UNITED STATES TARIFF COMMISSION

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

TC Publication No. 8

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UNITED STATES TARIFF COMMISSION

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Introduction

This report presents the results of investigation No. 332-40 conducted by the U.S. Tariff Commission under the provisions of section 332 of the Tariff Act of 1930, pursuant to the following resolution adopted in August 1960 by the Committee on Finance of the U.S. Senate:

> RESOLVED, That the United States Tariff Commission is hereby directed pursuant to section 332 of the Tariff Act of 1930, as amended, to make a thorough investigation of 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, and report to the Committee on Finance of the Senate not later than March 1, 1961.
>
> The report of the Commission shall set forth the facts relative to United States and world production, and trade; imports; domestic supplies and consumption; the possibilities of world over-production; the interests of consumers, processors, and producers; foreign and domestic wage rates; costs of transportation to principal consuming centers; supplies of shrimp available to domestic and foreign fishermen; and other pertinent factors.
>
> The report shall also contain an analysis of 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 as well as an analysis of the possible results of a tariff quota under which all imports not in excess of the imports in the calendar year 1960 shall enter free of duty and all imports in excess of those in 1960 shall be dutiable at 50 percent ad valorem.
>
> In the course of its investigation the Commission shall hold hearings at which fishermen, canners, and other processors, and all other interested parties shall be given the opportunity to be heard.

Public notice of the institution of the investigation and of the hearing to be held in connection therewith was issued on September 12, 1960. The notice was posted at the office of the Commission in Washington, D.C., and at its office in New York City, and was published

in the Federal Register (25 F.R. 8894) and in the September 15, 1960, issue of Treasury Decisions. Subsequent to the issuance of the notice of the investigation, the Senate Finance Committee extended the date for submitting the report from March 1 to April 1, 1961. The public hearing was duly held from January 9 to 13, 1961, and all interested parties were given opportunity to be present, to produce evidence, and to be heard.

An earlier report on shrimp was issued by the Tariff Commission on May 9, 1960, presenting the results of an investigation conducted in response to a resolution of the Committee on Ways and Means of the U.S. House of Representatives. 1/ In that investigation the Commission was unable, within the 3 months prescribed by the resolution, to make a thorough 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. Some of the descriptive material and many of the statistical tables presented in the Commission's earlier report, however, are pertinent to the present investigation and are therefore included in this report with appropriate revisions and additions.

In addition to the data from its earlier report, the Commission in this report utilized information presented at the public hearing and in the briefs of interested parties, as well as information obtained by fieldwork, from other Government agencies, and from responses to questionnaires.

1/ 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 February 9, 1960, 1960 (processed).

Questionnaires were sent to 395 domestic handlers and processors of shrimp and shrimp products. In approving the questionnaire to domestic handlers and processors, the U.S. Bureau of the Budget directed that the Commission not require certain small concerns to complete the questionnaire, i.e., any handler or packer (not engaged in the more advanced processing operations) that handled less than 250,000 pounds of heads-off, shell-on shrimp (or the equivalent) in 1959. Therefore, the Commission did not send the questionnaire to numerous concerns known to be small handlers. In addition, 62 of the domestic handlers to whom the questionnaire was sent reported that they each handled less than 250,000 pounds of shrimp in 1959; 61 concerns on the Commission's mailing list either had gone out of business or had discontinued handling shrimp and did not fill in the questionnaire; 49 concerns returned questionnaires that provided no usable data; and 79 concerns did not respond. Usable data, therefore, were obtained from 144 concerns, which accounted for the following approximate percentages of total U.S. production in 1959:

	Percent
Frozen heads-off, shell-on shrimp	40
Frozen breaded shrimp	75
Frozen peeled and deveined shrimp	50
Canned shrimp	70
Miscellaneous shrimp products	60

Questionnaires were sent to 105 U.S. importers of shrimp and shrimp products. Of these, 28 were out of business or reported that they did not import shrimp in 1960, 14 did not respond, and 63 furnished usable data. The importers that furnished usable data accounted for 92 percent of total U.S. imports of shrimp and shrimp products in 1960.

