,065	827
Ogdensburg, NY:					
Canada-----	926	757	784	815	651
All other-----	0	0	0	0	0
Total-----	926	757	784	815	651
Duluth, MN:					
Canada-----	0	22	0	0	404
All other-----	0	0	0	0	0
Total-----	0	22	0	0	404
All other districts-----	3,075	1,920	1,196	1,869	830
Grand total-----	5,832	4,545	3,002	3,749	2,712
Value (1,000 dollars)					
Seattle, WA:					
Canada-----	5,499	4,649	2,788	3,189	2,399
All other-----	232	1,343	80	17	-
Total-----	5,731	5,992	2,868	3,206	2,399
Ogdensburg, NY:					
Canada-----	2,230	2,354	2,390	2,396	1,958
All other-----	-	-	-	-	-
Total-----	2,230	2,354	2,390	2,396	1,958
Duluth, MN:					
Canada-----	-	92	-	-	1,238
All other-----	-	-	-	-	-
Total-----	-	92	-	-	1,238
All other districts-----	9,246	5,516	3,301	4,918	2,445
Grand total-----	17,207	13,954	8,559	10,520	8,040

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

Note.--Because of rounding, figures may not add to the totals shown.

Table 60.--Fresh or chilled shrimp: U.S. exports of domestic merchandise, by customs districts and markets, 1980-84

District and market	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Los Angeles, CA:					
Japan-----	221	81	1,688	1,147	588
All other-----	15	14	6	40	43
Total-----	236	95	1,694	1,187	631
Laredo, TX:					
Mexico-----	126	3,155	981	781	461
All other-----	0	0	0	0	0
Total-----	126	3,155	981	781	461
Seattle, WA:					
Canada-----	752	502	472	680	366
All other-----	14	0	26	0	1
Total-----	766	502	498	680	367
Buffalo, NY:					
Canada-----	135	149	333	661	456
All other-----	0	0	0	0	0
Total-----	135	149	333	661	456
All other districts-----	1,266	1,300	1,997	1,398	741
Grand total-----	2,529	5,201	5,503	4,707	2,656
Value (1,000 dollars)					
Los Angeles, CA:					
Japan-----	743	325	3,448	3,064	1,381
All other-----	13	55	35	153	48
Total-----	756	380	3,483	3,217	1,429
Laredo, TX:					
Mexico-----	330	7,946	3,596	2,983	940
All other-----	-	-	-	-	-
Total-----	330	7,946	3,596	2,983	940
Seattle, WA:					
Canada-----	1,992	1,729	1,453	2,221	1,078
All other-----	44	1	86	-	7
Total-----	2,036	1,730	1,539	2,221	1,085
Buffaloso, NY:					
Canada-----	439	542	920	1,637	1,144
All other-----	-	-	-	-	-
Total-----	439	542	920	1,637	1,144
All other districts-----	3,601	4,481	6,246	4,670	2,316
Grand total-----	7,162	15,079	15,784	14,728	6,914

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

Note.--Because of rounding, figures may not add to the totals shown.

Table 61.--Shrimp in all forms: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Mexico-----	76,062	70,866	80,170	84,562	81,701
Ecuador-----	20,195	24,735	36,118	51,367	46,603
Panama-----	13,727	15,923	17,615	16,255	16,315
Brazil-----	8,768	10,933	12,697	14,644	19,812
Thailand-----	8,841	6,469	7,805	19,334	18,237
Taiwan-----	5,427	5,519	9,312	19,902	18,288
India-----	12,999	18,998	26,922	30,142	23,139
Norway-----	1,598	1,223	2,843	10,865	12,841
Peru-----	1,475	1,920	2,949	9,357	6,559
Salvador-----	6,233	6,564	7,303	4,707	8,514
All other-----	63,983	52,611	66,590	80,225	90,489
Total-----	219,308	222,761	270,324	341,429	342,426
	Value (1,000 dollars)				
Mexico-----	316,842	290,309	374,730	388,027	372,685
Ecuador-----	60,081	80,303	136,509	218,729	185,548
Panama-----	46,205	55,406	61,216	58,694	61,620
Brazil-----	20,317	23,659	38,488	44,992	61,135
Thailand-----	16,586	14,278	17,382	48,331	50,719
Taiwan-----	9,754	10,940	18,669	48,111	49,907
India-----	20,898	32,731	49,493	53,278	41,082
Norway-----	6,288	4,080	8,402	36,259	32,672
Peru-----	3,999	5,716	9,568	35,879	23,916
Salvador-----	18,139	20,841	26,067	16,896	23,525
All other-----	192,153	185,812	223,036	274,327	313,540
Total-----	719,263	723,875	963,561	1,223,522	1,216,350
	Unit value (per pound)				
Mexico-----	\$4.17	\$4.10	\$4.67	\$4.59	\$4.56
Ecuador-----	3.37	3.25	3.78	4.26	3.98
Panama-----	3.37	3.48	3.48	3.61	3.78
Brazil-----	2.32	2.15	3.03	3.07	3.09
Thailand-----	1.88	2.21	2.23	2.50	2.78
Taiwan-----	1.80	1.98	2.00	2.42	2.73
India-----	1.61	1.72	1.84	1.77	1.78
Norway-----	3.94	3.34	2.96	3.34	2.54
Peru-----	2.71	2.98	3.24	3.83	3.65
Salvador-----	2.91	3.18	3.57	3.59	2.76
All other-----	3.00	3.12	3.25	3.62	3.46
Average-----	3.28	3.25	3.56	3.58	3.55

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

valued at \$388 million, in 1983 before falling to 82 million pounds, valued at \$373 million, in 1984 (table 61). Mexico accounted for 28 percent of the quantity and 36 percent of the value of total U.S. shrimp imports during 1980-84. Mexico's share of the U.S. import market declined significantly during the period under review. In 1980, Mexico accounted for 35 percent of the quantity and 44 percent of the value of the U.S. shrimp import market. This share declined steadily to 24 percent of the quantity and 31 percent of the value by 1984. This decline was accompanied by an increase in market share for Ecuador. Ecuador was the second leading foreign supplier of shrimp to the United States during 1980-84. U.S. imports of shrimp from Ecuador increased from 20 million pounds, valued at \$68 million, in 1980 to 51 million pounds, valued at \$219 million, in 1983 before declining to 47 million pounds, valued at \$186 million, in 1984 (table 61). Imports from Ecuador accounted for 13 percent of the quantity and 14 percent of the value of U.S. shrimp imports during the period. Ecuador generally increased its share of the U.S. shrimp import market during 1980-84. In 1980, Ecuador accounted for 9 percent of the quantity and value of U.S. shrimp imports; this share rose to 15 percent of the quantity and 18 percent of the value in 1983 before falling slightly to 14 percent of the quantity and 15 percent of the value in 1984. The increase in Ecuador's market share was supplied mainly by aquaculture-produced shrimp, the production of which increased tremendously during the period. Other leading foreign shrimp suppliers during 1980-84 included Panama, Brazil, Thailand, and India.

#### Imports by product form

Shrimp are imported in several forms according to the degree of processing that has taken place. The majority of shrimp imports enter the United States as raw shell-on shrimp, not in airtight containers (TSUSA item 114.4545) and raw peeled shrimp, not in airtight containers (TSUSA item 114.4557). U.S. imports of raw shell-on shrimp, not in airtight containers, increased from 139 million pounds, valued at \$519 million, in 1980 to 226 million pounds, valued at \$914 million, in 1984 (table 62). U.S. imports from Mexico, the leading supplier of such shrimp, ranged from 50 million pounds, valued at \$213 million, in 1981 to 65 million pounds, valued at \$294 million, in 1983 and accounted for 33 percent of the quantity and 37 percent of the value of the U.S. total during the period. Mexico's share of the U.S. import market for raw, shell-on shrimp declined from 42 percent of the quantity and 47 percent of the value in 1980 to 28 percent of the quantity and 31 percent of the value in 1984. As Mexico's market share declined, Ecuador's share increased. U.S. imports of raw shell-on shrimp from Ecuador, the second leading supplier, increased from 18 million pounds, valued at \$62 million, in 1980 to 50 million pounds, valued at \$212 million, in 1983 before declining to 46 million pounds, valued at \$183 million, in 1984 (table 62). Ecuador accounted for 19 percent of the quantity and value of the U.S. total during the period. Ecuador's share of the U.S. import market for raw, shell-on shrimp increased from 13 percent of the quantity and 12 percent of the value in 1980 to 23 percent of the quantity and 24 percent of the value in 1983 before declining to 20 percent of the quantity and value in 1984. The increase in market share was due to the same reasons mentioned earlier, that is, the increase in Ecuadorian aquaculture production during the period under review. The slight decline in market share, as well as the decline in absolute terms, in 1984 was due mainly to a leveling of aquaculture production



Table 62.--Shrimp, shell-on: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Mexico-----	57,669	49,506	61,836	65,316	63,925
Ecuador-----	18,126	23,627	34,402	49,526	45,634
Panama-----	13,107	14,746	17,454	15,349	15,657
Brazil-----	3,321	4,519	5,954	6,454	12,319
Salvador-----	4,571	6,073	7,210	4,707	8,504
Taiwan-----	615	758	1,794	5,319	5,754
Peru-----	1,475	1,910	2,949	9,130	5,482
Venezuela-----	3,872	1,592	2,027	2,059	4,908
Colombia-----	2,241	2,452	2,527	2,426	3,258
Guyana-----	4,177	1,684	2,016	4,127	3,471
All other-----	22,576	34,085	43,158	52,537	56,783
Total-----	138,750	140,953	181,329	216,950	225,696
	Value (1,000 dollars)				
Mexico-----	244,219	213,311	296,505	294,046	285,054
Ecuador-----	62,374	78,204	131,606	212,157	183,028
Panama-----	44,961	52,809	60,838	57,362	60,472
Brazil-----	10,054	12,189	23,450	26,689	47,136
Salvador-----	15,262	19,860	25,878	16,896	23,503
Taiwan-----	1,878	1,967	4,992	16,585	22,120
Peru-----	3,999	5,698	9,568	35,370	20,990
Venezuela-----	15,986	6,530	9,126	8,666	19,676
Colombia-----	10,272	11,213	13,562	14,478	17,793
Guyana-----	12,583	6,143	10,936	23,054	17,649
All other-----	97,609	112,329	146,868	191,002	216,573
Total-----	519,217	520,253	733,328	826,306	913,993
	Unit value (per pound)				
Mexico-----	\$4.23	\$4.31	\$4.80	\$4.50	\$4.46
Ecuador-----	3.44	3.31	3.83	4.28	4.01
Panama-----	3.43	3.58	3.49	3.74	3.86
Brazil-----	3.03	2.70	3.94	4.14	3.83
Salvador-----	3.34	3.27	3.59	3.59	2.76
Taiwan-----	3.05	2.60	2.78	3.12	3.84
Peru-----	2.71	2.98	3.24	3.87	3.83
Venezuela-----	4.13	4.10	4.50	4.21	4.01
Colombia-----	4.58	4.57	5.37	5.97	5.46
Guyana-----	3.01	3.65	5.43	5.59	5.08
All other-----	3.30	3.30	3.60	3.64	3.81
Average-----	3.74	3.69	4.04	4.13	4.05

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

in Ecuador that year. Imports of raw shell-on shrimp accounted for 65 percent of the quantity and 74 percent of the value of total U.S. shrimp imports during 1980-84.

Imports of raw, peeled shrimp, not in airtight containers, ranged from 66 million pounds, valued at \$165 million, in 1981 to 82 million pounds, valued at \$218 million, in 1983 (table 63). Imports from Mexico, the leading supplier, ranged from 15 million pounds, valued at \$64 million, in 1982 to 18 million pounds, in 1980, 1981, and 1984 and valued at \$72 million, \$69 million, and \$87 million, respectively, in those years (table 63). These imports from Mexico accounted for 24 percent of the quantity and 41 percent of the U.S. total during 1980-84. Imports from India, the second leading supplier, increased from 10 million pounds, valued at \$15 million, in 1980, to 19 million pounds, valued at \$30 million, in 1983 before falling to 15 million pounds, valued at \$23 million, in 1984 (table 63).

U.S. imports of cooked, peeled shrimp, not specially provided for, (TSUSA item 114.4562) increased from 10 million pounds, valued at \$21 million in 1980, to 27 million pounds, valued at \$73 million, in 1983 and again totaled 27 million pounds in 1984 but were valued at only \$70 million (table 64). Norway and India were the two major suppliers in 1984. Imports from Norway rose from 927,000 pounds, valued at \$4 million, in 1980, to 11 million pounds, valued at \$27 million, in 1984 (table 64). This represented 26 percent of the quantity and 30 percent of the value of the U.S. total during 1980-84. Norway's import-market share increased from 9 percent of the quantity and 17 percent of the value of U.S. imports of cooked, peeled shrimp in 1980 to 39 percent of the quantity and value in 1984. This increase was due mainly to increased Norwegian shrimp catches during the period. U.S. shrimp imports from Norway consisted of coldwater shrimp species. U.S. imports of cooked, peeled shrimp from India, the second leading supplier, ranged from 3 million pounds, valued at \$4 million, in 1980 to 6 million pounds in 1982 and 1983, valued at \$11 million and \$10 million, respectively (table 64). The import-market share held by India reached a peak in 1982, when it was at 39 percent of the quantity and 29 percent of the value of U.S. imports of cooked, peeled shrimp. India's share fell to 19 percent of the quantity and 12 percent of the value in 1984, mainly due to domestic supply problems in India.

Imports of peeled shrimp in airtight containers (canned shrimp) (TSUSA item 114.4550) rose from 4 million pounds, valued at \$8 million, in 1980 to 14 million pounds, valued at \$26 million, in 1984, an increase of more than twofold in quantity and value (table 65). Thailand was the main supplier during the period, accounting for 57 percent of the quantity and 58 percent of the value of the U.S. total during 1984. U.S. canned shrimp imports from Thailand increased from 2 million pounds, valued at \$4 million, in both 1980 and 1981, to 8 million pounds, valued at \$15 million, in 1984 (table 65). Imports from Pakistan, the second leading supplier of canned peeled shrimp to the United States, rose from 189,000 pounds, valued at \$354,000, in 1980 to 2 million pounds, valued at \$3 million, in 1984 (table 65).

U.S. imports of breaded shrimp (TSUSA item 114.4572) increased from 172,000 pounds, valued at \$396,000, in 1980 to 4 million pounds, valued at \$15 million, in 1982 before falling to 319,000 pounds, valued at \$804,000, in 1984 (table 66). Imports from Canada, the leading supplier in 1984, increased from 2,000 pounds, valued at \$6,000, in 1980 to 82,000 pounds, valued at \$274,000, in 1984 (table 66). Mexico, which led in exports of breaded shrimp to the

Table 63.--Shrimp, peeled, raw, not in airtight containers: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Mexico-----	18,309	18,494	14,601	16,256	17,613
India-----	9,664	15,059	17,968	18,900	14,892
Taiwan-----	3,512	3,759	6,144	11,779	10,519
Thailand-----	5,088	3,804	4,374	7,773	5,731
Brazil-----	5,242	6,203	6,163	7,923	6,865
Pakistan-----	2,424	2,500	3,203	3,031	5,254
Norway-----	529	1	374	2,012	1,719
Argentina-----	16	99	94	711	1,312
Peru-----	0	10	0	220	1,047
U. Kingdom-----	1,248	356	395	927	865
All other-----	20,238	15,254	11,574	12,031	9,845
Total-----	66,270	65,540	64,889	81,562	75,662
	Value (1,000 dollars)				
Mexico-----	72,410	68,844	63,821	82,713	87,051
India-----	15,183	25,151	31,196	29,603	23,382
Taiwan-----	5,323	6,909	10,900	24,638	21,433
Thailand-----	8,662	8,074	9,251	18,259	16,240
Brazil-----	9,885	10,980	14,472	17,496	12,217
Pakistan-----	3,279	3,472	5,099	4,226	7,294
Norway-----	2,059	2	1,081	6,914	3,990
Argentina-----	23	329	381	2,546	3,688
Peru-----	-	18	-	479	2,876
U. Kingdom-----	2,998	952	957	3,002	2,669
All other-----	50,637	40,111	29,827	28,302	24,200
Total-----	170,459	164,852	166,984	218,186	205,038
	Unit value (per pound)				
Mexico-----	\$3.95	\$3.72	\$4.37	\$5.09	\$4.94
India-----	1.57	1.67	1.74	1.57	1.57
Taiwan-----	1.52	1.84	1.77	2.09	2.04
Thailand-----	1.70	2.12	2.12	2.35	2.83
Brazil-----	1.89	1.77	2.35	2.21	1.78
Pakistan-----	1.35	1.39	1.59	1.39	1.39
Norway-----	3.89	1.74	2.89	3.44	2.32
Argentina-----	1.42	3.31	4.07	3.58	2.81
Peru-----	-	1.84	-	2.18	2.75
U. Kingdom-----	2.40	2.67	2.42	3.24	3.08
All other-----	2.50	2.63	2.58	2.35	2.46
Average--	2.57	2.52	2.57	2.68	2.71

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

Table 64. Shrimp, peeled, not specially provided for: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Norway	927	1,034	1,916	8,093	10,548
India	2,585	2,356	5,829	6,052	5,097
Canada	1,040	873	936	2,410	1,808
Taiwan	769	670	1,276	2,489	1,481
Iceland	3	93	0	468	1,432
Thailand	1,138	497	456	1,309	874
Chile	0	3	51	388	677
Sweden	0	1	88	201	672
Japan	106	189	167	389	242
U. Kingdom	181	519	60	963	712
All other	3,142	2,614	4,136	4,294	3,696
Total	21,821	8,820	16,216	27,056	27,232
	Value (1,000 dollars)				
Norway	3,672	3,471	5,870	27,079	27,354
India	4,174	4,335	11,146	10,026	8,357
Canada	2,756	2,273	2,738	6,065	5,998
Taiwan	1,391	1,301	2,526	6,304	5,334
Iceland	13	418	-	1,679	3,682
Thailand	2,093	913	700	2,995	2,191
Chile	-	12	157	1,226	2,055
Sweden	-	6	244	697	2,024
Japan	265	1,072	1,246	2,220	1,974
U. Kingdom	553	1,542	169	1,893	1,659
All other	6,213	6,021	13,229	12,472	9,479
Total	21,129	21,363	38,025	72,655	70,106
	Unit value (per pound)				
Norway	\$3.96	\$3.36	\$3.06	\$3.35	\$2.59
India	1.62	1.81	1.91	1.66	1.64
Canada	2.65	2.60	2.93	2.52	3.32
Taiwan	1.81	1.94	1.98	2.53	3.60
Iceland	3.93	4.48	-	3.59	2.57
Thailand	1.84	1.83	1.54	2.29	2.51
Chile	-	3.99	3.06	3.16	3.04
Sweden	-	5.01	2.76	3.47	3.01
Japan	2.49	5.68	7.45	5.71	8.17
U. Kingdom	3.06	2.97	2.81	1.96	2.33
All other	1.98	2.30	3.20	2.90	2.56
Average	2.14	2.40	2.55	2.69	2.57

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

Table 65.---Shrimp, peeled, in airtight containers: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Thailand	2,154	1,822	2,228	7,020	7,778
Pakistan	189	355	604	1,479	2,324
Argentina	0	0	0	11	510
India	370	1,223	1,475	1,755	695
Japan	169	114	210	132	326
Taiwan	488	332	99	315	535
Chile	0	0	23	1,081	318
Norway	137	7	39	237	187
Hong Kong	78	70	297	205	231
Singapore	21	83	6	11	226
All other	617	378	350	930	453
Total	4,224	4,383	5,332	13,176	13,580
Value (1,000 dollars)					
Thailand	4,052	3,974	4,604	13,666	15,337
Pakistan	354	703	922	1,892	3,139
Argentina	-	-	-	39	1,330
India	545	2,277	2,527	2,598	1,213
Japan	310	268	609	329	1,071
Taiwan	1,072	763	251	581	1,020
Chile	-	-	70	3,321	997
Norway	541	38	128	815	563
Hong Kong	73	114	389	385	369
Singapore	17	66	8	14	312
All other	1,100	713	1,042	1,852	1,058
Total	8,063	8,828	10,551	25,529	26,409
Unit value (per pound)					
Thailand	\$1.88	\$2.18	\$2.07	\$1.95	\$1.97
Pakistan	1.87	1.98	1.53	1.28	1.35
Argentina	-	-	-	3.55	2.61
India	1.47	1.86	1.71	1.48	1.75
Japan	1.83	2.18	2.90	2.49	3.29
Taiwan	2.19	2.30	2.54	1.84	1.91
Chile	-	-	3.00	3.07	3.14
Norway	3.94	5.15	3.24	3.44	3.02
Hong Kong	0.94	1.64	1.31	1.88	1.60
Singapore	0.81	0.60	1.46	1.23	1.38
All other	1.78	1.89	2.28	2.00	2.34
Average	1.91	2.03	1.98	1.94	1.94

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

Table 66.--Shrimp, breaded, not in airtight containers: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Canada	2	20	33	19	82
Mexico	49	2,866	3,727	2,503	58
Brazil	0	0	0	9	82
Argentina	0	0	0	0	30
China	0	35	1	0	17
Japan	1	1	3	63	18
Philippines	1	0	10	1	13
Spain	0	0	0	0	13
Belgium	0	0	0	0	3
Honduras	0	0	0	0	1
All other	120	73	85	90	1
Total	172	2,995	3,859	2,685	319
Value (1,000 dollars)					
Canada	6	67	96	64	274
Mexico	121	8,151	14,388	10,011	218
Brazil	-	-	-	61	90
Argentina	-	-	-	-	67
China	-	111	1	-	67
Japan	3	2	14	475	54
Philippines	1	-	11	1	14
Spain	-	-	-	-	8
Belgium	-	-	-	-	6
Honduras	-	-	-	-	3
All other	266	187	162	265	3
Total	396	8,518	14,672	10,876	804
Unit value (per pound)					
Canada	\$3.08	\$3.30	\$2.89	\$3.42	\$3.32
Mexico	2.47	2.84	3.86	4.00	3.77
Brazil	-	-	-	6.54	1.09
Argentina	-	-	-	-	2.20
China	-	3.15	4.79	-	3.83
Japan	2.80	4.47	5.19	7.55	3.06
Philippines	0.78	-	1.03	0.89	1.12
Spain	-	-	-	-	0.58
Belgium	-	-	-	-	2.00
Honduras	-	-	-	-	6.41
All other	2.22	2.58	1.91	2.94	4.56
Average	2.30	2.84	3.80	4.05	2.52

1/ Less than 500.

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

United States during 1980-83, fell to second in 1984. U.S. imports of breaded shrimp from Mexico rose from 49,000 pounds, valued at \$121,000, in 1980 to 3.7 million pounds, valued at \$14 million, in 1982, then declined to 58,000 pounds, valued at \$218,000, in 1984 (table 66).

#### Imports by customs districts

Imported shrimp enter the United States through various customs districts. The major districts, in decreasing order of the value of shrimp imported, are New York, NY; Nogales, AZ; Miami, FL; Los Angeles, CA; and Laredo, TX. Together, these ports account for 79 percent of the quantity and 82 percent of the value of U.S. shrimp imports during 1980-84.

New York customs district.--Imports of shrimp in all forms into the New York customs district increased from 48 million pounds, valued at \$140 million, in 1980 to 74 million pounds in 1983 and 1984, valued at \$267 million and \$262 million, respectively (table 67). Imports into New York of raw, shell-on shrimp, the major shrimp product form entered there, increased from 30 million pounds, valued at \$101 million, in 1980 to 53 million pounds, valued at \$221 million, in 1984 (table 68). Ecuador accounted for the majority of such imports, with 18 million pounds, valued at \$76 million, imported into New York from this source in 1984 (table 68). Other leading suppliers were Panama and Brazil. During 1980-84, raw, shell-on shrimp accounted for 66 percent of the quantity and 79 percent of the value of all shrimp imported into the New York customs district. The remaining shrimp imports through the New York customs district consisted primarily of raw, peeled shrimp, not in airtight containers. During 1980-84, raw, peeled shrimp imports through this district ranged from 16 million pounds in 1980 and 1981, valued at \$36 million and \$32 million, respectively, to 23 million pounds, valued at \$47 million, in 1983 (table 69). India was the major source of such imports entered through New York during 1980-84. That country supplied 6 million pounds, valued at \$10 million, of raw, peeled shrimp in 1984. Other major suppliers were Pakistan, the United Kingdom, and Thailand.

Nogales customs district.--Imports of shrimp in all forms into the Nogales customs district ranged from 34 million pounds, valued at \$152 million, in 1981 to 44 million pounds, valued at \$206 million, in 1982 (table 67). The major product form was raw, shell-on shrimp, with imports of such shrimp ranging from 32 million pounds, valued at \$146 million, in 1981 to 45 million pounds, valued at \$200 million, in 1984 (table 68). Mexico was virtually the sole supplier of such imports entered through Nogales. Large cold storage facilities are located in Nogales through which Mexican shrimp is distributed throughout the United States.

Miami customs district.--Imports of shrimp in all forms into the Miami customs district increased from 44 million pounds, valued at \$146 million, in 1980 to 63 million pounds, valued at \$225 million, in 1983 before declining to 61 million pounds, valued at \$204 million, in 1984 (table 67). During 1980-84, such imports consisted mainly of raw, shell-on shrimp. Imports of raw, shell-on shrimp into the Miami customs district increased from 41 million pounds, valued at \$140 million, in 1980 to 62 million pounds, valued at \$223 million, in 1983 and then decreased slightly to 60 million pounds, valued at \$201 million, in 1984 (table 68). Ecuador was the leading supplier,

Table 67.--Shrimp in all forms: U.S. imports for consumption,  
by customs districts, 1980-84

District	1980	1981	1982	1983	1984 <sup>1/</sup>
Quantity (1,000 pounds)					
New York, NY-----	47,600	47,097	53,938	74,180	74,431
Nogales, AZ-----	37,954	33,758	43,973	45,190	46,095
Miami, FL-----	43,903	48,853	57,425	62,841	60,728
Los Angeles, CA-----	18,792	21,398	36,563	47,587	57,050
Laredo, TX-----	32,185	33,809	31,860	32,893	31,114
Boston, MA-----	10,190	13,304	13,318	25,166	22,764
Tampa, FL-----	5,518	6,438	10,623	17,210	16,036
San Diego, CA-----	5,260	2,150	3,504	5,373	4,435
San Francisco, CA-----	2,318	1,375	3,451	6,590	8,718
Savannah, GA-----	1,016	1,614	1,193	3,794	4,534
Total-----	204,736	209,796	255,848	320,824	325,905
Other districts-----	14,572	12,965	14,476	20,605	16,591
Grand total-----	219,308	222,761	270,324	341,429	342,496
Value (1,000 dollars)					
New York, NY-----	140,341	141,501	181,016	267,410	262,464
Nogales, AZ-----	169,171	151,852	206,424	203,887	203,993
Miami, FL-----	146,379	157,685	190,266	224,996	203,648
Los Angeles, CA-----	41,891	52,960	96,850	129,118	176,608
Laredo, TX-----	126,529	126,960	150,332	153,612	145,955
Boston, MA-----	21,231	27,912	29,951	60,957	61,647
Tampa, FL-----	18,012	20,921	45,708	72,487	59,502
San Diego, CA-----	18,700	8,784	16,071	26,526	22,468
San Francisco, CA-----	4,777	3,074	8,450	20,035	22,019
Savannah, GA-----	1,643	3,143	4,126	13,162	15,428
Total-----	688,674	694,792	929,194	1,172,190	1,173,732
Other districts-----	30,589	29,083	34,367	51,332	42,618
Grand total-----	719,263	723,875	963,561	1,223,522	1,216,350

<sup>1/</sup> Preliminary.

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

Note.--Because of rounding, figures may not add to the totals shown.



Table 68.--Raw, shell-on shrimp: 1/ U.S. imports, by customs districts and by principal sources, 1980-84

District and source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
<b>New York, NY:</b>					
Ecuador-----	7,148	8,353	10,026	19,503	18,303
Panama-----	9,000	8,862	9,054	7,667	8,872
Brazil-----	2,647	3,019	4,007	3,590	7,158
All other-----	10,980	9,513	12,809	16,971	18,426
Total-----	29,775	29,747	35,896	47,731	52,759
<b>Miami, FL:</b>					
Ecuador-----	9,480	12,647	19,123	25,276	19,965
El Salvador-----	4,571	5,939	6,877	4,700	8,358
Panama-----	3,807	5,091	8,193	7,354	6,480
Venezuela-----	3,855	1,548	1,510	1,514	4,321
All other-----	19,004	22,001	21,385	23,494	20,796
Total-----	40,717	47,226	57,088	62,338	59,920
<b>Nogales, AZ:</b>					
Mexico-----	36,452	32,499	41,998	43,868	44,881
All other-----	29	0	0	0	0
Total-----	36,481	32,499	41,998	43,868	44,881
<b>Los Angeles, CA:</b>					
Ecuador-----	299	730	3,341	2,257	4,409
Australia-----	1,096	850	1,340	2,039	3,097
Taiwan-----	221	230	351	1,173	2,344
Thailand-----	207	151	357	2,005	2,570
All other-----	1,052	1,741	4,316	4,974	10,526
Total-----	2,875	3,702	9,705	12,448	22,946
<b>Laredo, TX:</b>					
Mexico-----	15,578	13,717	15,526	14,862	14,225
All other-----	75	7	1	127	163
Total-----	15,653	13,724	15,527	14,989	14,388
<b>Tampa, FL:</b>					
Guyana-----	1,873	997	1,781	4,073	3,418
French Guiana-----	1,503	963	2,602	4,280	2,986
All other-----	112	1,955	4,045	4,515	4,998
Total-----	3,488	3,915	8,428	12,868	11,402
All other districts-----	9,761	10,140	12,687	22,708	19,400
Grand total-----	138,750	140,953	181,329	216,950	225,696

See footnote at end of table.

Table 68.--Raw, shell-on shrimp: 1/ U.S. imports, by customs districts and by principal sources, 1980-84--Continued

District and source	1980	1981	1982	1983	1984
Value (1,000 dollars)					
<b>New York, NY:</b>					
Ecuador-----	26,346	29,887	45,320	93,548	76,071
Panama-----	30,640	32,444	33,790	31,289	37,228
Brazil-----	8,100	8,498	16,149	16,360	29,380
All other-----	36,149	35,875	49,899	70,956	77,826
Total-----	101,235	106,704	145,158	212,153	220,505
<b>Miami, FL:</b>					
Ecuador-----	31,086	40,007	65,362	97,078	73,994
El Salvador-----	15,282	19,513	24,904	16,878	23,044
Panama-----	13,251	17,618	26,409	24,991	22,141
Venezuela-----	15,901	6,425	7,761	7,383	17,811
All other-----	64,167	69,831	64,934	76,785	64,370
Total-----	139,687	153,394	189,370	223,115	201,360
<b>Nogales, AZ:</b>					
Mexico-----	162,685	146,191	198,887	198,636	199,593
All other-----	131	-	-	-	-
Total-----	162,816	146,191	198,887	198,636	199,593
<b>Los Angeles, CA:</b>					
Ecuador-----	1,081	2,392	14,162	10,832	19,055
Australia-----	4,626	4,258	6,768	10,069	15,042
Taiwan-----	971	917	1,921	5,595	12,192
Thailand-----	1,108	792	1,495	8,791	11,763
All other-----	3,757	5,622	14,373	21,032	44,693
Total-----	11,543	13,981	38,719	56,319	102,745
<b>Laredo, TX:</b>					
Mexico-----	61,430	55,817	79,730	64,640	61,939
All other-----	281	20	5	107	565
Total-----	61,711	55,837	79,735	64,747	62,504
<b>Tampa, FL:</b>					
Guyana-----	6,421	3,418	10,030	22,835	17,369
French Guiana-----	5,798	3,912	14,786	24,758	16,863
All other-----	326	5,268	13,756	15,150	16,805
Total-----	12,545	12,598	38,572	62,743	51,037
<b>All other districts</b> -----	29,680	31,548	42,887	78,593	76,249
<b>Grand total</b> -----	519,217	520,253	733,328	896,306	913,993

1/ TSUSA item 114.4545.

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

Table 69.--Raw, peeled shrimp: 1/ U.S. imports, by customs districts  
and by principal sources, 1980-84

District and source	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
<b>Laredo, TX:</b>					
Mexico-----	16,501	17,150	12,611	14,926	16,392
All other-----	31	68	0	39	264
<b>Total-----</b>	<b>16,532</b>	<b>17,218</b>	<b>12,611</b>	<b>14,965</b>	<b>16,656</b>
<b>Los Angeles, CA:</b>					
Taiwan-----	733	1,097	2,688	5,403	5,202
India-----	4,450	5,435	6,588	5,616	5,345
Thailand-----	3,702	2,764	2,887	3,442	3,226
All other-----	3,755	3,064	4,158	2,925	4,266
<b>Total-----</b>	<b>12,640</b>	<b>12,360</b>	<b>16,321</b>	<b>17,386</b>	<b>18,042</b>
<b>New York, NY:</b>					
India-----	2,263	3,651	5,209	7,981	6,315
Pakistan-----	2,169	1,730	2,218	2,397	3,095
United Kingdom-----	1,022	270	313	728	770
Thailand-----	349	843	1,369	3,022	1,178
All other-----	10,207	9,459	7,666	9,298	7,700
<b>Total-----</b>	<b>16,010</b>	<b>15,953</b>	<b>16,775</b>	<b>23,426</b>	<b>19,058</b>
<b>Boston, MA:</b>					
Thailand-----	297	0	0	1,052	1,257
Taiwan-----	511	38	535	2,804	2,286
India-----	2,417	4,526	4,172	3,873	2,671
All other-----	1,569	2,275	1,743	3,762	3,682
<b>Total-----</b>	<b>4,794</b>	<b>6,839</b>	<b>6,450</b>	<b>11,491</b>	<b>9,896</b>
<b>All other districts-----</b>	<b>16,294</b>	<b>13,170</b>	<b>12,732</b>	<b>14,294</b>	<b>12,010</b>
<b>Grand total-----</b>	<b>66,270</b>	<b>65,540</b>	<b>64,889</b>	<b>81,562</b>	<b>75,662</b>

See footnote at end of table.

Table 69.--Raw, peeled shrimp: 1/ U.S. imports, by customs districts  
and by principal sources, 1980-84--Continued

District and source	1980	1981	1982	1983	1984
Value (1,000 dollars)					
<b>Laredo, TX:</b>					
Mexico-----	64,688	62,813	56,213	77,419	82,596
All other-----	131	158	-	305	606
<b>Total-----</b>	<b>64,819</b>	<b>62,971</b>	<b>56,213</b>	<b>77,724</b>	<b>83,202</b>
<b>Los Angeles, CA:</b>					
Taiwan-----	1,143	2,185	4,727	10,924	10,526
India-----	6,985	9,699	11,659	8,067	8,714
Thailand-----	6,337	5,779	6,110	7,251	8,214
All other-----	9,283	8,410	11,220	8,542	11,225
<b>Total-----</b>	<b>23,748</b>	<b>26,073</b>	<b>33,716</b>	<b>34,784</b>	<b>38,679</b>
<b>New York, NY:</b>					
India-----	3,777	5,806	9,396	13,207	10,040
Pakistan-----	2,905	2,356	3,349	3,309	3,968
United Kingdom-----	2,336	735	811	2,427	2,359
Thailand-----	599	1,836	2,850	7,730	2,295
All other-----	26,095	21,231	17,534	20,483	17,557
<b>Total-----</b>	<b>35,712</b>	<b>31,964</b>	<b>33,940</b>	<b>47,156</b>	<b>36,219</b>
<b>Boston, MA:</b>					
Thailand-----	507	-	-	2,571	5,545
Taiwan-----	742	108	1,012	6,016	4,247
India-----	3,674	7,429	7,069	5,879	3,787
All other-----	4,283	2,916	4,026	11,500	8,390
<b>Total-----</b>	<b>9,206</b>	<b>10,453</b>	<b>12,107</b>	<b>25,966</b>	<b>21,969</b>
<b>All other districts-----</b>	<b>36,974</b>	<b>33,381</b>	<b>31,008</b>	<b>32,556</b>	<b>24,969</b>
<b>Grand total-----</b>	<b>170,459</b>	<b>164,842</b>	<b>166,984</b>	<b>218,186</b>	<b>205,038</b>

1/ TSUSA item 114.4557

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

accounting for 32 percent of the quantity and 34 percent of the total value of raw, shell-on shrimp imports into the Miami customs district during 1980-84. Other leading suppliers were El Salvador, Panama, and Venezuela.

Los Angeles customs district.--Imports of shrimp into the Los Angeles customs district increased from 19 million pounds, valued at \$42 million, in 1980 to 57 million pounds, valued at \$177 million, in 1984 (table 67). Raw, shell-on shrimp was the major shrimp product form imported into Los Angeles, with such imports increasing from 3 million pounds, valued at \$12 million, in 1980 to 23 million pounds, valued at \$103 million, in 1984 (table 68). Ecuador was the major supplier of such imports into Los Angeles, providing 4 million pounds, valued at \$19 million, in 1984 (table 68). Australia was the second major supplier that year, providing 3 million pounds, valued at \$15 million. Other major suppliers were Taiwan and Thailand. Raw, peeled shrimp, not in airtight containers was the second leading shrimp product imported into the Los Angeles customs district. Such imports into Los Angeles increased from 13 million pounds, valued at \$24 million, in 1980 to 18 million pounds, valued at \$39 million, in 1984 (table 69). Taiwan was the major supplier, accounting for 5 million pounds, valued at \$11 million in 1984, or 29 percent of the total quantity and 28 percent of the total value that year. India and Thailand were other major suppliers. Cooked peeled shrimp, not in airtight containers and peeled shrimp, in airtight containers, accounted for the remaining imports of shrimp into the Los Angeles customs district. India and Thailand were the principal suppliers in 1984 (tables 70 and 71).

Laredo customs district.--Imports of shrimp in all forms into the Laredo customs district increased from 32 million pounds, valued at \$127 million, in 1980 to 34 million pounds, valued at \$127 million, in 1982 and then declined irregularly to 31 million pounds, valued at \$146 million, in 1984 (table 67). The majority of such imports were raw, peeled shrimp, which ranged from 13 million pounds, valued at \$56 million, in 1982 to 17 million pounds in 1980, 1981, and 1984, valued at \$65 million, \$63 million, and \$83 million, respectively (table 69). Mexico supplied virtually all of such imports during 1980-84. Such imports are believed to be mainly shrimp that has been exported to Mexico for processing as raw, shell-on shrimp and then reimported in processed form by U.S. processors and distributors. Imports of raw shell-on shrimp into the Laredo customs district ranged from 16 million pounds in 1980 and 1982, valued at \$62 million and \$80 million, respectively, to 14 million pounds in 1981 and 1984, valued at \$56 million and 63 million, respectively, with Mexico again being the leading supplier (table 68). The remaining shrimp imported into the Laredo customs district consists mainly of breaded shrimp from Mexico.

#### Imports by quarters

Shrimp imported into the United States on a quarterly basis for 1980-84, are shown in table 72. U.S. imports generally were greatest in the fourth quarter (when domestic landings were down) and lowest in the second quarter (when domestic landings began to peak). In recent years, U.S. imports have been less seasonal. For example, in 1982, total imports on a quarterly basis ranged from a low of 50 million pounds (valued at \$175 million) to a high of 93 million pounds (valued at \$349 million) in the fourth quarter, or a difference of 85 percent between the quarters. In 1984, the difference between the high and low quarters was 35 percent; 69 million pounds (valued at

Table 70.--Cooked, peeled shrimp, not in airtight containers: 1/ U.S. imports by customs districts and by principal sources, 1980-84

District and source	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Los Angeles, CA:					
India-----	775	659	3,387	3,155	2,960
Taiwan-----	133	145	436	1,836	880
Norway-----	96	249	337	1,455	1,139
All other-----	757	1,531	1,806	1,894	1,474
Total-----	1,761	2,584	5,966	8,340	6,453
San Francisco, CA:					
Norway-----	71	0	417	1,846	4,321
All other-----	533	366	1,083	1,279	1,361
Total-----	604	366	1,500	3,125	5,682
Boston, MA:					
Iceland-----	3	93	0	452	1,396
Norway-----	0	11	44	619	1,213
India-----	1,156	1,687	2,373	2,811	2,130
All other-----	1,279	873	415	1,528	1,226
Total-----	2,438	2,664	2,832	5,410	5,965
All other districts-----	5,088	3,276	4,618	10,181	9,139
Grand total-----	9,891	8,890	14,916	27,056	27,239
Value (1,000 dollars)					
Los Angeles, CA:					
India-----	1,562	1,498	7,208	5,850	5,246
Taiwan-----	273	421	865	4,751	3,694
Norway-----	367	794	1,026	4,788	3,143
All other-----	1,767	4,653	6,208	5,937	5,433
Total-----	3,969	7,366	15,307	21,326	17,516
San Francisco, CA:					
Norway-----	274	-	1,301	6,428	10,729
All other-----	956	869	2,524	3,721	3,428
Total-----	1,230	869	3,825	10,149	14,157
Boston, Ma:					
Iceland-----	13	418	-	1,621	3,581
Norway-----	-	23	142	2,086	3,369
India-----	1,613	2,733	3,870	4,059	3,090
All other-----	2,765	1,786	913	2,407	2,933
Total-----	4,391	4,960	4,925	10,173	12,973
All other districts-----	11,539	8,168	13,968	31,007	25,460
Grand total-----	21,129	21,363	38,025	72,655	70,106

1/ TSUSA item 114.4562.

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

Table 71.--Peeled shrimp, in airtight containers: 1/ U.S. imports  
by customs districts and by principal sources, 1980-84

District and source	1980	1981	1982	1983	1984
Quantity (1,000 pounds)					
Los Angeles, CA:					
Thailand-----	788	1,269	2,084	5,789	5,890
Pakistan-----	41	173	585	1,479	2,288
India-----	336	1,088	1,475	1,682	695
All other-----	338	186	427	462	706
Total-----	1,503	2,716	4,571	9,412	9,579
Seattle, WA:					
Thailand-----	80	135	18	338	661
Chile-----	0	0	23	1,060	274
All other-----	81	20	25	192	106
Total-----	161	155	66	1,590	1,041
All other districts-----	2,560	1,512	695	2,174	2,960
Grand total-----	4,224	4,383	5,332	13,176	13,580
Value (1,000 dollars)					
Los Angeles, CA:					
Thailand-----	1,378	2,831	4,355	11,358	11,896
Pakistan-----	61	259	874	1,892	3,001
India-----	460	2,011	2,527	2,448	1,213
All other-----	661	326	1,353	987	1,477
Total-----	2,560	5,427	9,109	16,685	17,587
Seattle, WA:					
Thailand-----	181	289	40	611	1,180
Chile-----	-	-	70	3,249	856
All other-----	55	26	87	673	351
Total-----	236	315	197	4,533	2,387
All other districts-----	5,267	3,156	1,245	4,281	6,435
Grand total-----	8,063	8,898	10,551	25,499	26,409

1/ TSUSA item 114.4550.

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

Table 72.--Shrimp: U.S. imports by product forms, 1/ by quarters, 1980-85

Year and product form	1st qtr	2d qtr	3d qtr	4th qtr	Total
	Quantity (1,000 pounds)				
1980:					
Raw, shell-on-----	28,727	26,911	28,916	54,196	138,750
Raw, peeled-----	16,314	13,973	16,225	19,759	66,270
Cooked, peeled-----	1,945	1,797	2,854	3,295	9,891
Canned-----	1,623	1,084	693	824	4,224
Breaded-----	40	50	39	44	172
Total-----	48,649	43,815	48,727	78,118	219,307
1981:					
Raw, shell-on-----	32,767	33,751	29,341	45,094	140,953
Raw, peeled-----	17,980	15,432	17,670	14,458	65,540
Cooked, peeled-----	2,171	2,449	2,160	2,110	8,890
Canned-----	820	1,103	1,497	963	4,383
Breaded-----	13	93	781	2,108	2,995
Total-----	53,751	52,828	51,449	64,733	222,761
1982:					
Raw, shell-on-----	33,847	42,081	39,932	65,469	181,329
Raw, peeled-----	11,721	15,454	17,068	20,646	64,889
Cooked, peeled-----	2,029	3,133	5,200	4,554	14,916
Canned-----	1,069	1,112	1,809	1,342	5,332
Breaded-----	1,305	774	1,200	580	3,859
Total-----	49,971	62,554	65,209	92,591	270,325
1983:					
Raw, shell-on-----	47,469	43,266	49,959	76,257	216,950
Raw, peeled-----	16,123	16,705	20,748	27,987	81,562
Cooked, peeled-----	4,198	5,235	10,773	6,850	27,056
Canned-----	3,191	2,878	4,036	3,071	13,176
Breaded-----	845	669	756	414	2,685
Total-----	71,826	68,753	86,272	114,579	270,325
1984:					
Raw, shell-on-----	53,541	47,951	55,246	68,957	225,696
Raw, peeled-----	19,326	15,892	17,307	23,137	75,662
Cooked, peeled-----	5,274	5,448	9,012	7,506	27,239
Canned-----	4,528	2,707	1,830	4,515	13,580
Breaded-----	151	48	75	44	319
Total-----	82,820	72,046	65,209	92,591	342,496
1985:					
Raw, shell-on-----	51,684	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Raw, peeled-----	20,526	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Cooked, peeled-----	7,180	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Canned-----	4,695	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Breaded-----	153	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Total-----	84,238	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>

See footnotes at end of table.



Table 72.--Shrimp: U.S. imports by product forms, 1/ by quarters, 1980-85--Continued

Year and product form	1st qtr	2d qtr	3d qtr	4th qtr	Total
	Value (1,000 dollars)				
1980:					
Raw, shell-on-----	115,599	97,897	100,486	205,235	519,217
Raw, peeled-----	45,955	33,739	38,485	52,279	170,459
Cooked, peeled-----	4,072	3,769	6,152	7,135	21,129
Canned-----	3,015	2,008	1,357	1,683	8,063
Breaded-----	141	89	81	85	396
Total-----	168,782	137,502	146,561	266,417	719,264
1981:					
Raw, shell-on-----	122,347	127,661	96,239	174,006	520,253
Raw, peeled-----	43,633	34,789	46,005	40,415	164,842
Cooked, peeled-----	5,036	5,562	5,621	5,144	21,363
Canned-----	1,853	2,098	3,037	1,911	8,898
Breaded-----	15	324	3,118	5,061	8,518
Total-----	172,884	170,434	154,020	266,537	723,874
1982:					
Raw, shell-on-----	131,268	172,687	148,279	281,096	733,328
Raw, peeled-----	30,548	39,937	43,596	52,904	166,984
Cooked, peeled-----	5,643	7,720	14,549	10,114	38,025
Canned-----	2,075	2,198	3,689	2,589	10,551
Breaded-----	5,197	3,069	4,238	2,167	14,672
Total-----	174,731	225,611	214,351	348,870	963,560
1983:					
Raw, shell-on-----	202,250	184,219	204,186	305,652	896,306
Raw, peeled-----	44,066	41,472	56,613	76,035	218,186
Cooked, peeled-----	8,814	13,022	31,102	19,718	72,655
Canned-----	5,971	5,627	8,040	5,860	25,499
Breaded-----	3,385	2,582	3,282	1,627	10,876
Total-----	264,486	246,922	303,223	408,892	1,223,522
1984:					
Raw, shell-on-----	215,880	201,086	216,897	280,130	913,993
Raw, peeled-----	57,224	42,851	46,637	58,327	205,038
Cooked, peeled-----	13,979	14,835	22,450	18,843	70,106
Canned-----	8,536	4,919	4,055	8,898	26,409
Breaded-----	292	157	245	110	804
Total-----	295,911	263,848	290,284	366,308	1,216,350
1985:					
Raw, shell-on-----	197,346	2/	2/	2/	2/
Raw, peeled-----	49,460	2/	2/	2/	2/
Cooked, peeled-----	17,221	2/	2/	2/	2/
Canned-----	9,319	2/	2/	2/	2/
Breaded-----	391	2/	2/	2/	2/
Total-----	273,737	2/	2/	2/	2/

1/ Raw, shell-on; raw, peeled; cooked, peeled; canned; and breaded (TSUS items 114.4545, 114.4557, 114.4562, 114.4550, and 114.4572).

2/ Data not available.

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

Note.--Because of rounding, figures may not add to the totals shown.

\$264 million) in the second quarter and 93 million (valued at \$366 million) in the fourth quarter.

The following tabulation shows the percentage difference between the highest and the lowest quarterly imports of raw, shell-on shrimp for each year during 1980-84 (calculated from official statistics of the U.S. Department of Commerce):

<u>Year</u>	<u>Difference (percent)</u>
1980-----	101
1981-----	54
1982-----	93
1983-----	76
1984-----	44

The variation of imports of raw, shell-on shrimp on a quarterly basis has been decreasing, going from 101 percent in 1980 to 44 percent in 1984. This decline is due largely to the increase in foreign production of shrimp by aquaculture, which makes the shrimp supply less seasonal.

#### Imports by size count

A sample taken by National Marine Fisheries Service, New Orleans, (NMFS) shows imports of shell-on shrimp and peeled shrimp by size count during 1980-84 (table 73). The shell-on shrimp imports in this survey accounted for between 68 percent and 84 percent of total U.S. imports of shell-on shrimp during 1980-84. Imports of the size count 31/40 appeared to be the predominant size imported, ranging from 10 to 15 percent of the total surveyed during this period. U.S. imports of shell-on shrimp consisted mainly of size counts less than 40 according to this survey.

Imports of peeled shrimp sampled by NMFS accounted for between 27 percent and 40 percent of the total imports of peeled shrimp during 1980-84 (table 73). The predominant size count imported during this period was for size count 71 and over, accounting for between 16 percent and 31 percent of total imports. Other leading size counts imported include 26/30 and 31/40.

Because of the high percentage (10 to 43 percent) of shrimp listed in the unclassified size count, no analysis can be made regarding trends in imports of shrimp by size counts. However, numerous industry and Government representatives agree that there has been a substantial increase in imports within the 31-40 size count range during 1980-84. This increase is believed to be accounted for mainly by aquacultured shrimp.

There are certain tendencies for shrimp to be imported into the United States in certain size counts from particular countries. As mentioned earlier, U.S. imports of shrimp from Ecuador are mainly produced by aquaculture and are concentrated in the 31/40 size count range. Also, according to the major importer of shrimp from Mexico, U.S. imports of shrimp

Table 73.--Shrimp, heads-off, shell-on, and peeled: U.S. imports, by size counts, 1980-84 1/

Type and size count	1980		1981		1982		1983		1984	
	Quantity	Share of total	Quantity	Share of total	Quantity	Share of total	Quantity	Share of total	Quantity	Share of total
Shell-on:	(1,000 pounds)	(Percent)	(1,000 pounds)	(Percent)	(1,000 pounds)	(Percent)	(1,000 pounds)	(Percent)	(1,000 pounds)	(Percent)
Under 15	10,396	10	12,999	11	13,550	10	12,870	9	15,072	10
15-20	12,217	12	11,922	10	11,597	9	12,335	8	14,747	10
21-25	10,324	10	8,165	7	9,781	7	10,643	7	14,444	9
26-30	9,533	10	8,219	7	8,756	7	9,666	6	15,445	10
31-40	14,722	15	12,528	11	13,085	10	14,485	10	22,957	15
41-50	9,481	10	6,060	5	7,862	6	8,002	5	11,867	8
51-60	4,736	5	3,155	3	4,101	3	4,541	3	7,724	5
61-70	3,005	3	2,857	2	3,124	2	2,999	2	5,288	3
71 & over	3,904	4	3,588	3	3,107	2	4,553	3	9,733	6
Pieces	2,196	2	1,779	2	2,035	2	3,359	2	3,788	2
Unclassified	18,504	19	46,542	40	56,388	42	66,914	45	32,150	21
Total	99,018	100	117,814	100	133,386	100	150,367	100	153,215	100
Peeled:										
Under 15	646	3	612	2	704	4	798	4	808	3
15-20	1,907	10	1,401	5	1,082	6	1,081	5	1,194	5
21-25	1,208	6	1,278	5	1,105	6	1,361	6	1,758	7
26-30	1,741	9	1,636	6	1,099	6	1,679	8	2,256	10
31-40	2,226	11	2,236	9	1,377	8	2,112	10	2,764	12
41-50	1,265	6	1,013	4	644	4	1,076	5	1,598	7
51-60	523	3	517	2	205	1	625	3	982	4
61-70	346	2	450	2	84	2/	353	2	808	3
71 & over	4,903	24	5,454	21	2,862	16	5,132	23	7,413	31
Pieces	1,788	9	1,213	5	849	5	1,318	6	1,658	7
Unclassified	3,514	18	10,132	39	7,494	43	6,439	29	2,302	10
Total	20,067	100	25,942	100	17,505	100	21,974	100	23,541	100

1/ By selected ports.

2/ Less than 0.5 percent.

Source: Compiled from official statistics of the U.S. Department of Commerce, National Marine Fisheries Service.

Note: Because of rounding, figures may not add to the totals shown.

from that country are of predominantly large shrimp. 1/ And, according to the Government of Panama, U.S. imports of shrimp from that country are also mainly of large shrimp. 2/

The Commission gathered data on U.S. imports of shrimp by size count and by country. The following tabulation shows U.S. imports of heads-off, shell-on shrimp during 1982-84 by selected size counts and countries, as reported by respondents to Commission questionnaires (in thousands of pounds):

<u>Year and country 1/</u>	<u>Size count</u>			
	<u>16/20</u>	<u>31/35</u>	<u>36/40</u>	<u>51/60</u>
1982:				
Mexico-----	9,993	4,397	1,987	1,452
Ecuador-----	333	1,196	1,206	620
Panama-----	559	544	509	1,358
Brazil-----	211	148	118	83
1983:				
Mexico-----	10,719	4,099	2,098	2,349
Ecuador-----	472	1,019	994	632
Panama-----	669	410	340	680
Brazil-----	102	97	107	126
1984:				
Mexico-----	10,363	4,361	3,051	2,378
Ecuador-----	314	845	718	421
Panama-----	753	685	510	1,170
Brazil-----	111	104	104	114

1/ The number of respondents were as follows: Mexico--7; Ecuador--9; Panama--5; Brazil--5.

According to the data supplied by questionnaire respondents, for the selected size counts, the principal size of shrimp imported from Mexico was 16/20, a size considered as large. This supports the claim mentioned earlier that U.S. shrimp imports from Mexico are mainly of large shrimp. However, according to the above data, imports of smaller shrimp from Mexico increased more than those of large shrimp during 1982-84. Imports from Ecuador reported by questionnaire respondents were predominantly of shrimp in the 31/35 and 36/40 size counts, which is consistent with the widely-held view that such imports are concentrated in this range (mainly the result of aquaculture production). Imports from Panama reported by questionnaire respondents were predominantly of small shrimp (51/60 size count), contradicting the claim by the Government of Panama mentioned earlier. This may be accounted for by the possibility that the imports reported by questionnaire respondents consisted mainly of

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1/ Submission by Dr. Guido Belsasso, Ocean Garden Products, Inc., p. 3 and chart V. According to the submission, 60.3 percent of Mexican exports of shrimp to the United States during 1982-84 was in size counts 21/25 and below.

2/ Submission by Mr. Armando R. Martinez V., Director General, Ministry of Commerce and Industry, Republic of Panama, p. 2 and table 2. According to the submission, about 76 percent of Panamanian exports of white shrimp to the United States during 1980-84 was in size counts 16/20 and below.

aquacultured shrimp. 1/ Imports of shrimp from Brazil reported by questionnaire respondents were fairly evenly distributed among the various selected size counts.

#### Projection of imports, 1985-90

Appendix N contains a projection of import levels during 1985-90. The projection was derived from a model that estimated import demand during the period by analyzing trends and characteristics in population growth, disposable income, per-capita shrimp consumption, domestic shrimp landings, U.S. shrimp exports, and world shrimp supplies. The results of the model indicate that U.S. shrimp imports are expected to increase from an annual average of 342 million pounds (heads-off basis) during 1980-84 to between 390-413 million pounds in 1990, or by from 14-21 percent.

#### OTHER MAJOR WORLD SHRIMP MARKETS

##### Japan

The Japanese market for fishery products is the world's largest, with total fishery product consumption estimated at 17.5 million metric tons annually. With per-capita fishery product consumption of 67 kilograms (live weight equivalent) per year, the Japanese eat more fish than anyone else (U.S. per-capita consumption, by comparison, is only 16 kilograms per year). Not only is Japan the largest fish-harvesting nation, with a commercial catch of 10.8 million metric tons in 1982, the country is also the world's largest importer of fishery products, with \$3.15 billion in net imports in 1982.

Japan is also an important consumer of shrimp. Japanese landings of shrimp and prawns in 1983 totaled 53,978 metric tons, a decrease of 7 percent from 58,060 metric tons in 1982. In addition, imports of shrimp in 1982 amounted to 151,396 metric tons (about 227,094 metric tons whole weight), compared with 1981 imports of 161,725 metric tons and imports in 1980 of 143,256 metric tons. Japanese shrimp exports are negligible, amounting to only 2,087 metric tons (3,131 metric tons whole weight) in 1982, compared with 2,812 metric tons exported in 1981 and 1,814 metric tons in 1980. Thus, apparent consumption (not adjusted for inventory change) in 1982 amounted to 282,023 metric tons of whole shrimp, compared with 320,693 metric tons 2/ consumed in the U.S. market in the same year.

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1/ According to the submission by the Government of Panama, production of aquaculture shrimp in Panama is relatively minor (2.2 million pounds in 1984), but about 68 percent of Panamanian exports of aquaculture shrimp during 1982-84 was in size counts 41/50 and above.

2/ Equals apparent consumption of 213,795 metric tons, heads-off weight, multiplied by a 1.50 whole-weight conversion factor.

### Market profile

Shrimp is marketed in Japan through approximately 50,000 sushi restaurants and an equal number of retail outlets, plus countless other restaurants. There are also about 50 central wholesale fish markets (these also sell at the retail level), the largest of which is Tsukigi, which, according to industry sources, dwarfs Fulton Fish Market in New York, the largest fish market in the United States. These fish markets altogether house about 85 wholesale firms. In addition, about 20 wholesale firms operate outside this system of marketplaces, and another 100 firms import shrimp for consumption in the Japanese market.

The Japanese people consume about 1.8 kilograms (about 4 pounds) of shrimp per capita annually, about twice the per capita consumption rate among U.S. consumers. Total shrimp consumption in Japan in recent years has shown no particular trend (table 74). Total consumption in 1983 was 200,400 metric tons, down 3 percent from the 1982 consumption level of 207,300 metric tons. According to one report, <sup>1/</sup> the Japanese Government projected that shrimp consumption in 1985 should be 260,000 metric tons, an increase of 30 percent over 1983 levels, which indicates the need for some 60,000 metric tons of additional imports in the face of projected stagnant growth in domestic landings.

Table 74.--Shrimp: Japanese production, imports, exports, and consumption, 1979-83

(In metric tons, product weight)					
Year	Production	Imports	Exports	Consumption	
1979-----	53,077	158,700	2,100	209,677	
1980-----	50,986	143,300	1,800	192,486	
1981-----	54,652	161,700	2,800	213,552	
1982-----	58,000	151,400	2,100	207,300	
1983-----	54,000	148,600	2,200	200,400	

Source: Production compiled from statistics of the Food and Agricultural Organization of the United Nations; imports and exports compiled from statistics of the Organization for Economic Cooperation and Development.

The projected increase in shrimp consumption in 1985 is attributed by the Government to a variety of factors including increasing urban population and income levels (making shrimp more accessible to more Japanese), and changing consumer preferences in response to new product forms and improved marketing techniques. The Japanese shrimp market is very sensitive to price changes (as opposed to, for example, the relatively greater importance of income in shaping U.S. demand for shrimp). This is basically because shrimp is an integral part of the Japanese diet, and must still compete with numerous

<sup>1/</sup> "World Prawn Markets", Australian Fisheries, 41:4 (April 1982), p. 16.

other foods (fish and nonfish) as a protein source. The Japanese are also particular about the visual presentation of shrimp in foods, preferring, for example, brightly colored, "exotic" species such as those found in western and southwestern Pacific waters over less colorful species found, for example, in the Gulf of Mexico. Of increasing popularity and availability are shrimp packaged and marketed live, often packed in moist sawdust, with so-called tiger and flower shrimps being the preferred species. These shrimp are sold through retail outlets, including department stores, often as gift items.

### Imports

Japan has traditionally been the world's largest importer of shrimp, accounting for 35 to 40 percent of world shrimp trade in recent years. Only in one year, 1983, did the United States surpass Japan in shrimp imports, with 154,869 metric tons imported by the former compared with 148,628 metric tons for the latter. Japan's imports of frozen shrimp, accounting for virtually its entire shrimp import bill, are shown for selected years in the following tabulation (data from the U.S. Department of Commerce):

<u>Year</u>	<u>Metric tons</u>	<u>Billion yen</u>	<u>Yen per kilogram</u>
1960-----	624	0.23	375
1961-----	4,057	2.5	618
1970-----	57,145	49.3	863
1980-----	143,256	240.4	1,678
1981-----	161,725	269.1	1,664
1982-----	151,396	326.6	2,157
1983-----	148,628	301.0	2,025
1984-----	169,100	<u>1/</u>	<u>1/</u>

1/ Not available.

The principal product form of imported shrimp, by far, is frozen, usually whole or heads-off, shell-on; packed in 5-pound, 4-pound, 2-kilogram, 1.5-kilogram, and 1-kilogram blocks. Shell-off shrimp, which make up 27-28 percent of all frozen imports, are usually packed in 2-kilogram blocks. Frozen imports make up about 99 percent of all Japanese shrimp imports, the remainder being fresh or live shrimp. Table 75 presents semimonthly data on prices of imported shrimp products on the Japanese market (with comparisons with prices of similar products in other world markets), covering a 1-year period beginning May 15, 1984.

In 1960, Japan opened its market to shrimp imports in order to supply a growing demand that could not be met by domestic resources. Imports grew steadily from 624 metric tons in 1960 to a record 169,100 metric tons in 1984. The value of Japan's shrimp imports in recent years has generally been rising, owing in part to higher volume, and also to rising average unit values as importers shift to higher-priced species. 1/ As noted earlier, the projected increase in consumption in Japan suggests there should be continued increases in imports within the next few years.

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1/ Market News and Price Report, Infopesca, Panama, June 1, 1983, p. 3.

Table 75.---Shrimp: World prices for selected species, frozen, heads-off, by size counts and markets, semi-monthly, May 15, 1984-May 1, 1985

Period	(In U.S. dollars per pound, product weight 1/)																	
	Indian scampi (white)						Pakistani pink or brown						Pakistani white					
	Under 15 count		16-20 count		41-50 count		71-90 count		16-20 count		31-35 count		51-60 count		31-35 count		51-60 count	
US	Japan	Europe	US	Japan	Europe	US	Japan	Europe	US	Japan	Europe	US	Japan	US	Japan	US	Japan	
1984:																		
May 15	4.95	5.32	4.80	4.65	4.99	4.35	2.90	2.20	1.84	6.08	5.81	4.81	4.17	3.08	2.99			
June 1	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	
June 15	4.95	5.22	4.55	4.65	4.99	4.15	2.80	2.61	2.72	5.69	5.69	3.76	4.08	2.61	2.61			
June 29	4.95	5.22	4.55	4.65	4.99	4.15	2.80	2.61	2.72	5.74	5.69	3.20	4.08	2.25	2.61			
July 16	4.50	5.35	4.85	4.00	4.81	4.45	2.40	2.81	2.45	5.78	5.69	3.90	4.08	2.25	2.61			
August 1	4.74	5.35	4.75	4.35	4.81	4.35	2.40	2.81	2.45	5.78	5.69	3.90	4.08	2.25	2.61			
August 15	5.00	5.81	4.40	4.40	5.49	4.00	2.40	2.36	2.31	5.62	5.13	3.67	3.22	2.43	2.72			
September 1	5.00	5.58	4.30	4.40	5.76	3.90	2.63	2.49	2.31	5.47	5.15	3.67	3.29	2.72	2.31			
September 15	5.00	5.44	4.25	4.40	5.13	3.95	2.63	2.49	2.31	5.47	5.15	3.67	3.29	2.72	2.31			
October 1	4.80	5.44	4.25	4.50	5.22	3.95	2.63	2.49	2.40	5.47	5.08	3.67	3.22	2.72	2.18			
October 15	4.80	5.62	4.20	4.50	5.31	3.70	2.63	2.49	2.40	5.47	5.08	3.67	3.22	2.72	2.18			
November 1	4.55	5.49	4.30	4.30	5.26	3.20	2.45	2.22	2.22	5.49	5.44	3.22	3.22	2.36	2.36			
November 16	5.00	5.44	3.60	4.40	5.31	3.20	2.16	2.00	2.22	5.49	5.44	3.22	3.22	2.36	2.36			
December 1	5.00	5.99	3.60	4.40	5.67	3.20	2.16	2.00	2.22	5.49	5.44	3.22	3.22	2.36	2.36			
December 15	5.99	5.99	3.60	5.67	5.67	3.20	2.29	2.00	2.22	5.19	5.22	2.90	3.11	2.22	2.36			
1985:																		
January 1	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	2/	
January 15	4.00	5.35	3.50	4.90	4.90	2.15	1.59	1.59	2.15	5.49	5.26	3.04	2.86	2.36	2.09			
February 1	4.00	6.12	3.50	5.31	5.31	2.15	1.75	1.75	2.15	5.08	5.26	3.04	2.90	2.09	2.13			
February 15	4.00	5.62	3.30	3.50	5.08	2.90	2.13	1.91	2.11	5.45	4.90	3.08	2.88	2.36	2.00			
March 1	5.67	4.00	4.00	4.00	4.99	3.65	2.40	1.91	2.31	5.35	4.90	3.08	2.88	2.31	2.00			
March 16	5.58	4.00	4.00	4.00	4.90	3.65	2.27	2.09	2.15	5.35	5.17	2.99	2.97	2.36	1.95			
April 1	5.90	4.00	4.00	4.00	5.08	3.75	2.36	2.09	2.34	5.25	5.22	3.10	2.95	2.35	1.95			
April 15	6.12	6.12	3.50	5.31	5.53	3.20	2.36	2.09	2.34	5.25	5.22	3.10	2.95	2.35	1.95			
May 1	6.17	5.94	4.15	5.13	5.35	2.18	2.22	2.22	2.18	4.90	5.26	2.80	2.77	2.00	2.00			

1/ Prices paid by importers on a c.i.f. basis.

2/ Not available.

Source: INFOFISH Trade News, Kuala Lumpur 01-02, Malaysia, various issues.



Throughout the period since the opening of the Japanese market to imports, the leading suppliers have included India, Indonesia, China, Mexico, Thailand, Taiwan, and Australia. India, the largest supplier, has historically accounted for about one-quarter of the Japanese imports. Mexico is the only non-Asian or non-Oceanian source of any great importance. With world "wild" shrimp resources at or near maximum harvest, those countries with aquaculture potential will likely account for most of the increase in imports going to the growing Japanese market in future years. All of the current principal suppliers, with the exception of Mexico, are projected by the U.S. Department of Commerce to at least double (or in the case of India, triple) their present levels of production of aquacultured shrimp by 1990, 1/ with a large portion of this increase likely to go to Japan.

### Exports

Exports of shrimp from Japan are negligible, amounting to only 2,200 metric tons in 1983, about 5 percent of domestic production. This is not an important part of the Japanese shrimp market as Japanese shrimp consumption is very high, well in excess of the capacity of the domestic industry, leaving little in the way of an exportable surplus of shrimp.

#### Western Europe

The countries that make up Western Europe have, by and large, affluent, developed economies, which have in recent years become important markets for shrimp products. The region as a whole appears to be a net importer of shrimp, despite the existence of growing capacity in shrimp production. Much of this capacity is located in the northernmost countries, such as Norway and Iceland, which produce surplus supplies for export to other European countries and to the United States. Principal non-European suppliers of shrimp to the European market include the major Asian producers such as Thailand. But these countries are relatively unimportant suppliers; most of the market for shrimp in Europe is supplied from within the region.

With respect to the trade of fish products, as with most commodities, a distinction must be made between the European Community (EC) and the remaining Western European countries. The members of the EC act as one in trading with non-EC nations, setting so-called reference prices that regulate the minimum prices for imported commodities and fixing quotas for imports into the EC. There is considerable trade in shrimp between EC members; in most cases, other members constitute an EC nation's principal source of supply and/or export market. However, there are important non-EC nations in Europe, notably Norway, which heavily affect the European shrimp market.

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1/ The Outlook for Salmon and Shrimp Aquaculture Products in World Markets, op. cit.

Data on the shrimp market in Western Europe in 1983 are presented in table 76. The estimated total catch of shrimp in 1983 was 273,918 metric tons (live weight), including 155,513 metric tons harvested by EC member nations and 118,405 metric tons harvested by other Western European nations. The data on import/export trade provide an indication of the extent to which Western European nations are dependent upon one another for imported supplies and as export markets: adding the import volume of all Western European countries together results in total imports of 133,023 metric tons (product weight), yet only 23,837 metric tons (18 percent) actually were imported from outside the region, the majority instead was harvested by other Western European nations. Similarly, total exports by all Western European nations in 1983 amounted to 100,891 metric tons, yet only 7,400 metric tons (7 percent) actually were shipped outside the region, the majority instead going to other Western European markets. The principal non-Western European sources of supply of shrimp in 1983 included the Soviet Union (10,500 metric tons to Norway), India (5,000 metric tons to the United Kingdom), and Turkey (2,800 metric tons to Sweden), among others. Data on prices of imported shrimp products in Western European markets are presented in table 75. The most important non-Western European export market in 1983 was the United States (a combined 7,400 metric tons from the United Kingdom and Norway).

Table 76.--Shrimp: Western European catch, imports, and exports, 1983

(In metric tons)						
Item	:	EC members	:	Other <u>1/</u>	:	Total
Domestic catch (live weight)-----	:	155,513	:	118,405	:	273,918
Imports (product weight) <u>2/</u> :	:		:		:	
Total-----	:	105,745	:	27,278	:	133,023
From non-European sources-----	:	10,537	:	13,300	:	23,837
Exports (product weight) <u>3/</u> :	:		:		:	
Total-----	:	72,791	:	28,100	:	100,891
From non-European sources-----	:	3,000	:	4,400	:	7,400

1/ Includes Iceland, Norway, Portugal, Spain, and Sweden.

2/ Excludes Greece, Greenland, Ireland, Portugal, and Spain.

3/ Excludes France, Greece, Ireland, Italy, Portugal, and Spain.

Source: Estimated by the staff of the U.S. International Trade Commission on the basis of data of the Organization for Economic Cooperation and Development.

France is Western Europe's largest importer of shrimp, purchasing some 32,000 metric tons in 1983. As much as one-half of this supply comes from French-speaking western African sources such as Senegal, formerly a French colony. In these countries, many of the processors are at least partially controlled by the French, and this provides a measure of quality control over imports into the discerning French shrimp market.

Conversely, the United Kingdom, another of Western Europe's largest importers (16,000 metric tons in 1983), is a large market for lesser quality shrimp products. The United Kingdom is supplied largely by India and Malaysia, which make up the bulk of the United Kingdom's non-European supplies of shrimp products. One of the principal European suppliers to the United Kingdom is Norway, which exported 6,600 metric tons of peeled shrimp to that market in 1983.

Domestic production of shrimp in Western Europe, particularly non-EC nations, has been rising in recent years. Overall, total Western Europe shrimp production in 1978-79 averaged 139,000 metric tons (live weight), increasing to 166,000 metric tons in 1983. In some cases, a nation's production of shrimp has increased as a result of depressed conditions in other fisheries. Such is the case in Iceland and Norway, for example, where much of the increased shrimp catch has been harvested by offshore trawlers which previously fished the now-depressed cod fishery. If the depressed conditions of other fisheries in the Northeast Atlantic continue, it is likely other countries will also experience further shifting of fishing activity toward shrimp harvesting, resulting in additional domestic supplies and/or increased exports to markets such as the United States.

The increased shrimp harvesting activity recently experienced in Western Europe stimulated increased processing capacity as well, reportedly due in part to government assistance with such expansion. <sup>1/</sup> However, this expansion may be excessively hasty. In Norway, the number of shrimp processing plants increased from 130 in 1983 to 180 in 1984, and production fell from 70,000 metric tons (product weight) in 1983 to 65,000 metric tons a year later. Growing excess capacity and a need to increase utilization has caused some problems in shrimp markets, including a tendency to sacrifice quality for quantity. As a result, prices in some Western European shrimp markets have fallen, and this is in part responsible for the 1983-84 decline in Norwegian production of 5,000 metric tons, or 7 percent. Also a factor in declining production was a limit on imports of raw shrimp from the Soviet Union, which had been purchased to augment domestic supplies for processing and which caused concern among Norwegian fishermen, who fought for an import restriction.

Another recent problem in Western European shrimp markets resulted from the importation of Asian shrimp tainted with shigella bacteria, which in the Netherlands during December 1983-January 1984 caused the deaths of 14 persons from dysentery. As an immediate result, shrimp demand throughout the region was curtailed; Norwegian producers were particularly upset, since some Asian shrimp had been marketed in Western Europe falsely labeled as of Norwegian origin. Legislation was recently proposed in the EC to require the pasteurization after importation into the EC of all shrimp production, which would likely have the effect of reducing net incomes of shrimp importers and processors by raising costs.

As noted above, domestic production of shrimp in Western Europe is limited, compared with demand. Consumption of domestic shrimp centers on two types of shrimp, the Pandalus species (northern prawn (P. borealis) and pink shrimp (P. spp.)) and common shrimp (Crangon crangon). The latter is a very

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<sup>1/</sup> "Shellfish: Search for wider markets," Fishing News International, December 1984, p. 12.

high quality shrimp, popular in such markets as Belgium and the Netherlands. The United Kingdom is a large market for all types of shrimp, from premium African white shrimp to lesser quality Pandalus species. West Germany, an important producer of Crangon crangon, is a large market for Taiwanese and Chilean cooked shrimp. As noted earlier, France imports considerable quantities of high quality shrimp from Western Africa.

The tariff structure of the EC is such that developing countries, many of which are major shrimp exporters, have an advantage over developed countries. Tariffs on imports from the latter range from 12 to 18 percent ad valorem, and developing countries in general pay only 6 percent and some with special agreements with the EC are accorded duty-free status. Another trade barrier relates to quality standards, which vary among EC members, for there is no Community-wide set of product standards. Belgium and Luxembourg are among the most lenient EC members in regard to standards, while the United Kingdom and Italy are among the most strict.

#### CONDITIONS OF COMPETITION

There is considerable competition in the U.S. market between domestic and foreign suppliers, since the U.S. Gulf and South Atlantic region shrimp industry, particularly the harvesting sector, is unable to fully supply the needs of the market. During 1980-84, U.S. imports of shrimp increased both in absolute terms and in their share of the U.S. shrimp market.

The competition in the U.S. market between shrimp produced by the U.S. Gulf and South Atlantic region shrimp industry and shrimp produced by foreign shrimp industries is affected by a variety of conditions. The competitive conditions that are discussed below include price, product quality, resource availability, product availability, transportation, exchange rates, and government assistance.

#### Price

The nature of the products produced from shrimp and the structure of the market in which these products are traded combine to make a highly competitive market, especially at the vessel-first-buyer level, with prices adjusting daily to changes in supply and demand. The product that most shrimp are marketed as--raw, heads-off, shell-on--is largely homogeneous, with few perceptible differences in the product of one supplier compared with that of another within local markets. Other more highly processed products, such as breaded shrimp, are often differentiable between suppliers, usually owing to quality differences creating price differentials based on the reputations of various producers. Shrimp product producers are numerous and small relative to the size of their market, especially at the primary levels of marketing, such as dockside dealers and primary processors (graders and freezers), and at the final-consumer level such as the restaurant trade.

Price does not, however, act as a strategic signal inducing changes in quantity supplied or demanded at certain levels of the shrimp marketing chain. These levels include that at which the fishermen operate and that at which the final consumer acts. At the fishermen's level, the quantity supplied is less influenced by price than by exogenous factors, such as the

biological condition of the shrimp resource (and hence shrimp abundance). At the final-consumer level, represented mostly by the restaurant and institutional trade, the quantity demanded is not heavily influenced by price because of the "basket" of items in an entree that a consumer must purchase along with the shrimp itself. These are crucial levels of marketing, with important implications for price behavior and import demand. The nature of supply from domestic producers, in conjunction with consumer demand, shapes the market's demand for imported shrimp products. Lack of responsiveness of domestic producers to changes in price reduces the control over the market enjoyed by that segment of the industry. On the demand side, final-consumer demand for shrimp ultimately determines demand for shrimp by all intermediate buyers of shrimp, and the apparently inelastic nature of consumer demand for shrimp results in more volatile prices for shrimp throughout the lower levels of the marketing chain.

The first stage of shrimp marketing is the ex-vessel, or dockside level, where fishermen sell their catch to dockside dealers, or less typically, to brokers or processors. There is little or no product differentiation here, although some harvesters may develop reputations for somewhat better quality because of better handling practices, for instance, but this is not an important influence in ex-vessel pricing. Shrimp harvesters are numerous and loosely organized, allowing little bargaining control over buyers, who tend to be much more concentrated on a port-by-port basis. In many instances, an informal supply contract is created when a buyer finances a harvester's trip expenses (usually at zero interest), obligating that vessel to deliver its catch to that buyer. The informal nature of the contract, however, by allowing the harvester to sell elsewhere, prevents the buyer from taking too much advantage of its market power by offering prices to the harvester much lower than the market price. This system of marketing transfers much of the risk of vessel operation to the buyer; in the case of a large dealer or processor, several hundred thousand dollars may be tied up at any one time in advances to harvesters from which the processor purchases its raw material.

Import competition is not a direct influence at the ex-vessel level, since imported shrimp rarely enter the United States in a product form identical to that landed by U.S. harvesters. Therefore, they do not compete for the business of primary processors or dealers. Imported shrimp usually enters the U.S. market in frozen, raw, heads-off form, the same product produced by primary processors; thus the ex-vessel price, that paid by the primary processors, is influenced indirectly, but quite significantly, by import competition.

Wholesale prices pertain to purchases made by larger processors (breaders, canners, etc.) from domestic and importing broker/wholesalers or from dockside dealers. This segment of the industry appears to be the most influenced by market power, because wholesale prices are heavily influenced by a few large buyers in the industry through their prices as quoted in the so-called "green sheet," the daily market news report published by the National Marine Fisheries Service, which reflects prices paid by importers and wholesalers in New York City and elsewhere. These prices are paid for frozen, raw, heads-off shrimp, from which are made the other shrimp products. Numerous industry sources interviewed during Commission staff fieldwork indicated that, owing to their more concentrated position in the market relative to both dealers and retailers or restaurateurs, processors and wholesalers are suspected of being

able to exercise at least some market power, especially with respect to playing import and domestic prices off one another.

The wholesale shrimp market is where imports have their most direct effect, since the product form of the primary processors is identical to that of the bulk of imported shrimp, and both compete head-on for the business of wholesalers and direct institutional buyers. Historically, imports of shrimp have been seasonal because of exporting industries' reliance on "wild" stock of shrimp in much the same manner as U.S. harvesters. In recent years, however, the fluctuations in import supply have lessened as aquacultured shrimp, which is produced year round, becomes more prevalent in the marketplace. This has disrupted historical pricing patterns in some markets for domestic shrimp, where in the past prices tended to rise in winter and spring when supply was low and decline in summer and fall when landings increased. Dealers and primary processors would hold their inventories acquired in the summer until prices rose later in the year. Now wholesalers have greater access to year-round supplies of imported shrimp, and dealers and primary processors are finding that prices no longer rise and fall with the predictability observed in past years. The reason for this, as voiced by some in the industry during Commission staff fieldwork, is that wholesalers and large processors have become reliant upon imports and use import availability as a tool with which to bid down prices paid to dealers year round.

At the retail level, competition between imported and domestic shrimp generally ceases to exist. Most estimates place 80 percent of the retail market with restaurants and other institutional purchasers, by which stage imported and domestic products have usually been combined by wholesalers or processors. Generally, consumers do not express particular preference for shrimp by species or country-of-origin, and retailers (including restaurants) have not engaged in marketing shrimp products with such an emphasis.

#### Product Quality

The quality of shrimp products depends on a number of factors including how the shrimp was kept prior to processing, for how long, the level of care taken in handling and processing, and the method of shipment to market. Whether or not the shrimp was produced by aquaculture is also important; aquacultured shrimp generally are of high quality because of the speed with which they can be processed once harvested, and the control of the producer over size uniformity, flesh texture, and other quality considerations. They are usually processed very soon after harvest, often within a few hours, and do not suffer the flesh damage caused to U.S.-caught and imported ocean shrimp by holding in ice prior to processing. Aquaculturists can deliver shrimp consistent in size, texture, and color, all considerations that are important to U.S. buyers.

U.S. and other ocean-caught shrimp is often held on ice in fishing vessels for hours or days prior to transfer to dealers and processors, and this adversely affects product quality. Supplies are dependent upon seasonality, weather, water conditions, and other factors beyond the control of the fisherman. These tend to cause inconsistencies in product supply and quality. Offsetting this is the proximity to the markets, which U.S. fishermen enjoy, cutting down on the time between harvest, processing, and distribution. A common practice of U.S. fishermen and processors (and also of

foreign suppliers) is to treat shrimp with a liquid solution of sodium bisulfite to ward off a discoloration known as "black spot," a harmless yet visually unappealing deterioration of the shrimp shell. This practice has recently come under review by the U.S. Food and Drug Administration, which in January 1985 implemented standards limiting the concentration of sodium bisulfite to 100 parts per million, a restriction applicable to both domestic and imported shrimp.

At the processor level, the degree of care taken in handling, storage, and processing substantially affects the quality of the processed product, and it can vary from plant to plant. Improper refrigeration procedures or unsanitary conditions can adversely affect product quality, as can such practices as excessive coating of breaded products or improper cooking procedures. In addition, product quality factors important from the buyer's point of view include appearance, consistency of size, color, and other attributes that largely depend on available supply from harvesters but which tend to be less reliable from domestic harvesters than from foreign aquaculture sources.

The seasonal and cyclical nature of domestic shrimp harvests, augmented by such influences as the "Texas closure" (see the earlier discussion of Resource Management), contributes greatly to the variability in quality of domestic shrimp. During periods of high landings volume, local dealers and primary processors find themselves glutted with shrimp that they often can neither process quickly and efficiently nor market easily. The result is low prices for shrimp to both fishermen and the dealers, owing to both the greater supply and the reduced quality of the product. Conversely, product quality can be higher and more consistent when supplies are less plentiful, as the capacity of local processing facilities is less strained.

Most shrimp industry members interviewed by the Commission staff agree that the quality of shrimp products varies more by individual supplier than by source country. <sup>1/</sup> In most countries, including the United States, shrimp is harvested and processed by a large number of individuals and firms, and mandatory quality standards are not common. Therefore, no overall competitive advantage in terms of quality is apparent for domestic versus imported shrimp, nor vice versa. There are, however, certain quality characteristics that may be more prevalent among domestic or imported shrimp products that may give the one a competitive advantage over the other under certain circumstances. For example, U.S. west coast consumers prefer the taste of Mexican white shrimp over that of domestic Gulf brown shrimp and, thus, perceive the quality of the Mexican shrimp to be higher. Also, some imported heads-off, shell-on shrimp is "finger-packed" neatly in layers in immediate containers as opposed to most domestic shrimp, which is "jumble-packed" (randomly). This packaging difference, which is accounted for primarily by lower labor costs in many foreign shrimp-exporting countries, gives a quality advantage in terms of appearance to the imported shrimp. The individual finger-packed shrimp are also easier to separate when frozen in a block and are less susceptible to breakage--important considerations for the restaurant and institutional trade. Members in the processing and restaurant and institutional segments of the industry also stated that shipments of imports from certain sources tended to be overpacked (i.e., contain more shrimp than ordered), thus increasing the

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<sup>1/</sup> Information gathered during Commission staff fieldwork. Also, see testimony of Jonathan Sleik, hearing transcript, p. 218.

yield to the purchaser. Last, the previously mentioned characteristics of aquacultured shrimp (e.g., shorter time between harvest and processing, uniform size and color) give certain quality advantages to imported shrimp produced by that method.

Certain quality advantages exist for domestically produced shrimp. First, just as west coast consumers perceive Mexican white shrimp to have a superior taste, many consumers in other markets, such as in the east and northeast, perceive domestic shrimp to have a taste advantage over imported shrimp. Moreover, domestic Gulf brown shrimp produce a higher yield of meat per pound of live shrimp than many imported species, which is an important consideration, particularly to the processing segment of the industry. Also, quality problems with certain imported shrimp that result in detention and rejection by the U.S. Food and Drug Administration (see the discussion in the Customs Treatment section of the report) may serve to give a competitive advantage to domestic shrimp (as well as shrimp from nonproblem areas).

### Resource Availability

The availability of shrimp resources to the Gulf and South Atlantic region shrimp fisheries, particularly with respect to future supplies, is an important consideration in assessing the relative competitiveness of the U.S. shrimp industry vis-a-vis foreign competitors in the U.S. and world markets. Not only does resource availability help determine the proportion of the market that it is possible for the domestic industry to serve, but it also influences industry efficiency insofar as catch-per-unit of effort is higher the greater the biomass of the resource (the quantity of fish) on a given fishing ground.

U.S. shrimp supplies in the Gulf and South Atlantic region can be produced from two sources, "wild" fisheries and aquaculture operations. The wild sources, the ocean fisheries, are considered by Government officials concerned with U.S. shrimp fishery management to be fished to capacity; that is, despite increasing effort over the years, the average annual catch of shrimp has not increased, and it appears the long-run maximum yield from the fisheries of the two areas has been achieved. The estimated maximum yields for these two areas are 23 million pounds for the South Atlantic and 205 million pounds for the Gulf of Mexico, for a total of 228 million pounds of shrimp annually.

In addition to the ocean sources, domestic aquaculture operations also provide some supplies of shrimp to the U.S. market. However, environmental and technological constraints have prevented this sector of the industry from expanding beyond an annual production of about 0.5-1.0 million pounds. In the future, as industry experience increases, this production level may increase, but not likely in the foreseeable future to a point where aquaculture is a more important source of supply than the ocean fisheries.

World production of shrimp, on the other hand, particularly in countries with warm-water aquaculture operations, is projected by the National Marine Fisheries Service to increase substantially in the next few years. This is particularly true in countries that already supply the U.S. market, such as



some in Latin America and Asia. According to a recent study <sup>1/</sup>, the number of countries producing aquacultured shrimp is projected to more than double during 1982-1990, from 17 in 1982 to 44 in 1990. Further, aquacultured shrimp production is projected to increase by more than 200 percent during the same period, from about 78,000 metric tons in 1982 to over 240,000 metric tons in 1990. The production of aquacultured shrimp in 1982 and projected production in 1990 are shown below for the countries expected to have the largest increases (in metric tons):

<u>Country</u>	<u>1982</u>	<u>Production</u>	<u>1990</u>
India-----	15,000		50,000
Indonesia-----	11,313		40,000
Taiwan-----	9,575		30,000
Thailand-----	10,091		25,000
Philippines-----	3,900		20,000
Ecuador-----	21,500		40,000
Brazil-----	200		4,000
Peru-----	600		3,500
Colombia-----	0		3,000
Mexico-----	0		2,000

The countries where aquaculture is expected to expand are generally those with warm climates and extensive undeveloped coastlines and/or natural inland bodies of water. These conditions, combined with low wage rates, ready investment capital, and skilled personnel, create an ideal environment for the growth of shrimp aquaculture facilities.

The growth of aquaculture shrimp production in foreign countries is not likely to be free of adverse impacts on other shrimp sources, such as ocean fisheries. In numerous countries, there is concern that rapid expansion of shrimp aquaculture has or may adversely affect the more traditional shrimp fisheries operated by vessels in coastal waters or the open oceans. This is largely because in many cases the principal (or only) source of supply of "seed" shrimp (larvae or post-larval shrimp used to stock the aquaculture ponds) is the "wild" fisheries, where the larvae are harvested by commercial fishermen for sale to aquaculture firms. A problem arises when so much of the larval shrimp resource is harvested that there is insufficient supply left to mature and reproduce, as well as sustain the commercial ocean fisheries. An additional point of concern has been the conversion of estuaries and mangrove swamps to aquaculture facilities, thereby destroying the natural habitats of larvae and post-larval shrimp. With continued expansion of aquaculture in many countries, particularly in the absence of simultaneous development of shrimp hatchery facilities to provide seed shrimp supplies, these problems may worsen, causing a decline in ocean-shrimp fisheries, which will tend to offset, at least partially, any gains in aquaculture shrimp production.

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<sup>1/</sup> The Outlook for Salmon and Shrimp Aquaculture Products in World Markets,  
op. cit.

In general, because of the limited potential for shrimp aquaculture in the United States, primarily because of environmental reasons, the potential for growth in U.S. shrimp production seems small. Aquaculture of shrimp is currently a small sector of the total industry, and even if it were to expand ten-fold, it would not exceed 4 percent of the volume of shrimp available from the shrimp fisheries of the Gulf and South Atlantic region. Furthermore, fisheries in this region are currently producing at capacity, with no likelihood of prolonged future growth.

The principal competing shrimp-producing nations, on the other hand, have the promise of rather significant growth potential. This is largely, if not exclusively, due to the potential for aquaculture in those countries. The areas with the greatest growth potential are also among the most important foreign suppliers of shrimp to the U.S. market; it seems likely that a substantial share of any increased growth in shrimp production in those countries will be destined for the U.S. market.

#### Product Availability

The components of product availability that are important include (but are not limited to) large volume and consistent supply, a wide assortment of sizes and species, and ability to serve a wide market. An overall competitive advantage of product availability does not clearly rest with either the domestic industry or foreign suppliers; rather, each side has certain advantages and disadvantages.

The U.S. industry suffers from an essentially fixed resource base, which limits its ability to increase its overall market share, which currently is only about 20 percent for all product forms combined. The fact that domestic producers cannot supply more than a relatively small proportion of the market may impede their ability to secure large-volume customers, such as large restaurant chains. Moreover, the reliance on a "natural" source of supply that is subject to seasonal availability also disrupts marketing and distribution channels, especially in the fresh shrimp market. In frozen or canned shrimp markets where inventories can be kept, this is less of a problem. Also to the extent that aquaculture can be developed, seasonality of raw material supplies to processors can be reduced or eliminated.

Another disadvantage to the domestic industry relating to its dependence upon a wild resource relates to consistency of supply of particular sizes or species of shrimp. Again, the seasonality of the resource is the principal constraint on the industry's ability to market a continuous supply of one product grade or another. Foreign suppliers, particularly aquaculture operations, have the potential to pick and choose their raw material, thereby supplying shrimp products on a made-to-order basis. However, this potential is not often realized; most aquaculture produced shrimp imported into the United States is concentrated in the 31-40 count range and usually consists of a limited range of species suitable to aquaculture. Efforts are reportedly being made in some countries, such as Ecuador, to widen the array of sizes and species offered by the industry in order to secure wider markets. This concentration by foreign suppliers on particular size counts contrasts with the domestic shrimp industry's ability, subject to seasonal constraints, to offer a wide range of sizes and up to four major species.

There is no clear advantage to one side or the other with respect to the ability to serve a wide geographic market. Imported and domestic processed shrimp products are distributed similarly, and very soon in the marketing channels are mixed together; thus, where domestic shrimp are able to be shipped, so are imported shrimp, and vice versa.

#### Transportation

As shrimp is a high-value product that can be shipped in bulk, unit transportation costs are low relative to the product's selling price. In the case of imported shrimp, transportation costs can be estimated by examining import charges. <sup>1/</sup> The following tabulation, compiled from official statistics of the U.S. Department of Commerce, Bureau of the Census, presents Customs values and import charges of U.S. shrimp imports, by product form and by major U.S. suppliers, during 1983:

<u>Product form and country</u>	<u>Customs value</u> ----- <u>thousand dollars</u> -----	<u>Import charges</u> ----- <u>thousand dollars</u> -----	<u>Share of customs value</u> (percent)
Raw, shell-on:			
Ecuador-----	212,157	9,268	4
Panama-----	57,362	1,526	3
Brazil-----	26,689	1,814	7
Raw, peeled:			
India-----	29,603	3,544	12
Taiwan-----	24,638	1,168	5
Thailand-----	18,259	1,251	7
Brazil-----	17,496	1,575	9
Cooked, peeled, not in airtight containers:			
Norway-----	27,079	1,062	4
India-----	10,026	1,023	10
Peeled, in airtight containers:			
Thailand-----	13,666	487	4
Pakistan-----	1,892	283	15

In general, there is little variation in import charges of shrimp by product form. Import charges are lower for countries geographically closer to the United States. For example, import charges for shrimp from South American countries ranged from 3 to 9 percent of Customs value, whereas import charges

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<sup>1/</sup> Import charges represent the aggregate cost of all freight, insurance, and other charges, but not including U.S. import duties, incurred in bringing the merchandise from alongside the carrier at the port of exportation in the country of exportation and placing it alongside the carrier at the first port of entry in the United States. In the case of overland shipments originating in Mexico, such costs, if any, are not required to be reported to Customs.

from Pakistan and India were 15 and 12 percent of Customs value, respectively. <sup>1/</sup> Customs import charges for other Asian countries, such as Taiwan and Thailand, ranged from 4 to 7 percent.

Transportation costs for imported shrimp to the U.S. market are likely mitigated by relatively low production costs in the exporting country and exchange rate differentials vis-a-vis the U.S. dollar.

For comparative purposes, trucking rates were obtained for shipping frozen shrimp from a major distribution center for domestically produced shrimp, New Orleans, to major U.S. shrimp markets, New York, Chicago, and Los Angeles. The following tabulation gives rates for shipments less than a truckload, based on various weight categories, obtained from a New Orleans area trucking firm, rates effective June 1985, in dollars per 100 pounds and share (percent) of the March, 1985 New York wholesale price of 26/30 count domestic Gulf brown shrimp, heads-off, shell-on (\$4.88 per pound):

<u>Destination and weight category</u>	<u>Rate per 100 pounds (dollars)</u>	<u>Share (percent) of N.Y. wholesale price</u>
<b>New York:</b>		
500 pound minimum-----	20.81	4
2,000 pound minimum-----	19.59	4
5,000 pound minimum-----	16.03	3
10,000 pound minimum-----	13.21	3
<b>Los Angeles:</b>		
750 pound minimum-----	22.52	5
2,000 pound minimum-----	20.82	4
5,000 pound minimum-----	14.71	3
10,000 pound minimum-----	12.82	3
<b>Chicago:</b>		
500 pound minimum-----	15.00	3
1,000 pound minimum-----	9.00	2
5,000 pound minimum-----	5.50	1
10,000 pound minimum-----	5.00	1

Transportation rates based on these routes and this shrimp product form and size count ranged from 1 to 5 percent of the wholesale value. The rates are generally lower, but similar, to the import charges shown in the earlier tabulation.

As a significant quantity of U.S. shrimp imports is entered in ports located near major markets (e.g., New York, Los Angeles), such imports may not be subject to transportation costs in addition to those incurred between the source country and the U.S. port. For imported shrimp destined for interior U.S. markets (e.g., Chicago), transportation costs are the same as for domestic shrimp traveling the same route, as there is no differentiation by source.

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<sup>1/</sup> The unit value of U.S. shrimp imports generally are lower for imports from Pakistan and India, thus increasing this share even more.

There is no clear competitive advantage with respect to transportation of most shrimp products for either domestic or foreign producers. Most shrimp is marketed in the frozen form and, as such, perishability is usually not a factor in transportation. Also, domestic and foreign shrimp products move through the same distribution channels to a large extent, and are subject to the same transportation costs once the imported shrimp is in the United States. And, the cost of transporting imported shrimp from the source country to the United States is likely offset to a large degree by lower production costs and other factors.

The only major competitive advantage with respect to transportation is in the marketing of fresh shrimp. Although much smaller in scale than the frozen-shrimp market, the fresh-shrimp market is a lucrative one, since prices for fresh shrimp are generally higher than those for frozen shrimp. However, fresh shrimp is highly perishable, and spoilage costs are higher than those for frozen shrimp. Many of the principal shrimp-exporting nations are quite distant geographically from the U.S. market and this, coupled with the perishability of fresh shrimp, often prevents these countries from supplying the fresh shrimp-market. Thus, domestic shrimp producers have a clear competitive advantage in terms of transportation with respect to the relatively small, but valuable, fresh-shrimp market.

#### Government Assistance

The role of Government assistance in influencing the relative competitiveness of the Gulf and South Atlantic region shrimp industry vis-a-vis foreign suppliers is difficult to assess because of the paucity of data on Government involvement in the shrimp industries of developing nations, which are among the most important suppliers to the U.S. market. Thus instead of a comparison of the dollar values of comparable programs in the United States and competing nations, it is possible only to compare the types and purposes of the programs and their likely effects on industry competitiveness.

In the United States, shrimp fishermen receive financial assistance from the National Marine Fisheries Service (NMFS) of the U.S. Department of Commerce. This assistance comes in the forms of loan guarantees and Federal income tax deferrals for fishing vessel and gear acquisition; compensation for gear damage related to offshore energy exploration activities; and compensation for losses sustained through seizure of vessels by foreign governments. In addition, some programs of other agencies, such as the Department of Agriculture, the Farmer's Home Administration, and the Small Business Administration, provide limited assistance to the fishing industry and to aquaculture operations. At the State and local government levels, very little in the way of financial assistance is provided specifically to the shrimp industry; however, some enterprises have benefitted from such forms of assistance as industrial development bonds, production credit associations, and other State/local programs that help many kinds of businesses.

Other forms of Government assistance to U.S. shrimp fishermen include legislation that prohibits the landing by foreign-flag fishing vessels of shrimp (and all fish) in U.S. ports (the so-called "Nicholson Act", 46 U.S.C. 251). In addition, various programs at the Federal and State levels

provide research and development assistance and aid in marketing and product promotion. Daily and weekly market news information (both U.S. and international) is disseminated throughout the industry through market news reports published by the NMFS.

In other countries, public financial assistance often takes the forms of state ownership of shrimp hatcheries, low-cost leasing of Government-owned land for shrimp aquaculture, and special tax provisions for producers and exporters. For example, in Panama the Government is supporting the development of shrimp hatcheries through financial assistance and research and development; in Indonesia as many as 100 Government-owned shrimp hatcheries have been built or are at various stages of completion. In Ecuador, Peru, and Brazil, the Government has financed, or arranged private financing for aquaculture facilities; such assistance has included small investment credit loans and working capital loans. Also in Ecuador, shrimp exporters benefit from a 20 percent export subsidy and the recent reduction of a quota specifying the percentage (formerly 20 percent and now 2.4 percent) of the industry's output that must be marketed domestically.

In general, public assistance to the shrimp industries of competing countries appears designed to stimulate new production (and exports) through the development and expansion of aquaculture. In many countries, this is a less expensive and more readily feasible way to develop the industry than support of the ocean fisheries (which in many instances may be fished to capacity already). According to the projections of one study <sup>1/</sup>, these policies seem likely to succeed as world production of aquaculture produced shrimp, which is concentrated in Latin and South America and in Asia, is projected to increase two-fold by 1990 over 1982 production levels. With large and potentially increasing shrimp markets in North America, Japan, and Western Europe, these countries' policies to develop their shrimp industries are attractive as a means of expanding exports of a high-value commodity.

In the United States, Government assistance to the Gulf and South Atlantic region shrimp industry does not appear to have the same intent--that of industry development and expansion--as in other countries. The resource is essentially in fixed supply, and expanding the fishing fleets is not going to create new production. In fact, current programs like NMFS's Fishing Vessel Obligation Guarantee Program, which guarantees loans for vessel acquisition, may have the effect of depressing incomes on a per vessel basis if new entry into the industry is the result of the program. That, according to a NMFS official, is not its intent, but the time for encouraging new entry into the shrimp fisheries has passed. <sup>2/</sup> Other programs, such as research and development support or market news reports, benefit the industry by making information about new technology and market developments more accessible.

In general as concerns the current and future competitive well-being of the shrimp industry, it would appear that Government assistance favors the industries of competing nations rather than the U.S. industry, largely because of exogenous factors, such as resource availability and environmental

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<sup>1/</sup> The Outlook for Salmon and Shrimp Aquaculture Products in World Markets, op. cit.

<sup>2/</sup> T.S. Allen, Chief, Financial Services Branch, National Marine Fisheries Service, Southeast Region, in phone conversation with Commission staff, June 6, 1985.

conditions. Government policies in other countries are clearly designed to stimulate growth of the industry at relatively low cost and will likely succeed in promoting production and exports to such markets as the United States. Public financial and other assistance to the U.S. fishing industry, on the other hand, is not tailored to the peculiar needs of the shrimp industry and so benefits that segment of the nation's fishing industry less than other segments.

### Exchange Rates

Exchange rates have historically played an important role in world movements of shrimp supplies. Industry sources report that relative exchange rates between a country's currency and the U.S. dollar and the Japanese yen may have a definite influence over export shipments. Although domestic supplies and demand, along with preferences for species and size counts, play the predominate role in marketing decisions, the exchange rate is also a factor.

Because the United States and Japan are the largest markets for shrimp, exchange rate movements can change the decisions of exporters concerning which of these markets he may want to concentrate in. Industry sources report that Mexico is a good example of this phenomenon. In 1980-83, when the U.S. dollar began to appreciate at a much faster rate vis-a-vis the Mexican peso, shrimp exports that historically would have been sent to Japanese markets were instead diverted to the United States.

Also, since shrimp is a relatively high-value commodity, some countries have begun exporting shrimp to gain much needed hard currency. As the dollar has appreciated vis-a-vis most other currencies, a number of smaller nations increased their shrimp exports to the United States. Emilio Parodi, President of the Chamber of Shrimp Producers of Ecuador, reported to the Commission that shrimp has become a major source of foreign exchange earning for Ecuador. <sup>1/</sup> Ecuadorian foreign exchange earnings from shrimp more than doubled from 1981-84.

Tables 77 and 78 present the nominal and real (deflated by the respective countries' producer price index) exchange rate indexes of the major shrimp exporting nations currencies vis-a-vis the U.S. dollar.

### Brazil

In nominal terms, the value of the Brazilian cruzeiro plunged 97.4 percent from the beginning of 1981 through October-December, 1984. In the shorter run, the nominal decrease was nearly 88 percent from January-March 1983 to October-December 1984. However, because of extremely high inflation rates in Brazil (sometimes ranging up to 200 percent per year), the real exchange rate effect is much less pronounced. In real terms, the cruzeiro fell 27.5 percent from January-March 1981 to April-June 1983. Since that time, the real rate actually increased by 12 percent through October-December 1984.

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<sup>1/</sup> Testimony of Mr. Parodi, transcript of hearing, p. 238.

Table 77.--Nominal quarterly exchange rates vis-a-vis the U.S. dollar: 10 largest countries exporting shrimp to the United States

Period	Brazil	Ecuador	El Salvador	India	Mexico	Norway	Panama	Peru	Thai-	Vene-
	:	:	:	:	:	:	:	:	land :	zuela
1981:										
Jan.-Mar----	100.0	100.0	1/	100.0	100.0	100.0	1/	100.0	100.0	100.0
Apr.-June---	84.4	100.0	1/	96.5	97.5	94.1	1/	89.5	99.0	100.0
July-Sept---	71.0	100.0	1/	90.3	94.8	87.9	1/	84.0	91.0	100.0
Oct.-Dec----	59.9	100.0	1/	88.9	91.4	91.6	1/	76.2	89.0	100.0
1982:										
Jan.-Mar----	51.2	100.0	1/	88.2	68.5	89.9	1/	67.7	89.9	100.0
Apr.-June---	44.2	86.8	1/	86.7	50.2	88.0	1/	58.3	89.9	100.0
July-Sept---	37.3	75.3	1/	84.8	33.0	80.5	1/	49.7	89.9	100.0
Oct.-Dec----	30.7	75.3	1/	83.6	32.1	74.9	1/	41.3	89.9	100.0
1983:										
Jan.-Mar----	21.7	73.7	1/	82.0	23.0	75.2	1/	33.3	89.9	100.0
Apr.-June---	14.9	57.5	1/	81.1	20.6	74.6	1/	25.9	89.9	99.9
July-Sept---	11.1	53.0	1/	79.9	18.6	72.3	1/	19.8	89.9	99.8
Oct.-Dec----	8.2	48.3	1/	78.4	17.0	71.3	1/	16.9	89.9	99.8
1984:										
Jan.-Mar----	6.2	44.3	1/	75.5	15.7	69.6	1/	14.9	89.9	77.1
Apr.-June---	4.7	41.1	1/	73.9	14.5	69.1	1/	12.1	89.9	57.2
July-Sept---	3.5	38.1	1/	70.1	13.5	63.9	1/	9.9	89.9	57.2
Oct.-Dec----	2.6	37.2	1/	66.7	12.7	60.5	1/	7.8	80.9	57.2

1/ Data not available.

Source: Compiled from statistics of the International Monetary Fund.



Table 78.--Real quarterly exchange rates vis-a-vis the U.S. dollar: 10 largest countries exporting shrimp to the United States

Period	Brazil	Ecuador	El Salvador	India	Mexico	Norway	Panama	Peru	Thailand	Venezuela
1981:										
Jan.-Mar----	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Apr.-June----	98.8	99.1	104.3	98.1	101.3	93.8	98.7	100.1	98.8	102.6
July-Sept----	95.4	104.4	104.7	94.2	102.7	89.4	99.2	103.7	91.2	106.4
Oct.-Dec----	93.6	105.4	109.3	91.2	105.3	93.3	101.1	105.2	90.9	106.0
1982:										
Jan.-Mar----	93.3	110.0	109.0	88.8	87.3	93.1	103.1	104.8	89.6	108.9
Apr.-June----	96.8	98.5	110.6	87.6	73.9	91.1	106.6	102.8	89.2	110.0
July-Sept----	96.3	91.5	110.7	89.0	57.6	85.1	106.1	99.1	88.4	111.4
Oct.-Dec----	91.5	93.7	112.0	86.6	65.6	81.0	106.9	96.0	89.2	111.3
1983:										
Jan.-Mar----	80.5	86.8	111.7	85.8	61.0	82.0	106.5	94.5	89.2	113.8
Apr.-June----	72.8	75.4	115.3	88.1	65.9	81.1	107.7	91.7	89.6	116.2
July-Sept----	77.0	74.1	118.1	89.2	66.7	79.7	106.7	87.0	90.4	118.6
Oct.-Dec----	79.5	68.7	120.5	87.9	67.3	79.5	106.4	87.0	90.0	120.0
1984:										
Jan.-Mar----	78.8	65.3	122.0	85.0	73.0	78.5	102.8	92.0	86.3	95.1
Apr.-June----	78.3	62.1	123.3	84.0	77.7	77.5	104.6	88.9	84.8	73.8
July-Sept----	79.2	1/	1/	83.5	78.8	73.5	1/	86.1	84.7	78.6
Oct.-Dec----	81.3	1/	1/	78.8	1/	70.6	1/	81.7	75.9	1/

1/ Data not available.

Source: Compiled from statistics of the International Monetary Fund.

Ecuador

During 1981 and for January-March 1982, the Ecuador sucre was fixed at 25 per U.S. dollar; however, since April-June 1982 successive devaluations have occurred, causing the nominal rate to drop 61.9 percent from April-June 1982 to July-September 1984. In real terms, the sucre declined 37.6 percent from January-March 1981 to April-June 1984. This drop in the real exchange rate for the Ecuador sucre was the largest decline for any of the 10 currencies examined.

El Salvador

The El Salvador colon has been officially fixed at a rate of 2.5 per U.S. dollar throughout the subject period. However, because of a higher inflation rate relative to the U.S. dollar, the real value of the colon increased by 23.3 percent from January-March 1981 to April-June 1984.

India

The Indian rupee decreased in nominal terms by 33.3 percent from January-March 1981 through October-December, 1984. Because of an inflation rate that rose faster than the inflation rate in the United States, the real value of the rupee fell only 21.2 percent in the same period.

Mexico

The Mexican peso steadily decreased in nominal value by 87.3 percent from January-March 1981 through October-December, 1984. Varying inflation rates, however, have complicated the real exchange rate. During 1981 the real exchange rate increased by 5 percent before beginning a rapid decline of 45 percent from October-December 1981 through July-September 1982. The Mexican inflation rate then began to rapidly increase, causing a gradual 35 percent increase in the real rate from July-September 1982 through April-June 1984.

Norway

The Norwegian krone nominally declined by 39.5 percent from January-March 1981 through October-December 1984. When adjusted for differences in inflation, the real rate declined by 29.4 percent in the same period.

Panama

The Panamanian balboa was fixed at a rate of 1 to 1 with the U.S. dollar throughout the subject period. Because of a higher inflation rate relative to the United States, the value of the balboa increased by 4.6 percent from January-March 1981 through July-September 1984.

Peru

The nominal value of the Peruvian soles declined drastically by 92.2 percent from January-March 1981 to October-December, 1984. In real terms, because of a high inflation rate, the real value of the soles increased by 4.8 percent during 1981. Although inflation rates remained high, massive devaluations have put downward pressure on the real exchange rate. From October-December 1981 to October-December 1984, the real value of the soles declined 22 percent. The decline in the Peruvian soles was the lowest of any of the free floating currencies examined.

Thailand

The Thailand baht depreciated by 10.1 percent during 1981 before being fixed at a rate of 23 per U.S. dollar in October-December 1981. The real value of the baht remained fairly stable throughout the subject period because of an inflation rate very similar to that of the United States. In October-December, 1984, the baht was further devalued to 25.5 per dollar, causing a 10 percent decline in the nominal rate and less than a 1-percent decline in the real rate.

Venezuela

The Venezuelan bolivares were fixed at 4.293 per U.S. dollar for 1981-82 and January-April 1983 before being devalued to 4.3 per dollar in May 1983. The rate was constant until February 1984 when it was devalued again to 7.5 per dollar. The last devaluation caused a 43 percent decline in the nominal value of the bolivar from October-December 1983 to October-December, 1984. Owing to a high inflation rate, the real exchange rate of the bolivar steadily increased by 20.0 percent from January-March 1981 to October-December 1983. However, the recent devaluation of the bolivar has caused a 39 percent decrease in the real exchange rate since October-December 1983.



**APPENDIX A**

**COPY OF LETTER TO CHAIRWOMAN STERN FROM AMBASSADOR WILLIAM E. BROCK, THE  
UNITED STATES TRADE REPRESENTATIVE, REQUESTING THE INVESTIGATION, AND  
COPY OF LETTER AMENDING THE REQUEST**

THE UNITED STATES TRADE REPRESENTATIVE OFFICE OF THE CHAIRWOMAN  
WASHINGTON U.S.T.R.  
20506

October 5, 1984

94 OCT 5 P2:17

The Honorable Paula Stern  
Chairwoman  
United States International Trade  
Commission  
701 E Street, N.W.  
Washington, D.C. 20436

Dear Madam Chairwoman:

Members of the U.S. Gulf and South Atlantic shrimp industry have brought to my attention a number of problems they are experiencing. They are concerned about the competitive factors affecting their industry, including strong competition from imports. In order to assess fully the nature and extent of these problems, more information is required concerning the economic, technological, and competitive conditions which the industry faces. To provide this information, I request, at the direction of the President and pursuant to Section 332 (g) of the Tariff Act of 1930, that the Commission conduct an investigation and report to me all significant competitive, technological, and economic factors which are affecting the performance of the U.S. Gulf and South Atlantic shrimp industry, including the harvesting, processing, and marketing sectors.

The Commission's investigation should examine the conditions of competition that have affected the U.S. Gulf and South Atlantic shrimp industry and the shrimp industries of the major foreign suppliers over the last 5 years. It should concentrate on the competitive position of imported shrimp in U.S. markets, the development of shrimp aquaculture in the United States and foreign countries, the development of surimi-based imitation-shrimp products in the United States and foreign countries, and trends in the consumption, distribution, and marketing of shrimp in the United States.

The variety of shrimp to be investigated should include warm water white, pink, and brown shrimp in the common product forms of fresh, chilled, frozen, and prepared or preserved. The Commission's report on this investigation should include to the maximum extent possible, information with respect to the following, broken down where appropriate by species and size of shrimp:

1. Industry. A profile should be provided of the U.S. shrimp industry, including:

- a. a description of the shrimp boat owners and operators, shore-based offloading facilities, and support-service industries;
- b. a description of the shrimp processing industry (including freezers, canners, breaders, and packing houses);
- c. a description of capacity utilization in production facilities in the U.S. shrimp industry, the relative profit and loss status of the various segments of the industry, and trends in employment levels of the various segments of the industry;
- d. an analysis of inventory levels and trends in the industry;
- e. historical levels and future trends of U.S. shrimp exports;
- f. a description of the U.S. shrimp market in terms of the chain of distribution from the shrimp processor to the ultimate consumer of shrimp, analysis of the degree of vertical and horizontal integration in the U.S. shrimp industry, and consideration of the relative concentration of U.S. production in the different segments of the U.S. shrimp industry.

2. Imports. The following aspects of the imported shrimp issue should be considered:

- a. trends in the ratio of U.S. imports to U.S. production (domestic landings, processed product production);
- b. trends in the ratio of U.S. imports to apparent U.S. consumption;
- c. the amount of imported shrimp, considered in quantity and value terms, both absolute and relative to domestic production, for the 1979-1984 period, broken down by countries of origin;

- d. the ports of entry of imported shrimp;
- e. the seasonality of imported shrimp, considered on a quarterly basis, by volume and value, by countries of origin;
- f. estimates of future levels of shrimp imports for the next 5 years (1985-1989), by country of origin and type, taking into account changes in consumption levels and taste preferences in major consuming countries, and changes in production technologies and projected increases in aquaculture investment in foreign countries.
- g. a comparison of prices and quantity of U.S. and imported shrimp;

3. Conditions of Competition. Factors of competition affecting the U.S. and major foreign suppliers in the U.S. market should be considered, including:

- a. a discussion of the levels and trends in U.S. consumption of shrimp, including consideration of factors influencing demand (such as income, prices, different types and sizes of shrimp, competing products, and consumer preferences).
- b. a discussion of the U.S. production and supply picture, including:
  - 1. determinants and the relative elasticity of supply in the United States as a whole, and by region.
  - 2. factors which have affected harvesting and processing in the U.S. shrimp industry, including:
    - a. recessionary conditions;
    - b. the fixed and variable costs of production;



- c. the availability of capital and sources of credit for fishermen;
  - d. seasonal variations;
  - e. prices.
- c. a comparison of transportation costs for domestic and imported shrimp to major U.S. market areas;
  - d. a comparison of marketing practices of the U.S. and foreign suppliers;
  - e. a comparison of the costs of production of shrimp in the U.S. and major foreign supplying countries (including labor, fuel, and major cost items);
  - f. consideration of assistance provided by the governments of foreign shrimp exporting countries for the benefit of local shrimp industries, including:
    - 1. assistance which might be provided by governments on:
      - a. diesel fuel;
      - b. transportation costs;
      - c. insurance;
      - d. guaranteed prices.
    - 2. import restraints such as tariffs, non-tariff barriers to trade, such as quotas, embargoes, or origin and labeling requirements, and sanitary regulations;
    - 3. limitations placed on U.S. access to certain foreign shrimp resources through restrictive resource management policies;
  - g. investments in production facilities and in research and development by U.S. and foreign producers.

In the course of its investigation, the Commission should hold public hearings at a location in the Gulf and South Atlantic region which would be convenient for industry representatives and other interested parties to present their views.

Any information or analysis the Commission might develop concerning actual or possible action the U.S. industry has or could take to adjust to import competition would also be appreciated.

The Commission should report the results of the investigation to the President as soon as possible, but no later than 6 months after receipt of this request. However, should approval of questionnaires delay the Commission's work for longer than 2 weeks, the submission of the report may be delayed correspondingly for up to an additional 2 months.

Thank you for your cooperation in and attention to this important matter.

Very truly yours,



WILLIAM E. BROCK

WEB:rdc

THE UNITED STATES TRADE REPRESENTATIVE  
WASHINGTON  
20506

February 15, 1985

The Honorable Paula Stern  
Chairwoman  
United States International Trade  
Commission  
701 E Street, N.W.  
Washington, D.C. 20436

Dear Madam Chairwoman:

On October 5, 1984, I requested at the direction of the President and pursuant to Section 332 (g) of the Tariff Act of 1930, that the Commission conduct an investigation and report to me all significant competitive, technological, and economic factors which are affecting the performance of the U.S. Gulf and South Atlantic shrimp industry, including the harvesting, processing, and marketing sectors. Since members of the shrimp industry are unable to provide certain information, they have requested that some changes be made in the level of detail covered in the original request.

Because these changes will not sacrifice or compromise the overall quality of the investigation, I request that the following changes be made in my October 5 request:

1. Reduce the scope of the investigation from last 5 years to 3 years;
2. Delete all references to the development of surimi-based imitation-shrimp products in the United States and foreign countries;
3. The second sentence in paragraph 3 on page 1 should end with the word "following";

-2-

4. Replace paragraph 3 on page 5 with -- "The Commission should report the results of the investigation to the President as soon possible, but no later than August 1, 1985."

Thank you for your cooperation in and attention to this matter.

Very truly yours,

*Signed*

WILLIAM E. BROCK

WEB:rrt

cc: Doug Newman, USITC ✓  
David Ingersoll, USITC  
Glen Delaney, Congressman Breaux's Office

**APPENDIX B**

**NOTICE OF INSTITUTION OF INVESTIGATION NO. 332-201, AND PRELIMINARY  
NOTICE OF HEARING, AND NOTICE OF AMENDMENT TO THE INVESTIGATION**

preliminary antidumping investigation No. 731-TA-206 (Preliminary).

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was given by posting copies of the notices in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register on October 11, 1984 (49 FR 39924). A public conference was held in Washington, DC, on October 22, 1984, and all persons who requested the opportunity were permitted to appear in person or by counsel.

The Commission transmitted its determination in this investigation to the Secretary of Commerce on November 13, 1984. The views of the Commission are contained in USITC Publication 1606 (November 1984), entitled "Investigation No. 731-TA-206 (Preliminary), Fabric and Expanded Neoprene Laminates from Japan."

By Order of the Commission.

Issued: November 13, 1984.

Kenneth R. Mason,

Secretary.

[FR Doc. 84-30519 Filed 11-20-84; 8:45 am]

BILLING CODE 7020-02-M

[Investigation No. 337-TA-179]

**Certain Spherical Roller Bearings and Components Thereof; Commission Decision not to Review Initial Determination of no Violation of Section 337 of the Tariff Act of 1930**

**AGENCY:** International Trade Commission.

**ACTION:** Nonreview of initial determination.

**SUMMARY:** Notice is hereby given that the Commission has determined not to review an initial determination (ID) that there is no violation of section 337 of the Tariff Act of 1930 in the above-captioned investigation based on a finding that the patent in controversy, U.S. Letters Patent 3,996,753 (753 patent) is invalid for failure to meet the requirements of 35 U.S.C. 112.

**FOR FURTHER INFORMATION CONTACT:** Frank J. Schuchat, Esq., Office of the General Counsel, U.S. International Trade Commission, telephone (202) 523-1826.

**SUPPLEMENTARY INFORMATION:** The authority for the Commission's action is contained in section 337 of the Tariff Act of 1930 (19 U.S.C. 1337) and in § 210.53-210.56 of the Commission's Rules of Practice and Procedure. (19 CFR 210.53-210.56).

The Commission instituted this investigation in response to a complaint filed by SKF Industries Inc. (SKF), King of Prussia, Pennsylvania, seeking an investigation to determine whether there is a violation of section 337 in the importation of certain spherical roller bearings and components thereof, into the United States, or in their sale, by reason of alleged infringement of claims 1-4, 11, 12, 16, 17, 19-23, 25, 26, 28, or 29 of the '753 patent. Complainant SKF alleged that the effect or tendency of the unfair acts was to destroy or substantially injure an industry, efficiently and economically operated, in the United States. SKF requested issuance of a permanent exclusion order and a permanent cease and desist order.

Two firms were named as respondents: (1) FAG Bearings Corporation, Stamford, Connecticut, and (2) FAG Kugelfischer George Schaefer & Co., Schweinfurt, Federal Republic of Germany. A notice of investigation was issued and published in the Federal Register of January 11, 1984. (49 FR 1433-34).

A hearing was held before the presiding officer from July 31, 1984 to August 10, 1984. Appearances were made by counsel for SKF and counsel for respondents and by the Commission investigative attorney.

On October 12, 1984, the presiding officer issued an ID that there is no violation of section 337 in the importation or sale of the spherical roller bearings under investigation. Specifically, the presiding officer found the '753 patent is invalid under: 35 U.S.C. 112.

Complainant SKF filed a petition for review of the presiding officer's determination on October 2, 1984. On that same date, respondents filed a contingent petition for review. No other petitions or agency comments were received.

Copies of the public version of the ID and all other nonconfidential documents in the record of this investigation are available for public inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 701 E Street NW., Washington, DC 20436, telephone (202) 523-0161.

By Order of the Commission.

Issued by: November 15, 1984.

Kenneth R. Mason,

Secretary.

[FR Doc. 84-30525 Filed 11-20-84; 8:45 am]

BILLING CODE 7020-02-M

[332-201]

**Conditions of Competition Affecting the U.S. Gulf and South Atlantic Shrimp Industry**

**AGENCY:** International Trade Commission.

**ACTION:** At the request of the United States Trade Representative (USTR), the Commission has instituted investigation No. 332-201 under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), for the purpose of gathering and presenting information on the competitive and economic factors affecting the performance of the U.S. Gulf and South Atlantic shrimp industry.

**EFFECTIVE DATE:** November 8, 1984.

**FOR FURTHER INFORMATION CONTACT:** Mr. Doug Newman, Mr. Roger Corey, or Ms. Rose Steller, Agriculture, Fisheries, and Forest Products Division, U.S. International Trade Commission, Washington, D.C. 20436, telephone 202-724-0087, 202-724-1758, or 202-724-2882, respectively.

**Background**

The USTR requested on October 5, 1984, that the Commission investigate the competitive conditions affecting the performance of the U.S. Gulf and South Atlantic shrimp industry. The USTR specified that the investigation cover warm water white, pink, and brown shrimp in the common product forms of fresh, chilled, frozen, and prepared or preserved. To the extent possible, the study will provide information on the structure of the U.S. Gulf and South Atlantic shrimp industry and markets; a comparison of the costs of production of shrimp in the United States and major foreign supplying countries; a comparison of transportation costs for domestic and imported shrimp to major U.S. markets; a comparison of marketing practices of U.S. and foreign suppliers; levels and trends of U.S. shrimp consumption, production, and trade; shrimp prices; and U.S. and foreign government involvement in shrimp industries; and barriers to trade in shrimp. Further, the Commission has been asked to examine the development of shrimp aquaculture and surimi-based imitation-shrimp products in the United States and foreign countries.

**Public Hearing**

A public hearing in connection with the investigation will be held beginning on March 21, 1985, in New Orleans, LA at a time and place to be announced. All interested persons shall have the right to appear by counsel or in person, to present information and to be heard.

Requests to appear at the public hearing should be filed with the Secretary, U.S. International Trade Commission, 701 E Street NW., Washington, D.C. 20436, not later than noon, March 14, 1985.

**Written Submissions**

In lieu-of, or in addition to, appearances at the public hearing, interested persons are invited to submit written statements concerning the investigation. Commercial or financial information which a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of § 201.6 of the Commission's rules or practice and procedure (19 CFR 201.6). All written submissions, except for confidential business information, will be made available for inspection by interested persons. To be ensured of consideration by the Commission, written statements should be submitted at the earliest practicable date, but not later than March 7, 1985. All submissions should be addressed to the Secretary at the Commission's office in Washington, D.C.

By Order of the Commission.  
Issued: November 13, 1984.

**Kenneth R. Mason,**  
*Secretary.*

[FR Doc. 84-30518 Filed 11-20-84; 8:45 am]  
BILLING CODE 7020-02-M

[Investigation No. 731-TA-205  
(Preliminary)]

**Carbon Steel Wire Rod From the German Democratic Republic**

**Determination**

On the basis of the record<sup>1</sup> developed in the subject investigation, the Commission determines, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured<sup>2</sup> by reason of imports from the German Democratic Republic of carbon steel wire rod, provided for in item 607.17 of

<sup>1</sup> The record is defined in § 207.2(i) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(i)).

<sup>2</sup> Vice Chairman Liebeler and Commissioner Lodwick determine that there is a reasonable indication that an industry in the United States is threatened with material injury by reason of the subject imports.

the Tariff Schedules of the United States, which are alleged to be sold in the United States at less than fair value (LTFV).

**Background**

On September 26, 1984, a petition was filed with the Commission and the Department of Commerce by counsel on behalf of Atlantic Steel Co., Continental Steel Co., Georgetown Steel Corp., North Star Steel Co.-Texas, and Raritan River Steel Co., alleging that imports of carbon steel wire rod from the German Democratic Republic are being sold at LTFV. Accordingly, effective September 26, 1984, the Commission instituted a preliminary antidumping investigation under section 733(a) of the Tariff Act of 1930.

Notice of the institution of the Commission's investigation and of a conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register on October 3, 1984 (49 FR 39113). The conference was held in Washington, DC, on October 19, 1984, and all persons who requested the opportunity were permitted to appear in person or by counsel.

The Commission transmitted its report on this investigation to the Secretary of Commerce on September 13, 1984. A public version of the Commission's report, Carbon Steel Wire Rod from the German Democratic Republic (investigation No. 731-TA-205 (Preliminary), USITC Publication 1607, November 1984) contains the views of the Commission and information developed during the investigation.

By order of the Commission.  
Issued: November 13, 1984.

**Kenneth R. Mason,**  
*Secretary.*

[FR Doc. 84-30520 Filed 11-20-84; 8:45 am]  
BILLING CODE 7020-02-M

[Investigation No. 337-TA-174]

**Certain Woodworking Machines; Receipt of Initial Determination Terminating Respondent on the Basis of Consent Order Agreement**

**AGENCY:** International Trade Commission.

**ACTION:** Notice is hereby given that the Commission has received an initial

determination from the presiding officer in the above-captioned investigation terminating the following respondent on the basis of a consent order agreement: C.O.M.B. Company.

**SUPPLEMENTARY INFORMATION:** This investigation is being conducted pursuant to section 337 of the Tariff Act of 1930 (19 U.S.C. 1337). Under the Commission's rules, the presiding officer's initial determination will become the determination of the Commission thirty (30) days after the date of its service upon the parties, unless the Commission orders review of the initial determination. The initial determination in this matter was served upon the parties on November 13, 1984.

Copies of the initial determination, the consent order agreement, and all other nonconfidential documents filed in connection with this investigation are available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 701 E Street NW., Washington, D.C. 20436, telephone 202-523-0161.

**Written Comments**

Interested persons may file written comments with the Commission concerning termination of the aforementioned respondent. The original and 14 copies of all such comments must be filed with the Secretary to the Commission, 701 E Street, NW., Washington, D.C. 20436, no later than 10 days after publication of this notice in the Federal Register. Any person desiring to submit a document (or portion thereof) to the Commission in confidence must request confidential treatment. Such requests should be directed to the Secretary to the Commission and must include a full statement of the reasons why confidential treatment should be granted. The Commission will either accept the submission in confidence or return it.

**FOR FURTHER INFORMATION CONTACT:** Ruby J. Dionne, Office of the Secretary, U.S. International Trade Commission, telephone 202-523-0176.

By Order of the Commission.  
Issued: November 13, 1984.

**Kenneth R. Mason,**  
*Secretary.*

[FR Doc. 84-30518 Filed 11-20-84; 8:45 am]  
BILLING CODE 7020-02-M

Issued: February 15, 1985.

Kenneth R. Mason,

Secretary.

[FR Doc. 85-4290 Filed 2-20-85; 8:45 am]

BILLING CODE 7020-02-M

[332-201]

**Conditions of Competition Affecting the U.S. Gulf and South Atlantic Shrimp Industry; Hearing**

**AGENCY:** United States International Trade Commission.

**ACTION:** Time and place of public hearing.

**SUMMARY:** Notice is hereby given that the public hearing in this matter will be held beginning on Thursday, March 21, 1985, in New Orleans, Louisiana, in the Queen Ann room of the Monte Leone Hotel, 214 Royal Street, at 10:00 a.m. Notice of the investigation and hearing was published in the Federal Register of November 21, 1984 (49 FR 45936).

By order of the Commission.

Issued: February 15, 1985.

Kenneth R. Mason,

Secretary.

[FR Doc. 85-4282 Filed 2-20-85; 8:45 am]

BILLING CODE 7020-02-M

[Investigation No. 731-TA-201 (Final)]

**Egg Filler Flats From Canada**

**AGENCY:** United States International Trade Commission.

**ACTION:** Institution of a final antidumping investigation and scheduling of a hearing to be held in connection with the investigation.

**SUMMARY:** The Commission hereby gives notice of the institution of final antidumping investigation No. 731-TA-201 (Final) under section 735(b) of the Tariff Act of 1930 (19 U.S.C. 1673d(b)) to determine whether an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from Canada of egg filler flats, provided for in item 256.70 of the Tariff Schedules of the United States, which have been found by the Department of Commerce, in a preliminary determination, to be sold in the United States at less than fair value (LTFV). Unless the investigation is extended, Commerce will make its final LTFV determination on or before March 26, 1985, and the Commission will make its final injury determination by May 15, 1985 (see sections 735(a) and 735(b) of the act (19 U.S.C. 1673(a) and 1673d(b))).

For further information concerning the conduct of this investigation, hearing procedures, and rules of general application, consult the Commission's Rules of Practice and Procedure, Part 207, Subparts A and C (19 CFR Part 207), and Part 201, Subparts A through E (19 CFR Part 201).

**EFFECTIVE DATE:** January 16, 1985.

**FOR FURTHER INFORMATION CONTACT:** Larry Reavis (202-523-0296), Office of Investigations, U.S. International Trade Commission, 701 E Street NW., Washington, DC 20436.

**SUPPLEMENTARY INFORMATION:**

**Background**

This investigation is being instituted as a result of an affirmative preliminary determination by the Department of Commerce that imports of egg filler flats from Canada are being sold in the United States at less than fair value within the meaning of section 731 of the act (19 U.S.C. 1673). The investigation was requested in a petition filed on August 3, 1985, by Keyes Fiber Co., Stamford, CT, and the Packaging Corporation of America, Evanston, IL. In response to that petition the Commission conducted a preliminary antidumping investigation and, on the basis of information developed during the course of that investigation, determined that there was a reasonable indication that an industry in the United States was materially injured by reason of imports of the subject merchandise (49 FR 37857, September 26, 1985).

**Participation in the Investigation**

Persons wishing to participate in this investigation as parties must file an entry of appearance with the Secretary to the Commission, as provided in § 201.11 of the Commission's Rules of Practice and Procedure (19 CFR 201.11), not later than twenty-one (21) days after the publication of this notice in the Federal Register. Any entry of appearance filed after this date will be referred to the Chairwoman, who will determine whether to accept the late entry for good cause shown by the person desiring to file the entry.

**Service List**

Pursuant to § 201.11(d) of the Commission's rules (19 CFR 201.11(d)), the Secretary will prepare a service list containing the names and addresses of all persons, or their representatives, who are parties to this investigation upon the expiration of the period for filing entries of appearance. In accordance with § 201.16(c) of the rules (19 CFR 201.16(c)), each document filed

by a party to the investigation must be served on all other parties to the investigation (as identified by the service list), and a certificate of service must accompany the document. The Secretary will not accept a document for filing without a certificate of service.

**Staff Report**

A public version of the prehearing staff report in this investigation will be placed in the public record on April 5, 1985, pursuant to § 207.21 of the Commission's rules (19 CFR 207.21).

**Hearing**

The Commission will hold a hearing in connection with this investigation beginning at 10:00 a.m. on April 19, 1985, at the U.S. International Trade Commission Building, 701 E Street NW., Washington, DC. Requests to appear at the hearing should be filed in writing with the Secretary to the Commission not later than the close of business (5:15 p.m.) on April 3, 1985. All persons desiring to appear at the hearing and make oral presentations should file prehearing briefs and attend a prehearing conference to be held at 10:00 a.m. on April 10, 1985, in room 117 of the U.S. International Trade Commission Building. The deadline for filing prehearing briefs is April 15, 1985.

Testimony at the public hearing is governed by § 207.23 of the Commission's rules (19 CFR 207.23). This rule requires that testimony be limited to a nonconfidential summary and analysis of material contained in prehearing briefs and to information not available at the time the prehearing brief was submitted. Any written materials submitted at the hearing must be filed in accordance with the procedures described below and any confidential materials must be submitted at least three (3) working days prior to the hearing (see § 201.6(b)(2) of the Commission's rules (19 CFR 201.6(b)(2), as amended by 49 FR 32569 August 15, 1984)).

**Written Submissions**

All legal arguments, economic analyses, and factual materials relevant to the public hearing should be included in prehearing briefs in accordance with § 207.22 of the Commission's rules (19 CFR 207.22). Posthearing briefs must conform with the provisions of § 207.24 (19 CFR 207.24) and must be submitted not later than the close of business on April 26, 1985. In addition, any person who has not entered an appearance as a party to the investigation may submit a written statement of information



1985. The views of the Commission are contained in USITC Publication 1656 (March 1985), entitled "Potassium Chloride From the U.S.S.R.: Determination of the Commission in Investigation No. 731-TA-187 (Final) Under the Tariff Act of 1930. Together With the Information Obtained in the Investigation."

Issued: March 11, 1985.

By order of the Commission.

Kenneth R. Mason,  
Secretary.

[FR Doc. 85-6682 Filed 3-19-85; 8:45 am]

BILLING CODE 7020-02-M

[Investigation No. 731-TA-239  
(Preliminary)]

#### Rock Salt From Canada

##### Determination

On the basis of the record<sup>1</sup> developed in the subject investigation, the Commission determines, pursuant to section 733(a) of the Tariff Act of 1930 (19 U.S.C. 1673b(a)), that there is a reasonable indication that an industry in the United States is materially injured, or threatened with material injury, by reason of imports from Canada of rock salt, provided for in items 420.94 and 420.96 of the Tariff Schedules of the United States, which are alleged to be sold in the United States at less than fair value (LTFV).<sup>2</sup>

##### Background

On January 28, 1985, counsel for the International Salt Co. filed a petition with the U.S. International Trade Commission and the U.S. Department of Commerce alleging that imports of rock salt from Canada are being sold in the United States at LTFV and that such imports are causing material injury, or threatening to cause material injury, to the domestic industry producing such merchandise. Accordingly, effective January 28, 1985, the Commission instituted a preliminary antidumping investigation under section 733(a) of the Tariff Act of 1930 to determine whether there is a reasonable indication that an industry in the United States is materially injured, or is threatened with material injury, or the establishment of an industry in the United States is

materially retarded, by reason of imports of such merchandise.

Notice of the institution of the Commission's investigation and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the Federal Register of February 6, 1985 (50 FR 5138). The conference was held in Washington, DC, on February 19, 1985, and all persons who requested the opportunity were permitted to appear in person or by counsel.

The Commission transmitted its report on the investigation to the Secretary of Commerce on March 14, 1985. A public version of the Commission's report, *Rock Salt from Canada* (investigation No. 731-TA-239 (Preliminary), USITC Publication 1658, 1985), contains the views of the Commission and information developed during the investigation.

Issued: March 14, 1985.

By order of the Commission.

Kenneth R. Mason,  
Secretary.

[FR Doc. 85-6679 Filed 3-19-85; 8:45 am]

BILLING CODE 7020-02-M

[1332-201]

#### Conditions of Competition Affecting the U.S. Gulf and South Atlantic Shrimp Industry

**AGENCY:** International Trade Commission.

**ACTION:** Amendment of scope of investigation and scheduling of date for reporting results of investigation.

**EFFECTIVE DATE:** March 7, 1985.

**FOR FURTHER INFORMATION CONTACT:** Mr. Doug Newman, Mr. Roger Corey, or Ms. Rose Steller, Agriculture, Fisheries, and Forest Products Division, U.S. International Trade Commission, Washington, D.C. 20436, telephone 202-724-0087, 202-724-1759, or 202-724-2862, respectively.

##### SUPPLEMENTARY INFORMATION:

##### Background

The USTR requested on October 5, 1984, that the Commission investigate the competitive conditions affecting the performance of the U.S. Gulf and South Atlantic shrimp industry and report on conditions during the past 5 years. Notice of that investigation was published in the Federal Register of November 21, 1984 (49 FR 45936). On February 15, 1985, the USTR requested

that certain changes be made in the scope of the investigation and timing of its completion in views of difficulties which members of the industry are having in providing certain information. In accord with that request, the Commission has made the following changes in the scope and timing of the investigation:

1. Reduction of the period of time examined from the last 5 years to the last 3 years;
2. Deletion of all references to the development of surimi-based imitation-shrimp products in the United States and foreign countries;
3. Elimination of the requirement for reporting data by species and size count;
4. Transmittal of the Commission's report on the results of the investigation to the President as soon as possible, but no later than August 1, 1985, rather than by June 5, 1985, as originally requested.

Issued: March 11, 1985.

By order of the Commission.

Kenneth R. Mason,  
Secretary.

[FR Doc. 85-6683 Filed 3-19-85; 8:45 am]

BILLING CODE 7020-02-M

#### INTERSTATE COMMERCE COMMISSION

[Finance Docket No. 30632]

#### Baltimore and Ohio Railroad Co.; Trackage Rights; Exemption

On March 1, 1985, The Baltimore and Ohio Railroad Company (B&O) filed a notice of exemption for trackage rights over a line of track of Consolidated Rail Corporation (Conrail) between East Gravel (milepost 1.7) and Wooster, OH (milepost 136.4), a distance of 134.7 miles.

B&O presently operates over Conrail's line between Warwick and Wooster, OH, however, Conrail now proposes to abandon and salvage that portion of its line of railroad between Warwick and Orrville, OH which would prevent B&O from continuing to serve its shippers at Wooster unless over the substitute trackage route shown above. The proposed trackage rights will enable B&O to continue serving its shippers in Wooster, OH and at the same time enable Conrail to further rationalize its system. The trackage rights are restricted to bridge traffic only.

This joint project involves the relocation of a line or railroad which does not disrupt service to shippers and falls within the class of transactions identified at 49 CFR 1180.2(d)(5) which the Commission has found to be exempt

<sup>1</sup> The record is defined in § 207.2(i) of the Commission's Rules of Practice and Procedure (19 CFR 207.2(i)).

<sup>2</sup> Vice Chairman Liebeler determines that there is a reasonable indication that an industry in the United States is materially injured by reason of imports from Canada of rock salt, provided for in items 420.94 and 420.96 of the Tariff Schedules of the United States, which are alleged to be sold in the United States at less than fair value.



**APPENDIX C**  
**WITNESSES AT THE HEARING**

## TENTATIVE CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject : Conditions of Competition Affecting  
the U.S. Gulf and South Atlantic  
Shrimp Industry

Inv. No. : 332-201

Date and time: March 21, 1985 - 10:00 a.m.

Sessions were held in the Queen Ann room of the Monteleone Hotel, in New Orleans, Louisiana.

Congressional appearance:

Honorable John B. Breaux, United States Representative, State of Louisiana, and Chairman, Subcommittee on Fisheries and Wild Life Conservation and the Environment

Domestic:

Concerned Shrimpers of Louisiana, Inc., Delcambre, Louisiana

Tee John Mialjevich

Raymond Couture

Joe Bruni

The Texas Shrimp Association, Austin, Texas

David Eymard, President

Julius Collins, Member

R. E. Clegg, Member

William Zimmerman, Member

Ralph Rayburn, Executive Director

Louisiana Shrimp Association, Dulac, Louisiana

Mrs. Thomas W. Steed, Cameron, Louisiana

Bobby Hession, Manager, Steed's Shrimp Company,  
Cameron, Louisiana

C. J. Kiffe, Shrimp Boat Captain/Owner

Charles H. Lyles, Executive Secretary

American Shrimp Processors Association, New Orleans, Louisiana

William D. Chauvin, Executive Director

Frank Tullos, Chairman of the Louisiana Seafood Marketing and  
Promotion Board and Frank's Riverside Seafood, Rive Ridge,  
Louisiana

International Management Services, Market and Project Development  
Worldwide, LaPlace, Louisiana

H. D. Seaton, Vice President and Vice-Chairman  
of the Louisiana District Export Council

Galloway & Greenberg--Counsel  
Washington, D.C.  
on behalf of

Southeastern Fisheries Association, Inc., Tallahassee,  
Florida

Eldon V.C. Greenberg--OF COUNSEL

International Seafood Traders, Metairie, Louisiana

Theodore H. Shepard, Consultant and Buyer

National Fisheries Institute, Washington, D.C.

Lee J. Weddig, Executive Vice President

- 3 -

James Rogers, Director of Government Affairs, National Restaurant Association

and

Jonathan Sleik, Vice President-Purchasing, Red Lobster Inns of America

East Bank Commercial Fisherman Association, New Orleans, Louisiana

Bill Dekemel, President

IMPORTERS:

Association of Seafood Importers, Inc., Fort Lee, New Jersey

Henry R. Branstetter, Consultant

McDermott, Will & Emery--Counsel  
Washington, D.C.  
on behalf of

Charles J. Peckham

John A. Hodges--OF COUNSEL

OTHER INTERESTED PARTIES:

Dr. Walter Keithly, Center for Wetland Resources, Coastal Fisheries Institute, Louisiana State University, Baton Rouge, Louisiana

Dr. Thomas D. McIlwain, Assistant Director for Fisheries, Research and Management, Gulf Coast Research Laboratory, Ocean Spring, Mississippi

APPENDIX D

EXPLANATION OF THE RATES OF DUTY APPLICABLE TO SHRIMP AND SELECTED PORTIONS  
OF THE TARIFF SCHEDULES OF THE UNITED STATES, ANNOTATED (1985)

Explanation of the rates of duty applicable to shrimp

The rates of duty in column 1 are most-favored-nation (MFN) rates and are applicable to imported products from all countries except those Communist countries and areas enumerated in general headnote 3(f) of the TSUSA. <sup>1/</sup> However, such rates would not apply to products of developing countries which are granted preferential tariff treatment under the Generalized System of Preferences (GSP) or under the "LDDC" column.

The rates of duty in the "LDDC" column are preferential rates (reflecting the full U.S. MTN concession rate for a particular item without staging of duty reductions) and are applicable to products of the least developed developing countries designated in general headnote 3(d) of the TSUSA which are not granted duty-free treatment under the GSP. If no rate of duty is provided in the "LDDC" column for a particular item, the column 1 rate applies.

The rates of duty in column 2 apply to imported products from those Communist countries and areas enumerated in general headnote 3(f) of the TSUSA.

The GSP is a program of nonreciprocal tariff preferences granted by the United States to developing countries to aid their economic development by encouraging greater diversification and expansion of their production and exports. The GSP, implemented by Executive Order No. 11888 of November 24, 1975, applies to merchandise imported on or after January 1, 1976, and is scheduled to remain in effect until January 4, 1985. It provides for duty-free treatment of eligible articles imported directly from designated beneficiary developing countries. Eligible articles are identified in the column entitled "GSP" with an "A" or "A\*." The designation "A" means that all beneficiary developing countries are eligible for the GSP, and "A\*" indicates that certain developing countries, specified in general headnote 3(c) of the TSUSA, are not eligible.

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<sup>1/</sup> The only Communist countries currently eligible for MFN treatment are the People's Republic of China, Hungary, Romania, and Yugoslavia.



## TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED (1985)

Page 1-20

SCHEDULE 1. - ANIMAL AND VEGETABLE PRODUCTS  
Part 3. - Fish and Shellfish1 - 3 - D, E  
113.30 - 114.30

G S P	Item	Stat. Suf- fix	Articles	Units of Quantity	Rates of Duty		
					1	LDDC	2
			Fish roe, fresh, chilled, frozen, prepared, or preserved:				
A	113.30	00	Sturgeon roe.....	Lb.....	15% ad val.		30% ad val.
	113.35	00	Other fish roe:				
			Boiled and in airtight containers.....	Lb.....	2.5% ad val.		30% ad val.
A	113.40	00	Other.....	Lb.....	0.5c per lb.	Free	20c per lb.
			Fish, prepared or preserved, not specially provided for:				
A	113.50	00	In oil.....	Lb.....	6.9% ad val.	5% ad val.	30% ad val.
			Not in oil:				
			In bulk or in immediate containers weighing with their contents over 15 pounds each:				
	113.56		Tuna.....		0.5c per lb.		1.25c per lb.
		20	Albacore.....	Lb.			
		65	Other.....	Lb.			
	113.58		Other.....		Free		1.25c per lb.
		20	Mincd.....	Lb.			
		40	Other.....	Lb.			
A	113.60		Other.....		6% ad val.		25% ad val.
		20	Mincd.....	Lb.			
		40	Other.....	Lb.			
			Subpart E. - Shellfish				
			Shellfish, fresh, chilled, frozen, prepared or preserved (including pastes and sauces):				
			Clams:				
			In airtight containers:				
	114.01	00	Razor clams ( <i>Siliqua patula</i> ).....	Lb.	3.5% ad val.		23% ad val.
A	114.04	00	Other:				
			Boiled clams, whether whole, minced, or chopped, and whether or not salted, but not otherwise prepared or preserved, in immediate containers the contents of which do not exceed 24 ounces gross weight.....	Lb.....	16.1% ad val.	14% ad val.	110% ad val.
A*	114.06	00	Other.....	Lb.....	8.8% ad val.	7% ad val.	35% ad val.
	114.10	00	Other.....	Lb.....	Free		Free
			Crabs:				
			Crabmeat:				
	114.15	00	Fresh, chilled, or frozen.....	Lb.....	7.5% ad val.		15% ad val.
			Prepared or preserved (including pastes and sauces):				
	114.20		In airtight containers.....		11% ad val.		22.5% ad val.
		20	Snow crab ( <i>Chionoecetes bairdi</i> , <i>C. opilio</i> , <i>C. tanneri</i> and <i>C. angulatus</i> ).....	Lb.			
		40	Other.....	Lb.			
A	114.25	00	Other.....	Lb.....	5.6% ad val.	5% ad val.	15% ad val.
	114.30	00	Other.....	Lb.....	Free		Free
			1/ Articles exported to the United States prior to July 1, 1980, must be appraised under the valuation standards provided for in sections 402 and 402a of the Tariff Act of 1930 in effect on June 30, 1980, and are subject to classification under the items of the Tariff Schedules in effect on that date.				
			Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).				

TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED (1985)

SCHEDULE 1. - ANIMAL AND VEGETABLE PRODUCTS  
Part 3. - Fish and Shellfish

C S P	Item	Stat. Suf- fix	Articles	Units of Quantity	Rates of duty		
					1	LDDC	2
			Shellfish, fresh, chilled, frozen, etc. (con.):				
			Oysters:				
			In airtight containers:				
	114.3-	00	Smoked.....	Lb.....	0.5% ad val.	Free	7.5% ad val.
	114.36	00	Other.....	Lb.....	4.7% ad val.		12.5% ad val.
	114.40		Other.....		Free		Free
		20	Seed oysters.....	bu.			
		40	Other.....	Lb.			
	114.45		Other shellfish.....		Free		Free
		10	Abalone.....	Lb.			
			Lobsters:				
		15	In airtight containers.....	Lb.			
			Other:				
		20	Live lobsters.....	Lb.			
		25	Rock lobster tails.....	Lb.			
		30	Other.....	Lb.			
		37	Scallops.....	Lb.			
			Shrimp:				
		45	Shell-on.....	Lb.			
			Peeled:				
		50	In airtight containers.....	Lb.			
			Other:				
			Not breaded:				
		57	Raw.....	Lb.			
		62	Other.....	Lb.			
		72	Breaded.....	Lb.			
		90	Other.....	Lb.			
			Shellfish juices in airtight containers:				
	114.50	00	Clam juice.....	Lb.....	8.5% ad val.		35% ad val.
A	114.55	00	Oyster juice.....	Lb.....	1.1% ad val.	Free	13% ad val.

Note: For explanation of the symbol "A" or "A\*" in the column entitled "CSP", see general headnote 3(c).

APPENDIX E

RATES OF DUTY APPLICABLE TO SHRIMP AND SELECTED PORTIONS OF THE CUSTOMS  
TARIFF SCHEDULE OF JAPAN

# 実行関税率表

CUSTOMS TARIFF SCHEDULES  
OF JAPAN

1983

日本関税協会発行

PUBLISHED BY

JAPAN TARIFF ASSOCIATION

No.	Stat. Code No.	IN I A I C I S 用	品名	Rate of Duty		Unit	Description
				General	GATT		
03.03			甲殻類及び軟体動物 (殻付かであるかどうかを問わないものとし、生きていないものにあつては、生鮮、冷蔵、冷凍、乾燥、塩水づけ又は塩漬のものに限る。) 並びに風に水漬した殻付の甲殻類				Crustaceans and molluscs, whether in shell or not, fresh (live or dead), chilled, frozen, salted, in brine or dried; crustaceans, in shell, simply boiled in water:
			1 えび				1 Shrimps, prawns and lobster:
			(1) 生きているもの及び生鮮、冷蔵又は冷凍のもの	(10%)	(4%) (3.2%) -3.4% *3.4%	4%	(1) Fresh (live or dead), chilled or frozen
111	4		--生きているもの----			KG	Live
			--生鮮、冷蔵又は冷凍のもの----				Fresh (dead), chilled or frozen
112	5		--いせえび----			KG	ise-ebi
119	5		--その他のもの----			KG	Other
120	9		(2) その他のもの	(15%)	(7.5%) (7.5%)	6%	(2) Other
			2 その他のもの				2 Other:
			(1) 生きているもの及び生鮮、冷蔵又は冷凍のもの	(10%)	(8%) (7.5%) -7.5%		(1) Fresh (live or dead), chilled or frozen
211	6		--かに----	10%		KG	Crabs
212	8		--いか----	10%	(7.5%) (6.9%) -6.9%	KG	Cuttle fish and squid
213	1		--たこ----	10%		KG	Octopus
214	2		--あわび----	10%		KG	Abalone
215	3		--はまぐり----			5%	Hard clam
216	4		--貝殻----	10%		KG	Adaptors of shellfish
219	8		--その他のもの----	10%		KG	Other
			(2) その他のもの	(15%)			(2) Other:
221	2		--いか----	15%		KG	Cuttle fish and squid
			--はまぐり				Hard clam:
222	3		--冷蔵又は塩水づけのもの			7.5%	Salted or in brine
223	4		--その他のもの----	15%		KG	Other
229	3		--その他のもの----	15%		KG	Other

(注) 03.03 食品衛生法

03.03-2(1)のうち軟体貝、貝殻及びいか (もんごういかを除く。) IQ  
03.03-2(2)のうち軟体貝、貝殻及びいか (もんごういかを除く。) IQ

(Note) 03.03 Food Sanitation Law

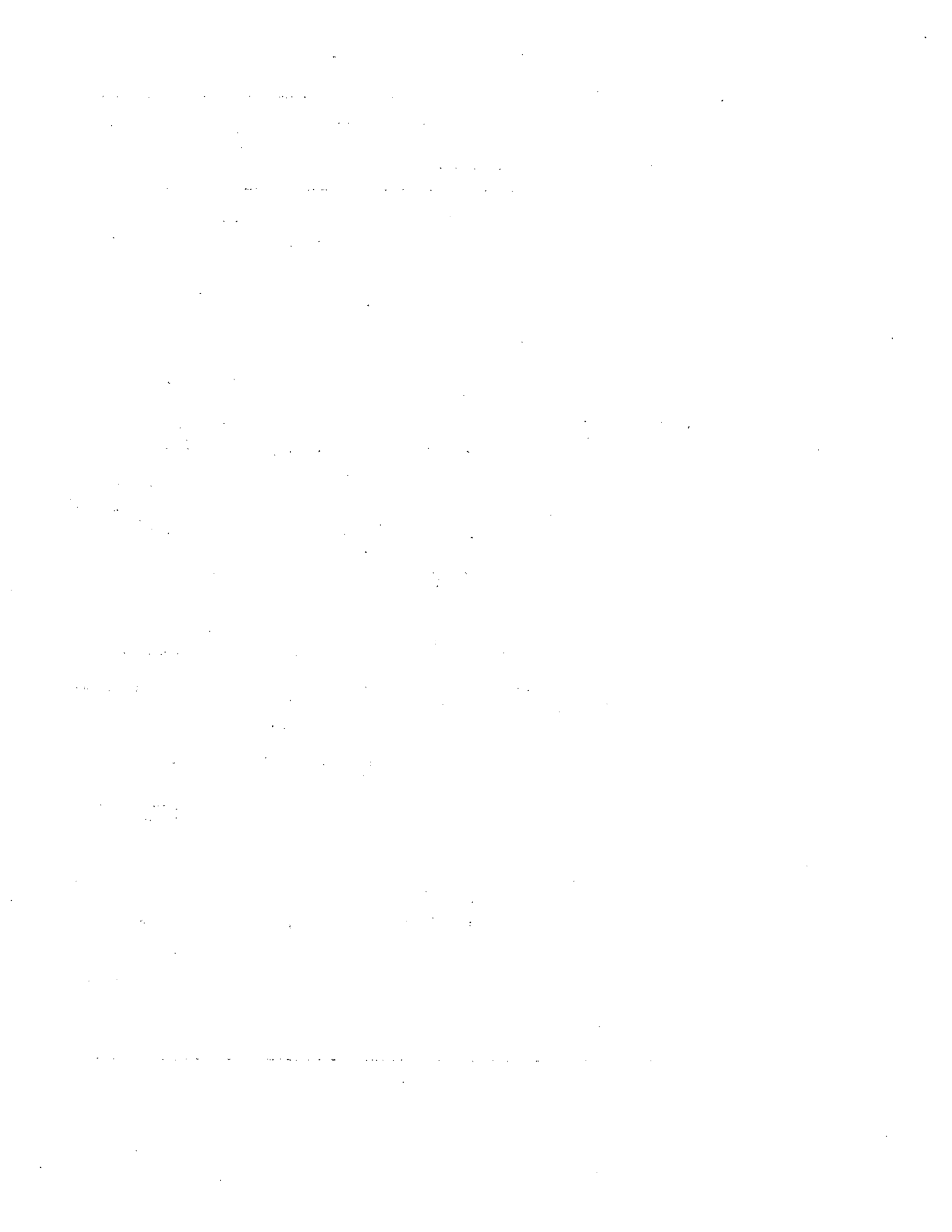
ex.03.03-2(1) Scallops; adaptors of shellfish; cuttle fish and squid other than Mongo ika: IQ  
ex.03.03-2(2) Scallops; adaptors of shellfish; cuttle fish and squid other than Mongo ika: IQ

No.	Stat. Code	IN	品名	Rate of Duty		Preferential	Temporary	Unit	Description
				General	GATT				
(16.04 -2)			* (i) たら(ゴドウス属, アラダラ属及び メルルシウス属の 魚)のもの.....				16%		* (i) Of Tora (genus <i>Gadus</i> , genus <i>Turragra</i> and genus <i>Merluccius</i> ):
211	0		- 気密容器入りの もの.....			12% Free		KG	In airtight contain- ers
219	1		- その他のもの...					KG	Other
220	2		* (ii) その他のもの.....	(10%)	(10%)		8%	KG	* (ii) Other
			* (2) その他のもの.....	(15%)	(15%)		12%		* (2) Other
			- 気密容器入りの もの.....						In airtight containers:
231	6		-- いわし.....			9% Free		KG	Sardines
232	4		-- さけ及びます...					KG	Salmon
233	1		-- かつお.....			8% Free		KG	Skip-jack and other bonito
239	0		-- その他のもの...			9% Free		KG	Other
			- その他のもの.....			9% Free			Other:
241	2		-- かつお類その他 の魚類.....					KG	Bonito and the like, boiled and dried
249	3		-- その他のもの...					KG	Other
16.05			甲殻類又は軟体動物の調製品						Crustaceans and molluscs, pre- pared or preserved:
			1. くん製のもの..... (15%)						1 Smoked
110	3		* (1) えび.....	(7.5%)	(7.5%)	Free	6%	KG	* (1) Of shrimps, prawns and lobsters

(註) 16.05 食品衛生法

(Note) 16.05 Food Sanitation Law

No.	Sta. Code No.	IN A C S E	品名	Rate of Duty		Unit	Description		
				General	Preferential				
(16.05 -1)	120	1	* (2) いか、新工貝及び甲殻類			12%	KG	* (2) Of cuttle fish, squid, scallops and adductor of snail-fish	
	190	6	* (2) その他のもの			6% Free	12%	KG	* (2) Other
	2		その他のもの (20%)						2 Other
			* (1) えび						* (1) Shrimps, prawns and lobsters:
	211	6	* (i) 単に水又は塩水で煮た後に冷蔵し又は冷蔵したもの	(15%)	(15%)		5%	KG	* (i) Chilled or frozen after simply boiled in water or in brine
	212	1	* (ii) 単に水若しくは塩水で煮、又はその後に冷蔵し、又はつけし若しくは乾燥したもの	(15%)	(15%)	4% Free	6%	KG	* (ii) Simply boiled in water or in brine; salted in brine or dried after simply boiled in water or in brine
	219	1	* (iii) その他のもの	11.3% 9.2%	10.3% 8.2%	9% Free	12%	KG	* (iii) Other
			* (2) その他のもの						* (2) Other:
			* (i) いか	(15%)	(15%)		15%		* (i) Cuttle fish and squid:
	231	3	- 気密容器入りのも			9% Free		KG	in airtight containers
	239	6	- その他のもの					KG	Other
			* (ii) その他のもの			9% Free	12%		* (ii) Other:
	220	1	- あわび (気密容器入りのも)	(15%)	(15%)			KG	Abalone, in airtight containers
			- かき						Crab:
	291	2	-- 気密容器入りのも	11.3% 9.2%	10.3% 8.2%			KG	in airtight containers
	299	3	-- その他のもの	(15%)	(15%)			KG	Other
			- その他のもの	(15%)	(15%)				Other:
	291	2	-- 気密容器入りのも					KG	in airtight containers
	299	3	-- その他のもの					KG	Other





**APPENDIX F**

**RATES OF DUTY APPLICABLE TO SHRIMP AND SELECTED PORTIONS OF THE EUROPEAN  
ECONOMIC COMMUNITY TARIFF SCHEDULES**

THE INTERNATIONAL  
CUSTOMS  
JOURNAL

ORGAN OF THE INTERNATIONAL UNION FOR THE  
PUBLICATION OF CUSTOMS TARIFFS

---

THIS PUBLICATION IS ALSO OBTAINABLE IN  
FRENCH, GERMAN, ITALIAN AND SPANISH

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EUROPEAN ECONOMIC COMMUNITY  
(E.E.C.)

NUMBER 14 (10<sup>th</sup> EDITION)

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"The International Bureau undertakes to employ the greatest care in the translation of the Customs Laws and of the Official publications interpreting these Laws, but it is understood that the Governments concerned do not assume any responsibility as to the accuracy of these translations and that in the case of dispute the original text shall be their only guide." (Art. 3, Executory Regulations of the International Convention of July 5th, 1890.)

I.C.T.B. PRINTING DEPARTMENT

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MAY 1983

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## EUROPEAN ECONOMIC COMMUNITY (E.E.C.). - No. 14 (10th Edition)

HEADING No.	DESCRIPTION	RATE OF DUTY		
		Autonomous % or Levy (L)	Conventional % 1.1.E2 1.1.B4	
1	2	3	4	5
03.02	Fish, dried, salted or in brine; smoked fish, whether or not cooked before or during the smoking process:			
	A. Dried, salted or in brine:			
	I. Whole, headless or in pieces:			
	a) Herring	12	12	12
	b) Coc ( <i>Gadus morhua</i> , <i>Boreogadus saida</i> , <i>Gadus ogac</i> )	13(a)	13(b)	13(b)
	c) Anchovies ( <i>Engraulis</i> spp)	15	10	10
	d) Atlantic halibut ( <i>Hippoglossus hippoglossus</i> )	15	--	--
	e) Salmon, salted or in brine	15	11	11
	f) Other	15	12	12
	II. Fillets:			
	a) Of cod ( <i>Gadus morhua</i> , <i>Boreogadus saida</i> , <i>Gadus ogac</i> )	20(a)	20	20
	b) Of salmon, salted or in brine	16	15	15
	c) Of lesser or Greenland halibut ( <i>Reinhardtius hippoglossoides</i> ), salted or in brine	16	15	15
	d) Other	16	16	16
	E. Smoked, whether or not cooked before or during the smoking process:			
	I. Herring	16	10	10
	II. Salmon	16	13	13
	III. Lesser or Greenland halibut ( <i>Reinhardtius hippoglossoides</i> )	16	15	15
	IV. Atlantic halibut ( <i>Hippoglossus hippoglossus</i> )	16	16	16
	V. Mackerel ( <i>Scomber scombrus</i> , <i>scomber japonicus</i> and <i>Orcynopsis unicolor</i> )	16	14	14
	VI. Trout	16	14	14
	VII. Eels ( <i>Anguilla</i> spp)	16	14	14
	VIII. Other	16	14	14
	C. Livers and roes	15	11	11
	D. Fish meal	15	13	13
03.03	Crustaceans and molluscs, whether in shell or not, fresh (live or dead), chilled, frozen, salted, in brine or dried; crustaceans, in shell, simply boiled in water:			
	A. Crustaceans:			
	I. Crawfish	25	(c)	(c)
	II. Lobsters ( <i>Homarus</i> spp):			
	a) Live	25	9	8.8
	b) Other:			
	1. Whole	25	10.5	9.9
	2. Other:			
	aa) Frozen	25	16	17.5
	bb) Other	25	20	20
	III. Crabs and freshwater crayfish:			
	a) Crabs of the species <i>Paralithodes cambricus</i> , <i>Chionoecetes</i> spp and <i>Callinectes sapidus</i>	18	11.5	10.6
	b) Other	18	15	15
	IV. Shrimps and prawns:			
	a) Prawns and shrimps of the <i>Pandalidae</i> family	18	12	12
	b) Shrimps of the genus <i>Langon</i> :			
	1) Fresh, chilled or simply boiled in water	18	18	16
	2) Other	18	18	18
	c) Other	18	18	18

(a) Total suspension for an indefinite period.

(b) Duty exemption within the limits of an annual tariff quota of 25 000 tonnes to be granted by the competent authorities.

(c) See Annex.

## EUROPEAN ECONOMIC COMMUNITY (E.E.C.). - No. 14 (10th Edition)

HEADING No.	DESCRIPTION	RATE OF DUTY		
		Autonomous % or Levy (L)	Conventional % 1.1.83 1.1.84	
1	2	3	4	5
	V. Other:			
	a) Norway lobsters ( <i>heprops norvegicus</i> ):			
	1. Frozen	14	12	12
	2. Other	14	12	12
	b) Other	14	12	12
	E. Molluscs:			
	I. Oysters:			
	a) European flat oysters weighing not more than 40g each	Free	Free	Free
	b) Other	18	18	18
	II. Mussels	10	10	10
	III. Snails, other than sea snails	6	Free	Free
	IV. Other:			
	a) Frozen:			
	1. Squid:			
	aa) <i>Loligo</i> spp	8	6	6
	bb) <i>Todarodes sagittatus</i>	8	6	6
	cc) <i>Illex</i> spp	8	8	8
	dd) Other	8	8	8
	2. Cuttle-fish of the species <i>Sepia officinalis</i> , <i>Kossia macrosoma</i> and <i>Sebioia rondoleti</i>	8	8	8
	3. Octopus	8	8	8
	4. <i>Coquilles St Jacques</i> ( <i>Pecten maximus</i> )	8	8	8
	5. Striped venus and other species of the family <i>Veneridae</i>	8	8	8
	6. Other	8	8	8
	b) Other:			
	1. Squid:			
	aa) <i>Loligo</i> spp	8	6	6
	bb) <i>Todarodes sagittatus</i>	8	6	6
	cc) <i>Illex</i> spp	8	8	8
	dd) Other	8	8	8
	2. Other	8	8	8

## CHAPTER 4

DAIRY PRODUCE; BIRDS' EGGS; NATURAL HONEY;  
EDIBLE PRODUCTS OF ANIMAL ORIGIN, NOT ELSEWHERE SPECIFIED OR INCLUDED

## NOTES

- The expression "milk" means full cream or skimmed milk, buttermilk, whey, curdled milk, kephir, yoghourt and other fermented or acidified milk.
- Milk and cream put up in hermetically sealed cans are regarded as preserved within the meaning of heading No. 04.02. However, milk and cream are not regarded as so preserved merely by reason of being pasteurised, sterilised or peptonised, if they are not put up in hermetically sealed cans.

## Additional Notes

- The term "cans", as used in Note 2 to this Chapter, shall be taken to apply only to such containers of a net capacity not exceeding 5 kg.
- The expression "special milk for infants", as used in subheading 04.02 B 1 a), shall be taken to mean products free from pathogenic and toxigenic germs and containing per gram less than 10 000 revivifiable aerobic bacteria and less than two coliform bacteria.

## EUROPEAN ECONOMIC COMMUNITY (E.E.C.) - No. 14 (10th Edition)

HEADING No.	DESCRIPTION	RATE OF DUTY		
		Autonomous % or Levy (L)	Conventional % 1.1.83	Conventional % 1.1.84
1	2	3	4	5
	2. Other, containing, by weight:			
	aa) 80% or more of meat or offal, of any kind, including fats of any kind or origin:			
	11. Hams, fillets and loins; pieces thereof	26(L)	--	--
	22. Shoulders and pieces thereof	26(L)	--	--
	33. Other	26(L)	--	--
	bb) 40% or more but less than 80% of meat or offal, of any kind, including fats of any kind or origin	26(L)	--	--
	cc) Less than 40% of meat or offal, of any kind, including fats of any kind or origin	26(L)	--	--
	b) Other:			
	1. Containing bovine meat or offal:			
	aa) Uncooked; mixtures of cooked meat or offal and uncooked meat or offal	20 + (L) (a)	--	--
	bb) Other	26	26	26
	2. Other:			
	aa) Of sheep or goats	26	20	20
	bb) Other	26	26	26
16.03	Meat extracts, meat juices and fish extracts, in immediate packings of a net capacity of:			
	A. 20 kg or more	Free	Free	Free
	B. More than 1 kg but less than 20 kg	9	1.5	1.2
	C. 1 kg or less	24	20	20
16.04	Prepared or preserved fish, including caviar and caviar substitutes:			
	A. Caviar and caviar substitutes:			
	I. Caviar (sturgeon roe)	30	30	30
	II. Other	30	30	30
	B. Salmonidae:			
	I. Salmon	20	1.3	1.1
	II. Other	20	7	7
	C. Herring:			
	I. Fillets, raw, coated with batter or breadcrumbs, deep frozen	18	15	15
	II. Other	23	20	20
	D. Sardines	25	25	25
	E. Tunny	25	24	24
	F. Bonito (Sarda spp), mackerel and anchovies	25	(b)	(b)
	G. Other:			
	I. Fillets, raw, coated with batter or breadcrumbs, deep frozen	18	15	15
	II. Other	25	20	20
16.05	Crustaceans and molluscs, prepared or preserved:			
	A. Crabs	20	16	16
	E. Other	20	20	20

(a) In certain conditions a levy is applicable in addition to the customs duty.

(b) See Annex.



**APPENDIX G**

**RATES OF DUTY APPLICABLE TO SHRIMP AND SELECTED PORTIONS OF THE  
CANADIAN TARIFF SCHEDULES**

## GROUP TARIFF

		Brit. Pref.	M.F.N.	Gen.	G.P.T.	U.K. IRE.	
12505-1	Oysters, prepared or preserved, oysters in the shell	1-84 1-85	5.9% 5.6%	5.9% 5.6%	25% 25%	Free Free	5.9% 5.6%
12505-2	Oysters, smoked, whether or not in cans or other air-tight containers	1-84 1-85	4.7% 4.1%	4.7% 4.1%	25% 25%	Free Free	4.7% 4.1%
12600-1	Clams in sealed containers		10%	10%	40%	6.5%	10%
12700-1	Crustaceans, fresh, n.o.p.; crustaceans, prepared or preserved, n.o.p.		8%	8%	25%	—	8%
12700-2	<i>New Zealand Canned crayfish</i>						Free
12800-1	Lobsters or lobster meat, fresh or boiled		Free	Free	25%	—	Free
12805-1	Lobsters, prepared or preserved	1-84 1-85	7.9% 7.3%	7.9% 7.3%	30% 30%	5% 5%	7.9% 7.3%
12900-1	Crabs in sealed containers		10%	10%	40%	—	10%
13000-1	Shrimp		Free	Free	25%	—	Free
13100-1	Turtles; leeches		Free	Free	Free	—	Free
13200-1	Oysters, seed and breeding, imported for the purpose of being planted in Canadian waters; live fish and fish eggs, for propagating purposes		Free	Free	Free	—	Free
13300-1	All other articles the produce of the fisheries, n.o.p.	1-84 1-85	6.1% 5.8%	6.1% 5.8%	25% 25%	4% 4%	6.1% 5.8%
	<i>Fish caught by fishermen in vessels registered in Canada or owned by any person domiciled in Canada, and the products thereof carried from the fisheries in such vessels, shall be admitted into Canada free of duty. The Minister may make such regulations, if any, as are deemed necessary for carrying out the provisions of this section.</i>						
	<i>(See Section 9 of the Customs Tariff)</i>						
13300-2	Caviar, being prepared sturgeon roe	1-84 1-85	6.1% 5.8%	6.1% 5.8%	25% 25%	Free Free	6.1% 5.8%
13303-1	Fish solubles		Free	Free	25%	—	Free
13305-1	Trout, live, imported by commercial trout farms		Free	Free	25%	—	Free

END OF GROUP 1.



**APPENDIX H**  
**CHARACTERISTICS OF RESPONDENTS TO COMMISSION QUESTIONNAIRES**  
**FOR SHRIMP BOAT OWNERS**

Operating characteristics of respondents to Commission questionnaires  
for shrimp boat owners

<u>Group and Item</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
Group 1: 1/			
Number of days fished-----	83	77	93
Number of trips-----	29	25	24
Days per trip-----	3	3	4
Crew size-----	2	2	2
Number of States shrimp was landed in-----	1	1	1
Unit value of gross catch-----	\$1.48	\$1.56	\$1.31
Share (percent) of respondents reporting no insurance-----	87	79	75
Group 2: 1/			
Number of days fished-----	167	176	172
Number of trips-----	18	18	18
Days per trip-----	10	10	10
Crew size-----	3	3	3
Number of States shrimp was landed in-----	2	2	2
Unit value of gross catch-----	\$2.82	\$2.84	\$2.60
Share (percent) of respondents reporting no insurance-----	19	17	23

1/ Group 1 is craft 50 feet or less in length; Group 2 is craft more than 50 feet in length.

Note.--Data are averages based on the number of respondents for each item. Averages may be based on a different number of respondents for different items and years. The number of respondents in Group 1 ranged from 14-15 in 1982; 13-14 in 1983; and 11-12 in 1984. The number of respondents in Group 2 ranged from 54-64 in 1982; 52-63 in 1983; and 51-61 in 1984.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Characteristics of respondents to Commission questionnaires  
for shrimp boat owners

<u>Item</u>	<u>Group 1</u> <u>1/</u>	<u>Group 2</u> <u>1/</u>
Number of craft owned-----	1	2
Craft age (years)-----	22	13
Length of time craft has been owned (years)-----	9	8
Length of time owner has been in shrimp fishery (years)-----	21	23
Gross register tonnage of craft----	18	78
Craft length (feet)-----	39	67
Composition of catch (by percent of value, 1982-84):		
White shrimp-----	46.0	33.7
Brown shrimp-----	53.9	50.2
Pink shrimp-----	0	11.9
Other shrimp-----	0	2.9
Fish-----	0.1	0.8

1/ Group 1 is craft 50 feet or less in length; Group 2 is craft more than 50 feet in length.

Note.--Data may be based on a different number of respondents for each item. The number of respondents in Group 1 ranged from 15-16 and for Group 2 from 69-72.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

Ownership characteristics of respondents to Commission questionnaires  
for shrimp boat owners

	<u>Group 1 1/</u>		<u>Group 2 1/</u>	
	<u>Number of</u> <u>respondents</u>	<u>Share</u> <u>(percent)</u> <u>of total</u> <u>respondents</u>	<u>Number of</u> <u>respondents</u>	<u>Share</u> <u>(percent)</u> <u>of total</u> <u>respondents</u>
Ownership of craft:				
Individually owned----	14	88	34	47
Partnership-----	2	12	9	13
Corporation-----	0	0	29	40
Other-----	0	0	0	0
Captain of the craft is:				
Owner-----	12	75	29	40
Part-owner-----	1	6	13	18
Other-----	3	19	30	42

1/ Group 1 is craft 50 feet or less in length; Group 2 is craft more than 50 feet in length.

Note.--Data may be based on a different number of respondents for each item. The number of respondents in Group 1 ranged from 15-16 and for Group 2 from 69-72.

Source: Compiled from data submitted in response to questionnaires of the U.S. International Trade Commission.

APPENDIX I

COST ITEMS FOR GULF AND SOUTHEAST U.S. SHRIMP TRAWLERS

AVERAGE VESSEL CONSTRUCTION COST

(Typical 68' - 80' LOA, fully rigged, equipped with ice refrigeration, Gulf of Mexico shrimp otter trawler)

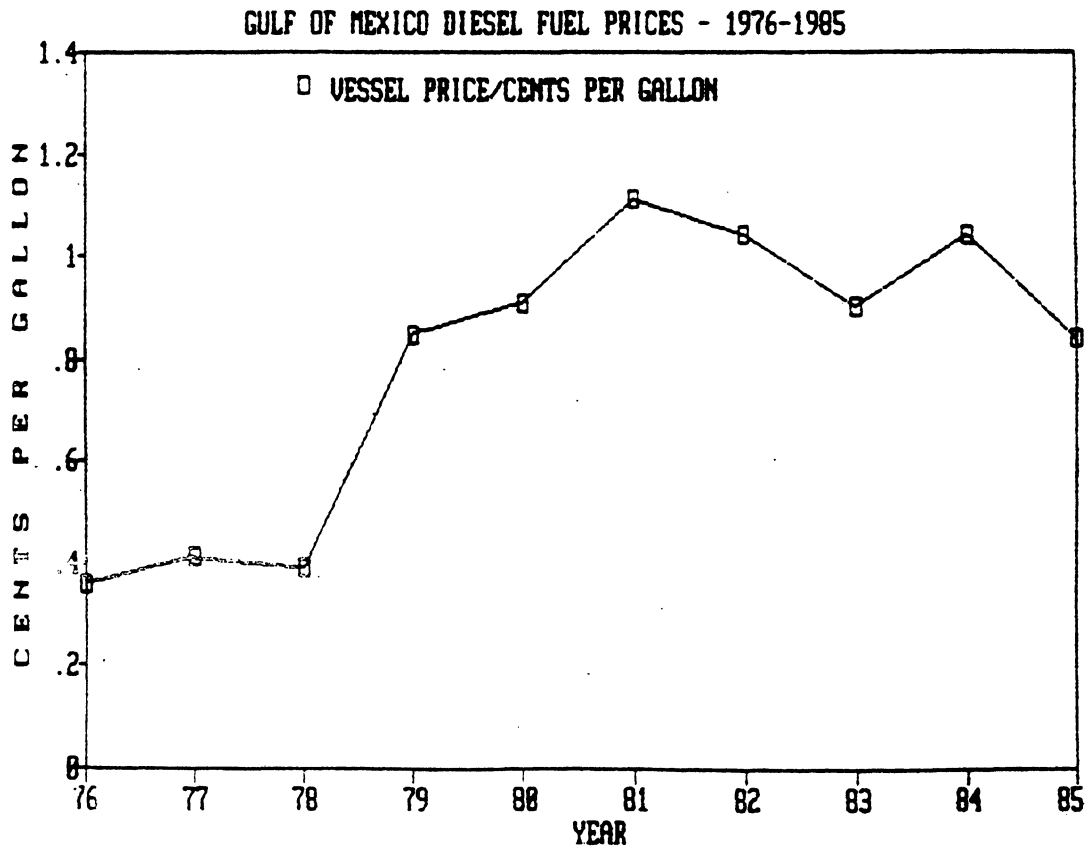
1972	\$109,266
1973	\$ 91,011
1974	\$121,966
1975	\$145,192
1976	\$168,686
1977	\$177,950
1978	\$210,077
1979	\$223,504
1980	\$262,107
1981	\$280,454
1982	\$294,476
1983	\$303,315
1984	\$324,547

GULF OF MEXICO DIESEL FUEL PRICES - 1976-1985Vessel Price, Cents Per Gallon

1976	\$ .36
1977	\$ .41
1978	\$ .39
1979	\$ .85
1980	\$ .91
1981	\$1.11
1982	\$1.04
1983	\$ .90
1984	\$1.04
<sup>1/</sup> 1985	\$ .84

Data reveal prices have increased by 48¢ per gallon or 133% during the past 8½ years.

<sup>1/</sup> Average price @ February 1985.



HISTORY OF TYPICAL INSURANCE COSTS FOR AN OFFSHORE SHRIMP TRAWLER OPERATING THROUGHOUT THE SOUTHEAST REGION

BASED ON \$300,000 HULL & MACHINERY (H&M) AND  
\$300,000 PROTECTION & INDEMNITY (P&I) COVERAGE

YEAR	H&M RATE	<u>1/</u> H&M PREMIUM	<u>2/</u> P&I PREMIUM	TOTAL ANNUAL PREMIUM	TOTAL PREMIUM RATE
1972	2.0%	\$ 6,000	\$1,950	\$ 7,950	2.65%
1973	2.2%	\$ 6,600	\$2,000	\$ 8,600	2.87%
1974	3.2%	\$ 9,600	\$2,200	\$11,800	3.93%
1975	3.3%	\$ 9,900	\$2,700	\$12,600	4.20%
1976	3.7%	\$11,100	\$3,776	\$14,876	4.96%
1977	3.4%	\$10,200	\$4,759	\$14,959	4.99%
1978	3.3%	\$ 9,900	\$6,705	\$16,605	5.54%
1979	3.4%	\$10,200	\$3,740	\$13,940	4.65%
1980	2.9%	\$ 8,700	\$3,461	\$12,161	4.05%
1981	2.3%	\$ 6,900	\$3,348	\$10,248	3.42%
1982	2.3%	\$ 6,900	\$3,571	\$10,471	3.49%
1983	3.4%	\$10,200	\$3,920	\$14,120	4.71%
1984	3.2%	\$ 9,600	\$4,941	\$14,541	4.85%
1985	4.6%	\$13,800	\$7,368	\$21,168	7.06%

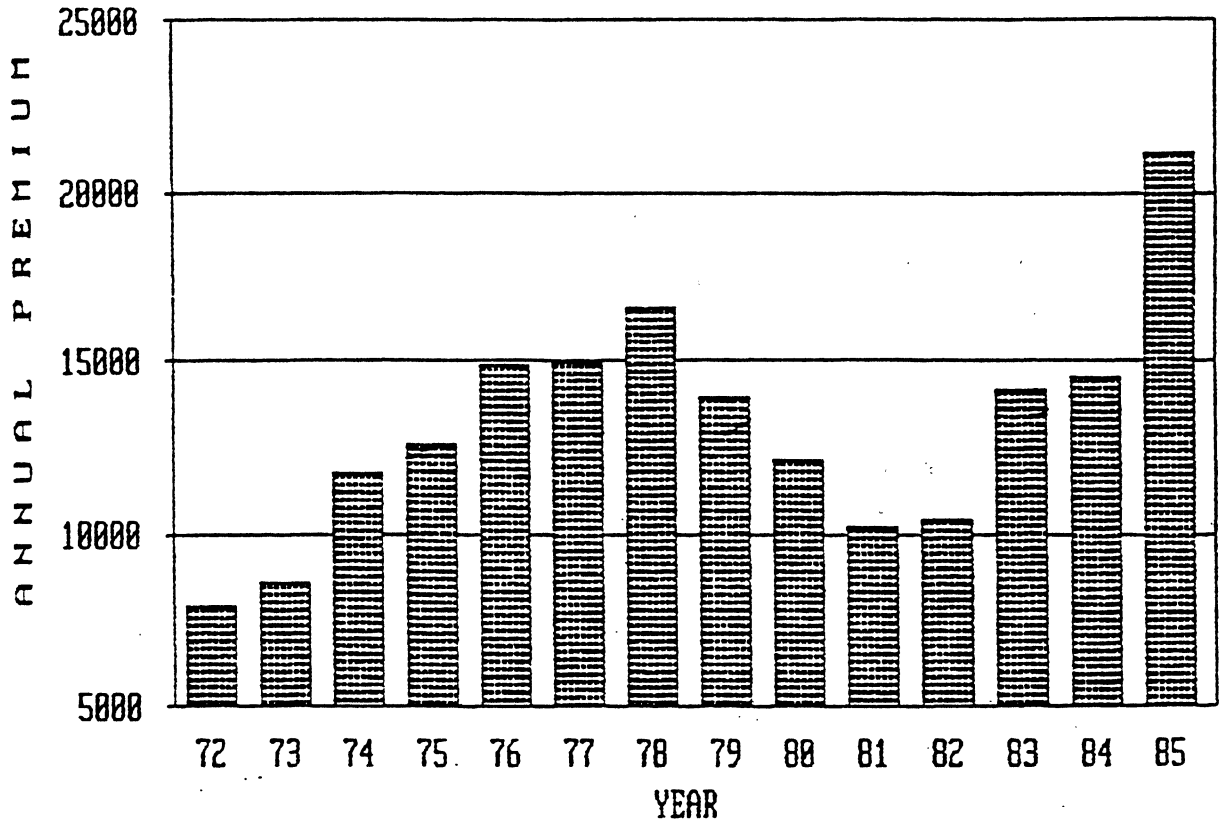
1/ Hull & Machinery coverage generally includes Breach of Warranty (BOW) coverage which protects the Mortgagee's interest. Until 1983-1984, Hull & Machinery policies were usually written on Taylor Form with a \$2,500 deductible per claim. Beginning with 1984 renewals, most Hull & Machinery policies have been written on AHAB Form of coverage with a \$5,000 deductible per claim and excluding latent defects.

2/ Based upon a crew complement of three.



### HISTORY OF TYPICAL INSURANCE COSTS

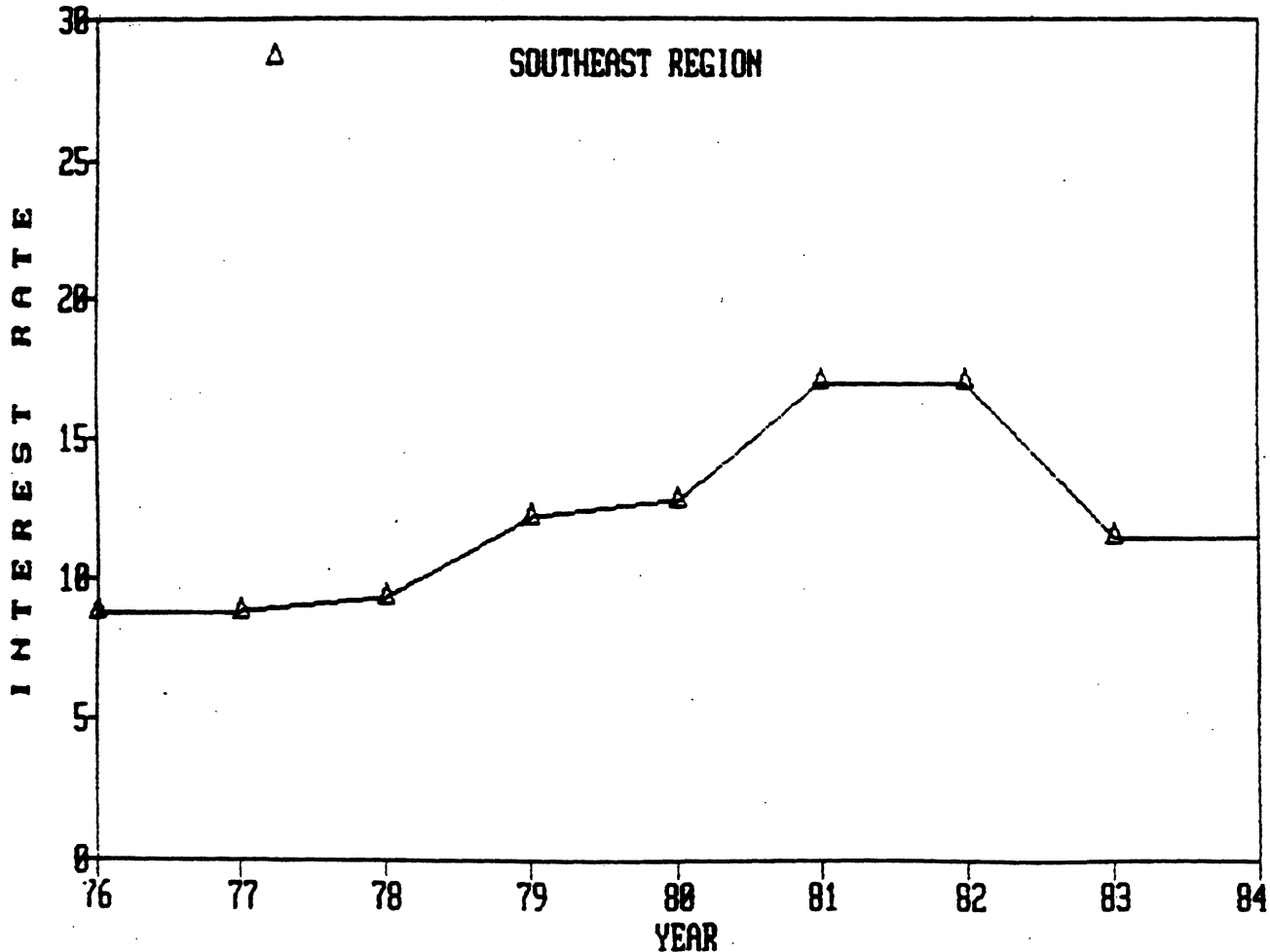
▨ SHRIMP TRAWLER, S.E. REGION



AVERAGE ANNUAL INTEREST RATES - 1976-1984Southeast Region

1976	8.75%
1977	8.75%
1978	9.30%
1979	12.09%
1980	12.72%
1981	17.06%
1982	17.00%
1983	11.50%
1984	12.93%

Data reveal interest rates under Fisheries Obligation Guarantee (FOG) financing have increased by 47% over the past 8 years.

**AVERAGE FOG INTEREST RATES - 1976-1984**

APPENDIX J

NEW YORK PRIME INTEREST RATES, 1919-85

NEW YORK PRIME RATE CHANGES  
1919 TO PRESENT

DATE	% RATE	DATE	% RATE	DATE	% RATE	DATE	% RATE	DATE	% RATE	DATE	% RATE
1919	5.25	4/19/68	6.50	8/27/73	9.75	10/8/76	6.75	3/14/80	18.50	5/19/81	20.00
1920	6.00	10/26/68	6.25	9/18/73	10.00	11/5/76	6.50	3/20/80	19.00	5/22/81	20.50
1921	5.50	12/2/68	6.50	1/29/74	9.50	12/10/76	6.25	3/31/80	19.50	6/1/81	20.00
1922	4.50	12/18/68	6.75	2/23/74	9.00	5/20/77	6.50	4/4/80	20.00	7/9/81	20.50
1923	4.75	12/20/68	6.50	3/4/74	8.75	6/3/77	6.75	4/21/80	19.50	9/15/81	20.00
1924	3.75	4/4/69	7.00	3/22/74	9.00	8/26/77	7.00	5/5/80	18.50	9/21/81	19.50
1925	4.00	4/10/69	7.50	3/28/74	9.25	9/23/77	7.25	5/7/80	17.50	10/6/81	19.00
1926	4.25	6/9/69	8.50	4/1/74	9.50	10/14/77	7.50	5/19/80	16.50	10/13/81	18.00
1927	4.25	3/26/70	8.00	4/5/74	9.75	10/11/77	7.75	5/27/80	14.50	11/2/81	17.50
1928	4.25	9/22/70	7.50	4/9/74	10.00	1/13/78	8.00	6/2/80	14.00	11/9/81	17.00
1929	5.50	11/13/70	7.25	4/16/74	10.25	5/12/78	8.25	6/9/80	13.00	11/16/81	16.50
1930	3.50	11/23/70	7.00	4/24/74	10.50	6/2/78	8.50	6/16/80	12.00	11/24/81	16.00
1931	3.00	12/23/70	6.75	4/30/74	10.75	6/16/78	8.75	7/8/80	11.50	12/1/81	15.75
1932	3.00	1/7/71	6.50	5/6/74	11.00	7/7/78	9.00	7/25/80	11.00	2/1/82	16.50
1933	1.50	1/18/71	6.00	5/10/74	11.25	9/1/78	9.25	8/25/80	11.25	2/17/82	17.00
1934-1946	1.50	2/16/71	5.75	5/17/74	11.50	9/15/78	9.50	8/28/80	11.50	2/24/82	16.50
12/15/47	1.75	3/12/71	5.50	6/25/74	11.75	9/29/78	9.75	9/8/80	12.00	7/20/82	16.00
8/10/48	2.00	3/22/71	5.25	7/3/74	12.00	10/16/78	10.00	9/15/80	12.25	7/28/82	15.50
9/22/50	2.25	4/26/71	5.50	10/15/74	11.50	10/27/78	10.25	9/19/80	12.50	8/2/82	15.00
1/5/51	3.00	7/8/71	6.00	10/29/74	11.25	11/7/78	10.50	9/29/80	13.00	8/16/82	14.50
10/17/51	2.75	10/21/71	5.75	11/12/74	10.75	11/6/78	10.75	10/2/80	13.50	8/18/82	14.00
12/18/51	3.00	11/5/71	5.50	11/27/74	10.50	11/20/78	11.00	10/20/80	14.00	8/23/82	13.50
4/27/53	3.25	1/5/72	5.25	1/14/75	10.00	11/27/78	11.50	10/30/80	14.50	10/7/82	13.00
3/17/54	3.00	1/25/72	5.00	1/27/75	9.50	12/27/78	11.75	11/7/80	15.50	10/8/82	12.75
8/4/55	3.25	4/19/72	5.25	2/5/75	9.00	6/18/79	11.50	11/18/80	16.25	10/12/82	12.00
10/14/55	3.50	7/17/72	5.50	2/24/75	8.50	7/30/79	11.75	11/24/80	17.00	11/22/82	11.50
4/13/56	3.75	10/3/72	5.75	3/3/75	8.25	8/17/79	12.00	11/28/80	17.75	01/11/83	11.00
3/21/56	4.00	12/27/72	6.00	3/17/75	8.00	8/29/79	12.25	12/2/80	18.50	02/28/83	10.50
3/6/57	4.50	2/7/73	6.25	3/24/75	7.75	9/10/79	12.50	12/5/80	19.00	08/08/83	11.00
1/22/58	4.00	3/26/73	6.50	4/3/75	7.50	9/17/79	13.00	12/11/80	20.00	03/19/84	11.50
4/21/58	3.50	4/19/73	6.75	5/21/75	7.25	9/24/79	13.25	12/17/80	21.00	04/05/84	12.00
9/11/58	4.00	5/3/73	7.00	6/10/75	7.00	10/1/79	13.50	12/23/80	21.50	05/08/84	12.50
5/15/59	4.50	5/24/73	7.25	7/16/75	7.25	10/24/79	15.00	1/5/81	20.50	05/25/84	13.00
9/1/59	5.00	6/6/73	7.50	7/25/75	7.50	11/5/79	15.25	1/12/81	20.00	09/26/84	12.75
8/23/60	4.50	6/19/73	7.75	8/12/75	7.75	11/13/79	15.50	2/4/81	19.50	10/16/84	12.50
REMAINED AT		7/2/73	8.00	9/15/75	8.00	11/21/79	15.75	2/24/81	19.00	10/29/84	12.00
4.50 UNTIL		7/2/73	8.25	10/27/75	7.75	11/28/79	15.50	3/4/81	18.50	11/9/84	11.75
12/6/65	5.00	7/9/73	8.50	11/5/75	7.50	12/10/79	15.25	3/11/81	18.00	11/29/84	11.25
3/10/66	5.50	7/10/73	8.25	12/1/75	7.25	2/20/80	15.75	3/18/81	17.50	12/24/84	10.75
5/23/66	5.75	7/16/73	8.50	1/12/76	7.00	2/25/80	16.25	4/2/81	17.00		
8/5/66	6.00	7/27/73	8.75	1/22/76	6.75	2/28/80	16.50	4/20/81	17.50		
1/27/67	5.75	8/6/73	9.00	5/28/76	7.00	3/3/80	16.75	4/29/81	18.00		
3/27/67	5.50	8/10/73	9.25	6/7/76	7.25	3/5/80	17.25	5/5/81	19.00		
11/20/67	6.00	8/21/73	9.50	8/6/76	7.00	3/10/80	17.75	5/11/81	19.50		

\*CHASE MANHATTAN LOWERED ITS PRIME RATE TO 11.00% ON 12/27/82, BUT IT WAS THE ONLY NEW YORK BANK TO HAVE DONE SO AT THAT TIME.

**APPENDIX K**

**FINANCIAL ASSISTANCE PROGRAMS AVAILABLE TO U.S. FISHERMEN**

FINANCIAL ASSISTANCE PROGRAMS AVAILABLE TO U.S. FISHERMENFisheries Obligation Guarantee

The Fisheries Obligation Guarantee program, administered by the National Marine Fisheries Service and authorized by Title XI of the Merchant Marine Act, 1936, as amended, facilitates the private capital market's responsiveness to the investment capital needs of domestic charter and commercial fishermen by guaranteeing obligations given to aid in financing or refinancing up to 87 1/2 percent of the cost of constructing, reconstructing, or reconditioning commercial fishing vessels (except shrimp otter trawlers which warrant only a 75% guarantee), commercial headboat, driftboat, and charter fishing vessels of five net tons or over, and eligible shoreside facilities. In the case of certain charter vessel classifications, U. S. Coast Guard certified vessels will automatically qualify, while those not having certification may qualify upon satisfactory demonstration that their use is commercial.

Capital Construction Fund

The Fishing Vessel Capital Construction Fund program, authorized by Section 607 of the Merchant Marine Act, 1936, as amended, provides tax incentives for constructing, reconstructing, and/or acquiring fishing vessels used in the commercial, headboat, driftboat, and charter trade.

Fishermen's Protective Act

The Fishermen's Protective Act helps fishermen absorb the cost of being seized on the high seas by foreign governments claiming territorial jurisdictions not recognized by the United States. This act also has a provision under the Fishing Vessel and Gear Damage Compensation Fund which may pay for damage, loss, or destruction of fishing vessels and gear of United States fishermen occurring in any fishery subject to the exclusive management authority of the United States. Vessel damage or loss is compensable if attributable to foreign flag vessels; while gear damage and loss are compensable if attributable to any flag vessel.

Fishermen's Contingency Fund

Title IV of the Outer Continental Shelf Lands Act of 1978 established this fund which is designed to compensate commercial fishermen for eligible claims for actual and consequential damage to, or loss of, fishing vessels or fishing gear by items associated with oil and gas exploration, development, or production on the Outer Continental Shelf.

Fisheries Loan Fund

The Fisheries Loan Fund authorized the administration of a direct loan program for vessels and gear under Section 4 of the Fish and Wildlife Act of 1956, as amended. The program was reactivated on January 2, 1981, and since then on an intermittent basis through September 30, 1984. The limited funds which have been made available are being used to prevent loan defaults on Fisheries Obligation Guarantee and private sector marine mortgage financings.

NUMBER OF DOCUMENTED SHRIMP OTTER TRAWLERS AND BOATS  
IN THE SOUTHEAST REGION, 1960 - 1984 a/

YEAR	DOCUMENTED VESSELS	BOATS	TOTAL CRAFT	FOG FINANCED	% OF TOTAL	YEARLY CHANGES - DOCUMENTED VESSELS	CCF OBJECTIVE VESSELS	ANNUAL CHANGE - TOTAL CRAFT
1960	3,782	3,903	7,685	-0-	-0-	-0-	-0-	-0-
1961	3,513	3,744	7,257	1	-0-	-269	-0-	-428
1962	3,407	4,815	8,222	1	-0-	-106	-0-	+965
1963	3,504	5,245	8,749	11	-0-	+97	-0-	+527
1964	3,537	5,029	8,566	15	-0-	+33	-0-	-183
1965	3,622	5,476	9,098	15	-0-	+85	-0-	+532
1966	3,654	5,707	9,361	16	-0-	+32	-0-	+263
1967	3,860	5,738	9,598	29	1%	+206	-0-	+237
1968	4,125	5,855	9,980	32	1%	+265	-0-	+382
1969	4,242	5,623	9,865	13	-0-	+117	-0-	-115
1970	4,333	5,222	9,555	16	-0-	+91	-0-	-310
1971	4,306	5,653	9,959	20	-0-	+231	-0-	+404
1972	4,537	5,480	10,017	-0-	-0-	+391	17	+58
1973	4,928	5,810	10,738	4	-0-	+179	41	+721
1974	4,749	5,246	9,995	4	-0-	-179	17	-743
1975	4,670	6,313	10,983	11	-0-	-79	11	+988
1976	5,094	6,490	11,584	22	-0-	+424	23	+601
1977	5,221	6,504	11,725	84	2%	+127	43	+141
1978 b/	5,564	6,850	12,414	128	2%	+343	94	+689
1979 b/	6,238	7,015	13,253	165	3%	+674	90	+839
1980 b/	5,951	7,427	13,378	56	1%	-287	54	+125
1981 b/	5,973	7,370	13,343	3 d/	-0-	+22	24	-35
1982 b/	6,262	7,180	13,442	5 d/	-0-	+289	12	+99
1983 b/	6,405	7,653	14,058	2 d/	-0-	+143	15	+616
1984 b/	6,166	7,329	13,495	2 d/	-0-	-239	6	-563
c/	6,166	7,329	13,495	347			447	

Source: Fishery Statistics of the United States, N.M.F.S., U. S. Department of Commerce, annual issues and preliminary data.

a/ Number of boats and vessels are exclusive of duplication of reporting for individual states within Southeast Region.

b/ 1978-84 data are preliminary -- subject to revision.

c/ Totals represent number of documented and undocumented shrimp otter trawlers, Southeast Region, exclusive of duplication, number of active FOG financed vessels (90% shrimp trawlers) for Southeast Region of NMFS, and percentage of totals as applies to number of documented otter trawlers. CCF data reveals 447 additions to the fleet during the 13-year period indicated, or a growth rate of about 7.7%.

d/ These 12 financings were not new debt obligations, but refinancings of existing government guarantees. The Region has not financed any new additions to the shrimp fleet since 1980.

FISHERIES OBLIGATION GUARANTEE CASE ACTIVITY - 1972 THROUGH 1984

<u>YEAR</u>	<u>APPLICATIONS ACCEPTED</u>	<u>DECLINED, WITHDRAWN, CANCELLED</u>	<u>CASES CLOSED</u>	<u>AVERAGE LOAN AMOUNT</u>
1972	14 \$ 1,104,457	---	---	---
1973	5 446,373	6 \$ 548,205	4 \$ 353,058	\$ 88,265
1974	8 3,063,073	7 1,919,482	4 401,996	100,499
1975	32 11,082,178	6 445,382	11 969,038	88,094
1976	46 5,727,300	3 239,000	22 2,479,659	112,712
1977	141 22,331,922	20 11,222,478	84 13,984,737	166,485
1978	212 47,037,088	35 4,634,052	128 24,897,269	194,510
1979	186 49,079,545	35 8,811,699	165 40,668,482	246,476
1980	37 12,063,679	68 20,492,786	56 19,070,587	340,546
1981	23 5,626,152	26 9,327,057	12 3,244,912	270,409
1982	39 7,924,262	9 2,399,980	39 8,457,579	216,861
1983	9 1,855,841	2 347,889	8 2,260,468	282,559
1984	36 6,520,480	1 97,193	27 4,482,080	166,003
<b>TOTALS</b>	<b>788 \$173,862,350 <sup>1/</sup></b>	<b>218 <sup>2/</sup></b>	<b>560 <sup>2/</sup></b>	<b>\$216,553</b>
		<b>\$60,485,203</b>	<b>\$121,269,865</b>	

<sup>1/</sup> Total does not account for increases or decreases in actual loan amounts.

<sup>2/</sup> Totals do not add to Total Applications Accepted due to 10 applications in process.



ACTIVE FISHERIES OBLIGATION GUARANTEE CASES BY STATE

AND

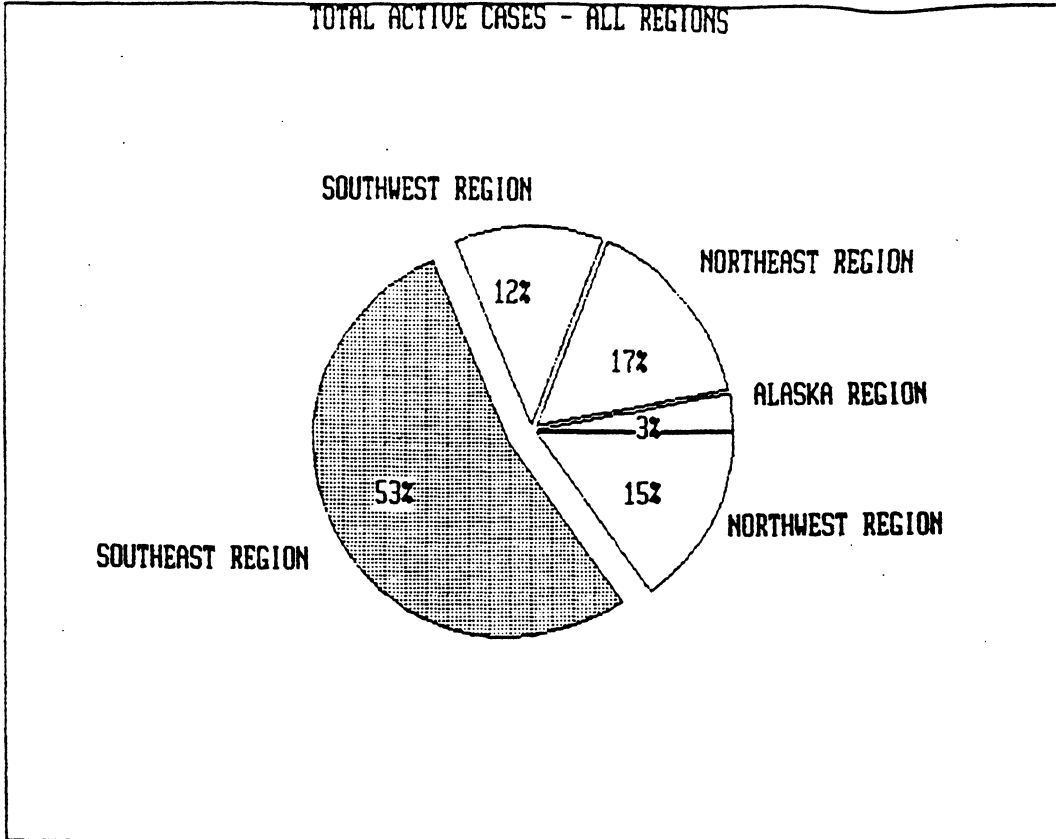
OUTSTANDING LOAN BALANCES IN SOUTHEAST REGIONAS OF JANUARY 31, 1985

<u>STATE</u>	<u>ACTIVE CASES</u>	<u>LOAN BALANCES</u> (Thousand Dollars)
Alabama	89	\$ 13,996
Florida	82	12,895
Georgia	12	1,701
Louisiana	55	8,741
Mississippi	-0-	-0-
North Carolina	19	3,045
South Carolina	3	510
Texas	112	17,614
	<hr/>	<hr/>
TOTALS	<u>372</u>	<u>\$ 58,502</u>

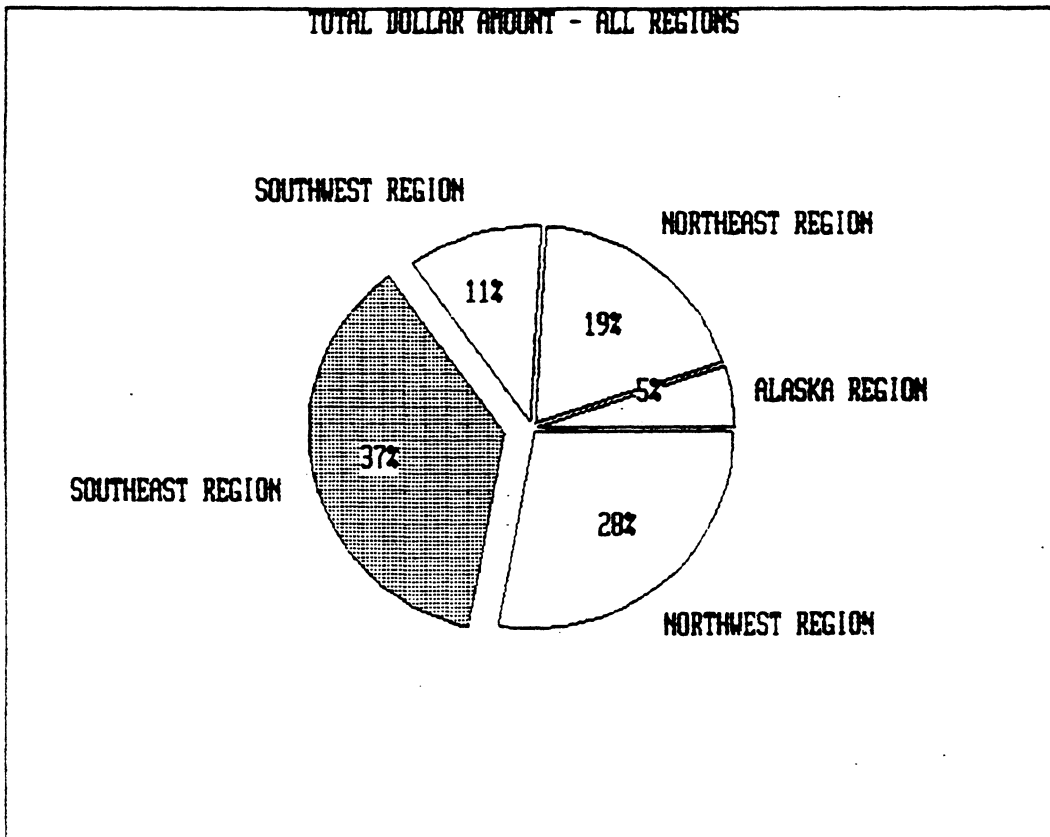
MONTHLY REPORT ON THE OUTSTANDING BALANCE OF  
 CONTINGENT LIABILITIES OF THE FEDERAL SHIP FINANCING FUND  
 AS OF JANUARY 31, 1985

<u>Region</u>	<u>Obligation Guarantee</u>	<u>No. Cases</u>	<u>Mortgage Insurance</u>	<u>No. Cases</u>	<u>Total Amount</u>	<u>Total Cases</u>
Alaska	\$ 8,331,949.56	21	-0-	-0-	\$ 8,331,949.56	21
Northeast	30,208,342.70	113	-0-	-0-	30,208,342.70	113
Southwest	17,326,576.42	84	\$ 18,275.00	1	17,344,851.42	85
Southeast	58,502,278.68	372	-0-	-0-	58,502,278.68	372
Northwest	<u>41,690,267.87</u>	<u>106</u>	<u>-0-</u>	<u>-0-</u>	<u>41,690,267.87</u>	<u>106</u>
Totals	<u>\$156,059,415.23</u>	<u>696</u>	<u>\$ 18,275.00</u>	<u>1</u>	<u>\$156,077,690.23</u>	<u>697</u>

FISHERIES OBLIGATION GUARANTEE PROGRAM  
TOTAL ACTIVE CASES - ALL REGIONS



TOTAL DOLLAR AMOUNT - ALL REGIONS



NUMBER OF FISHERIES OBLIGATION GUARANTEE DEFERMENTS BY STATE1980 - 1984

<u>STATE</u>	<u>NUMBER</u>	<u>\$ AMOUNT</u>
Alabama	44	\$ 422,295
Florida	46	310,967
Georgia	24	181,757
Louisiana	48	644,597
Mississippi	0	-0-
North Carolina	14	158,912
South Carolina	0	-0-
Texas	55	587,034
TOTALS	<u>231</u>	<u>\$2,305,562</u>

STATUS OF ADVERSE FISHERIES OBLIGATION GUARANTEE ACCOUNTSSOUTHEAST REGION - 1960 - 1984ACCOUNT HISTORY

<u>NO. OF CASES</u>	<u>REDEMPTION AMOUNT</u>	<u>FORECLOSURE SALE AMOUNT</u>	<u>DEFICIENCY</u>	<u>RESALE BY AGENCY</u>
<u>1/</u> 61	\$11.7M	\$3.2M	<u>2/</u> \$8.5M	\$2.6M

1/ 9 of these cases had to be redeemed pending insurance claim settlements, 15 were redeemed and refinanced, and 28 were foreclosed and sold.

2/ Amount indicates a receivable due the U. S. Government. Collection efforts are in progress; none of the amount shown has been written off.

SOUTHEAST REGION -- FOG FINANCED VESSELS SEIZED FOR CARRYING CONTRABAND1980 - 1984

<u>Number of Seizures</u>	<u>NMFS Disposition of Vessel</u>
7	Sold at Public Auction

SOUTHEAST REGION -- NOTICES OF VIOLATIONS AND ASSESSMENT (NOVAs)1980-1984

<u>Number of NOVAs Issued:</u>	370
<u>Number Involving Shrimp Vessels:</u>	254
<u>Number Involving Shrimp Trawlers Financed by National Marine Fisheries Service:</u>	12

HISTORY OF FISHERIES LOAN FUND

1981 - 1984

<u>Region</u>	<u>Total Cases Received</u>	<u>\$ Amount</u>	<u>Total Cases Closed</u>	<u>\$ Amount</u>	<u>% of Cases Closed</u>	<u>% of Dollar Amount</u>
Alaska	19	\$ 1,533,805	4	\$ 312,302	2 %	3 %
Northeast	41	1,871,922	31	1,432,500	17 %	14 %
Southwest	74	3,165,471	14	636,664	8 %	6 %
Southeast	304	15,339,222	112	5,547,205	61 %	55 %
Northwest	<u>63</u>	<u>5,789,926</u>	<u>23</u>	<u>2,238,899</u>	<u>12 %</u>	<u>22 %</u>
Totals	<u>501</u>	<u>\$27,700,346</u>	<u>184</u>	<u>\$10,167,570</u>	<u>100 %</u>	<u>100 %</u>

FISHERIES LOAN FUND ACTIVITY - SOUTHEAST REGION1981 - 1984

<u>STATE</u>	<u>APPLICATIONS RECEIVED</u>	<u>APPLICATIONS FUNDED</u>	<u>\$ FUNDED</u>
Alabama	67	36	\$ 1,796,228
Florida	45	23	827,725
Georgia	12	2	113,013
Louisiana	58	13	785,920
Mississippi	5	0	-0-
North Carolina	18	4	242,223
South Carolina	13	3	73,174
Texas	<u>86</u>	<u>31</u>	<u>1,708,922</u>
 TOTALS	 <u>304</u>	 <u>112</u>	 <u>\$5,547,205</u>



CAPITAL CONSTRUCTION FUND  
SOUTHEAST REGION SHRIMP AGREEMENTS

1971 - 1984

<u>STATE</u>	<u>TOTAL NO. OF AGREEMENTS</u>	<u>NO. TERMINATED<sup>1/</sup> WITH ACTION</u>	<u>NO. TERMINATED<sup>2/</sup> WITH NO ACTION</u>	<u>ACTIVE NO. AGREEMENTS</u>
Alabama	88	22	21	45
Florida	114	34	18	62
Georgia	16	2	6	8
Louisiana	21	2	15	4
Mississippi	7	3	3	1
North Carolina	39	16	4	19
South Carolina	42	8	14	20
Texas	<u>182</u>	<u>57</u>	<u>46</u>	<u>79</u>
TOTALS	<u>509</u>	<u>144</u>	<u>127</u>	<u>238</u>

1/ WITH ACTION means they constructed a new vessel, acquired a used vessel, and/or reconstructed a vessel before terminating.

2/ Of the 127 WITH NO ACTION, 25 deposited monies; but due to economic conditions of the industry, withdrew these monies nonqualified.

PROGRAM HISTORY OF CAPITAL CONSTRUCTION FUND - 1971 - 1984

	<u>Total Cases Rec./ Total Active</u>	<u>Total Deposits<sup>1/</sup></u>	<u>Total<sup>1/</sup> W/D</u>
All Regions	3193 / 1748	\$ 576.5M	\$470.1M
S.E. Region	606 / 292	\$ 119.6M	\$102.8M
	(19.0% / 16.7%)	(20.7%)	(21.9%)

1/ Tax benefits average about 30% of this figure. In order for a CCF agreement holder to ultimately achieve a 30% tax benefit, he would have to deposit \$3.00 into his account for each \$1.00 in benefits.

SHRIMP VESSEL ACTIVITY, BY STATE  
FINANCIAL SERVICES BRANCH, SOUTHEAST REGION  
AS OF DECEMBER 31, 1984

<u>STATE</u>	<u>FISHERIES OBLIGATION</u>		<u>FISHERIES LOAN</u>		<u>CAPITAL CONSTRUCTION</u>	
	<u>ACCOUNTS</u>	<u>GUARANTEE</u> (Thousand Dollars)	<u>ACCOUNTS</u>	<u>FUND</u> (Thousand Dollars)	<u>ACCOUNTS</u>	<u>FUND</u> (Thousand Dollars)
		<u>BALANCES</u>		<u>BALANCES</u>		<u>DEPOSIT BALANCES</u>
Alabama	87	\$13.7	34	\$1.7	45	\$ 2.3
Florida	68	\$10.7	20	\$ .7	62	\$ 4.8
Georgia	10	\$ 1.4	2	\$ .1	8	<u>1/</u>
Louisiana	51	\$ 8.1	13	\$ .8	4	<u>1/</u>
Mississippi	0	\$ 0	0	\$ 0	1	<u>1/</u>
North Carolina	6	\$ .9	1	\$ .06	19	\$ .8
South Carolina	1	\$ .2	2	\$ .04	20	\$ .7
Texas	<u>109</u>	<u>\$17.1</u>	<u>18</u>	<u>\$1.0</u>	<u>79</u>	<u>\$ 3.6</u>
TOTALS	<u>332</u>	<u>\$52.1</u>	<u>90</u>	<u>\$4.4</u>	<u>238</u>	<u>\$12.4</u>

1/ Due to the small number of active accounts, the Deposit Balance has not been identified but appears in the total.

**APPENDIX L**

**COST ANALYSIS OF A MEXICAN SHRIMP TRAWLER**

Cost analysis of a Mexican shrimp trawler (1 trip)

Value of a kilogram (kg) of shrimp- P/2,500\*

Value of an average shrimp catch of 1,250 kg- P/3,125,000

Costs:Fixed

30,000	Liters of diesel	P/984,000
2	Barrels of lubricant	105,120
	Food	140,000
	Deck equipment	50,000
	Spare parts	50,000
	Freon, salt, ice	75,000
	Repairs	
	Fishing gear	50,000
	Electrical equipment	45,000
	Equipment	110,000
		<u>1,609,120</u>

Variable

	Freezing and packing	187,500
	Taxes (SPT-0.023)	71,875
	Export duty (1 percent)	31,250
	Commission to distributor (7.5 percent)	234,375
	Transit and port charges	137,500
	Pre-payment to members	585,930
	Administration	173,437
	Social Security	50,000
	Social quotas	50,000
		<u>1,503,117</u>

Total cost per trip

P/3,112,237

Source: Mexican Federation of Fishery Cooperatives, March 1985. Translated by NMFS.

\* As of May 28, 1985, the Mexican peso traded for P/254 (floating rate) to the U.S. dollar.

**APPENDIX M**

**PRICE AND INCOME ELASTICITIES FOR SHRIMP**

## Price and Income Elasticities for Shrimp

Most analysts familiar with the shrimp industry maintain that the demand for shrimp in the U.S. market is price inelastic and income elastic. That is, they believe that consumption of shrimp is not very responsive to price changes, but that it is sensitive to changes in consumer income. In the United States, most shrimp is sold through restaurants and institutions, where shrimp normally constitutes a small portion of overall costs per plate. This helps explain why consumption of shrimp is thought to be relatively insensitive to changes in its price. Although shrimp has grown substantially in popularity in the United States, it remains more costly than many other meat, poultry, or seafood products. This is why consumption of shrimp is thought to be relatively elastic with regard to changes in income.

Numerous researchers have used econometric techniques to estimate price and income elasticities of demand for shrimp products. The models that have been developed vary considerably in their selection of variables and data. Not surprisingly, quantitative results differ. Yet most studies lend support to the popular hypotheses. Recently, however, several studies have reported elasticity estimates that challenge previous research results.

Most research on the U.S. shrimp market has produced estimates for the price elasticity of demand that range between  $-.27$  and  $-.63$ . Corresponding estimates for the income elasticity of demand range between  $1.00$  and  $2.04$ . Some of these estimates were derived from single equation, least squares methods (Batie [1974] and Cleary [1969]). Other researchers (Doll [1972], Gillespie et al. [1969], Hopkins et al., [1982], Prochaska et al. [1983]) developed more complete descriptions of the market using multi-equation models. Most studies used annual observations, typically spanning the 1950's and 1960's. The exceptions were Hopkins et al. and Prochaska et al.; these studies employed data that covered the 1970's, and part of the 1980's.

However, several studies undertaken with recent data suggest that the demand for shrimp may, in fact, be income inelastic. Sage Associates used monthly data between 1975 and 1980, and reported unitary elasticity of shrimp demand with respect to restaurant expenditures, an alternative specification to disposable income. <sup>1/</sup> Hu [1983], using annual data between 1960 and 1980, reports an income elasticity of  $.73$ . Roberts et al. [1982] report a price elasticity of demand of  $-.11$ , and an elasticity of demand with respect to restaurant expenditures of  $.42$ . Experiments with alternate specifications, including disposal income, also yielded elasticities below unity. Their model of the U.S. shrimp industry is notable for its sophisticated application of economic theory and econometrics. The behavioral model provides for simultaneous determination of seven endogenous variables, including wholesale

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<sup>1/</sup> In monthly models of shrimp demand, expenditures at restaurants and eating establishments is preferred over disposable income as an explanatory variable. Restaurant activity is characterized by distinct seasonal trends that would not be captured by monthly observations on disposable income.

and ex-vessel prices, apparent consumption, imports, inventories, fishing effort, and domestic landings. The data consist of monthly observations on 26/30 count shrimp taken since September 1974. The authors argue that the shrimp industry has undergone significant structural change, citing statistics that per capita shrimp consumption increased steadily until the early 1970's, after which much slower growth ensued. Roberts et al. contend that previous modeling efforts have not revealed these changes largely because researchers did not confine their analysis to recent data.

#### References

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**APPENDIX N**

**A PROJECTION OF U.S. IMPORT DEMAND FOR SHRIMP: 1985-1990**

## A Projection of U.S. Import Demand for Shrimp: 1985-1990

### Introduction and Methodology

The following identity relates domestic shrimp production (P), shrimp exports (X), imports (M) and domestic consumption (C):

$$C = P - X + M$$

or,  $M = C - P + X$

Import demand is the quantity of shrimp required to satisfy domestic consumption after allowing for domestic catch and export sales. Assumptions concerning each of the right-hand-side variables will be made to derive estimates for import demand.

Per-capita consumption of shrimp depends on real disposable income, the price of shrimp in real terms and relative to close substitutes, and tastes and preferences. Regression analysis was used to determine the relationships between consumption and its determinants. Assumptions regarding future values for these determinants were then made to estimate per-capita shrimp consumption through 1990. Total U.S. shrimp consumption was then projected using estimates of future growth in population.

Domestic shrimp landings are expected to be unchanged over the period. However, annual harvests may vary considerably around the expected level because of unpredictable environmental factors. Exports are small, relative to the magnitudes of the other variables involved. Primarily, exports will depend upon exchange rates between the dollar and currencies in the principal export markets for U.S. shrimp products.

An accurate description of the domestic shrimp industry for the years up to 1990 requires knowledge of the likely direction of world shrimp prices. Future prices will depend upon the relative movements of supply and demand. Most authorities believe that significant increases in shrimp production from natural fisheries are unlikely. Regarding growth in output from shrimp farming, there is substantial uncertainty. Furthermore, world shrimp demand behavior is not well understood. Consequently, the direction of world shrimp prices cannot be forecast with confidence.

### Analysis

U.S. consumption of shrimp is projected to increase at an annual rate of 2.5 to 3.0 percent. Population growth is expected to account for .9 percent of the increase. <sup>1/</sup> The remainder is attributed to the combined effects of changes in real income, shrimp prices, and shifting tastes on consumption of shrimp per capita. Changes in tastes are not directly measurable. Time-trend variables were introduced in an attempt to capture the influence of changing

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<sup>1/</sup> U.S. Statistical Abstract 1985

tastes. However, regression analysis was unable to discriminate between these trend effects and rising disposable income over the period, because they are highly correlated and compete for statistical significance. As a result, two estimates for growth in consumption will be provided, corresponding to the alternate assumptions that changes in tastes have, or have not, accompanied the rise in income as shrimp consumption increased. A range of values for possible consumption growth rates emerge. If changing tastes account for some of the growth in demand, then the combined effects of higher real income and changing tastes implies growth of 1.8 percent annually. 1/ If no change in tastes is assumed, then real-income effects will contribute 2.3 percent to annual growth in shrimp consumption. 2/ Therefore, with no change in the price of shrimp, U.S. consumption is projected to increase between 2.7 percent and 3.2 percent. This projected rate of change needs to be adjusted depending on expected changes in world shrimp prices.

According to the National Marine Fisheries Service (NMFS), world stocks of marine shrimp are fully exploited. Since 1977, world landings have ranged from 1.72 to 1.82 million metric tons of live-weight shrimp. It is expected that increases in world consumption will have to be met by expanded production from shrimp farms. The output of aquacultured shrimp is expected to grow rapidly and will soon become an important source of world supplies. In a recent study, NMFS projects world output of aquacultured shrimp to increase from 78,000 metric tons in 1982, to over 240,000 tons by 1990. However, this growth in aquacultured shrimp would represent less than 10 percent cumulative growth in world shrimp supplies, from 1.85 million tons, to 2.01 million tons. Furthermore, estimates for the growth of the aquacultured-shrimp industry are subject to considerable uncertainty. The potential exists for economic, technical, political and environmental difficulties to upset these estimates. The industry is in its infancy, and problems with disease control

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1/ For this case, an estimated income elasticity of .31 was used. Increased real income contributed .6 percent growth, while changing tastes accounted for 1.2 percent annual growth. The regression equation featuring time trend variables is as follows, with standard errors in parentheses:

$$\ln C = 3.272 + .313 \ln Y - .194 \ln P + .034 T_1 + .012 T_2 \quad R^2 = .86$$

(6.548) (.833) (.100) (.029) (.016)

where C denotes per capita shrimp consumption, Y is per capita real disposable income, P is the nominal wholesale price of 26/30 count shrimp deflated by the CPI, and  $T_1$  and  $T_2$  are trend variables for 1960-70, and 1971-84, respectively.

2/ This result obtained from use of an estimated income elasticity of 1.17; annual increases in real disposable income were assumed to be 2 percent:

$$\ln C = -3.459 - .205 \ln P + 1.174 \ln Y \quad R^2 = .86$$

(.982) (.088) (.165)

and inadequate supplies of breeding stock currently exist. Also, the consequences upon natural shrimp fisheries from the removal of breeding stock for maturation in shrimp farms has yet to be ascertained.

Similar uncertainty prevails with respect to future world demand for shrimp. No published research on the world demand for shrimp was found to exist. Consequently, it was not possible to estimate a model of world export supply, the excess of foreign production over foreign demand at each price. Nevertheless, world export supply is likely to be price inelastic. As a result, forecasts for world shrimp prices, in real terms, are subject to a wide margin for error. Clearly, expanded production of aquacultured shrimp will restrain upward movements in world shrimp prices. Historical patterns suggest that some increase in real shrimp prices will occur over the period 1985-1990. Given price inelasticity of U.S. demand, this price effect is not expected to significantly affect U.S. consumption levels. Using a price elasticity of  $-.20$ , and assuming that real shrimp prices continue to increase at their long-run trend rate of 5 percent annually, the price effect on consumption would be calculated as  $-1.0$  percent per year. Assuming that aquacultured shrimp production will moderate this trend, a price effect of  $-.7$  percent will be used instead. This is consistent with real prices increasing at an average annual rate of 3.5 percent. Consequently, an overall annual increase in U.S. consumption between 2.0 and 2.5 percent is projected. Consumption is projected to increase from a 1980-84 base-year average of 494 million pounds, in heads-off equivalent weight, to a range of 579 to 602 million pounds by 1990.

Landings have been generally flat over the last 20 years. The average over 1965-84 has been 209 million pounds per year. However, wide variation has been observed over the period. Landings have been as low as 148 million pounds in 1966 and 155 million pounds in 1983 and as high as 288 million pounds in 1977. Landings have been less than the 20-year average in 5 of the 6 years since 1979, averaging 192 million pounds annually. For the purposes of this projection, domestic shrimp landings of 209 million pounds annually will be assumed.

Since 1973, when 75 million pounds were sold abroad, U.S. exports of shrimp have fallen substantially, totaling less than 27 million pounds in 1984. The decline, averaging 5 million pounds per year, has been more or less continuous over this period. This downward trend will be reinforced by the recent strength of the dollar. The long-term character of this trend suggests that U.S. exports are unlikely to recover substantially should the dollar's value return to historic levels. Consequently, exports are projected to fall to 20 million pounds by 1990.

Under the assumptions stipulated, imports of shrimp are expected to increase from the 1980-84 base-period average of 342 million pounds, to a range of 390 to 413 million pounds by 1990 (table N-1). This would represent an increase of 13 to 20 percent relative to the base-period average. The relatively modest projected increase in shrimp imports stems from, in part, the assumed recovery of domestic landings from very low levels observed during the period 1980-1984. The increase in imports is expected to come mostly from sources producing aquacultured shrimp. Production from shrimp farming is

thought to be price elastic, as production costs are comparable to, or less than, the cost of marine-harvested shrimp. The increase in imports, which is likely to be between 50 million and 70 million pounds, would represent between 30 and 40 percent of the projected growth in aquacultured shrimp supplies. This would be slightly higher than the current U.S. share of world imports of shrimp. This projection suggests that U.S. consumers would be bidding away a larger share of the world's shrimp available for export. It is assumed that the rest of the world's demand for shrimp is more price elastic than that in the United States. There are several reasons why this may be the case. For one, shrimp is more likely to be purchased over the counter in Japan and in other major shrimp-consuming markets. Also, the cost of shrimp served in restaurants abroad will represent a larger portion of the cost of the meal because of generally lower labor and overhead expenses than in the United States. In both instances, changes in the cost of shrimp will be more apparent to foreign consumers, and it is likely that they will be more price responsive in their demand.

Table N-1.--Projected U.S. shrimp imports, 1985-1990.

(In millions of pounds)				
Year	Consumption <u>1/</u>	Landings	Exports	Imports <u>1/</u>
1980-84 actual---	494	189	37	342
1985 projected---	524-532	209	25	340-348
1986-----do-----	535-545	209	24	350-360
1987-----do-----	545-559	209	23	359-373
1988-----do-----	556-573	209	22	369-386
1989-----do-----	567-587	209	21	379-399
1990-----do-----	579-602	209	20	390-413

1/ For projected consumption and imports, low estimates assume 2.0 percent annual growth in consumption of shrimp, while high estimates assume 2.5 percent growth.

Source: Estimated by the staff of the U.S. International Trade Commission based on official statistics of the U.S. Department of Commerce.