The Commission requested the U.S. Foreign Service to furnish information on shrimp fisheries, processing, production, exports, wages, and potentials of the fisheries in about 60 foreign countries. Information was received for some 55 countries in time for analysis and incorporation in this report. For many countries very little information and no statistical data were available. For most of the important shrimp-producing countries, however, statistical data and other information were furnished in varying detail. The sections of this report pertaining to foreign shrimp fisheries and world trade are based on information furnished by the Foreign Service in response to the Commission's request, as well as on material obtained from other sources, including the Bureau of Commercial Fisheries of the U.S. Fish and Wildlife Service and the Food and Agriculture Organization of the United Nations.

U.S. Customs Treatment

The shrimp and shrimp products that are the subject of this investigation are included in the free list of the Tariff Act of 1930 under paragraph 1761, which provides for "shrimps, . . . fresh or frozen (whether or not packed in ice), or prepared or preserved in any manner (including pastes and sauces), and not specially provided for." This provision includes fresh or frozen shrimp whether or not beheaded, peeled, deveined, split, or cooked; it also includes canned shrimp, bait shrimp, and shrimp that have been breaded, salted, dried, pickled, smoked, or processed in various other ways.

The duty-free status of fresh or frozen shrimp (whether or not packed in ice) was bound pursuant to a concession granted by the United States in the bilateral trade agreement with Mexico, effective January 30, 1943. This agreement, however, was terminated, effective January 1, 1951. Trade agreements now in effect contain no tariff concessions by the United States on the shrimp and shrimp products provided for in paragraph 1761. These commodities, therefore, are not subject to the "escape clause" procedure under section 7 of the Trade Agreements Extension Act of 1951, as amended, and legislation imposing tariff duties or tariff quotas on such shrimp and shrimp products would not violate any international obligation of the United States. The imposition of an absolute quota, however, would be inconsistent with international obligations of the United States.

Shrimp caught by U.S. flag vessels and landed in the United States by the taking 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 craft 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 tariff paragraph 1730(a), which provides in part as follows:

> All 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 the Customs Regulations (19 CFR 10.78(b)(c)) 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; the enterprise may include a shore station operated in conjunction with such vessels by the owner or master thereof. The employment of citizens of a foreign country by an American fishery is permitted, but if an American fishery purchases fish or other marine products taken by citizens of a foreign country on the high seas or in foreign waters, such fish or other marine products are subject to treatment as foreign merchandise.

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 required to be entered under paragraph 1730(a),

pursuant to section 10.78(a) of the Customs Regulations. 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 paragraph 1761 as foreign merchandise because it is uncertain, in some cases, whether the shrimp are eligible for entry under paragraph 1730(a), and because it is simpler to clear them through customs under paragraph 1761 than under paragraph 1730(a). Should duties or quotas be imposed on imports under paragraph 1761, however, the question of the requirements for free entry of shrimp under paragraph 1730(a) would become important. Whether or not shrimp could be entered under paragraph 1730(a) 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.

Description and Uses

Shrimp are crustaceans that abound in the salt waters of many parts of the world. Commercially important species are caught, for the most part, in coastal waters. The quantity of shrimp consumed by other marine animals is believed to exceed by far the substantial amounts taken by fishermen. In the United States, where shrimp is one of the most popular seafoods, a relatively small amount is used as bait by sport fishermen. Some of the shrimp waste resulting from shrimp-canning operations is processed into meal for poultry feed.

The edible portion of a shrimp, 1/ comprising about 50 percent of its weight, consists of the muscular section (called shrimp meat) that remains after the head, thorax, legs, swimmerets, swimming fan, and shell have been removed. In the United States shrimp reach institutional outlets (hotels, restaurants, and the like) and retail outlets in many different forms. While small quantities of shrimp are sold to these outlets in the form in which the shrimp are taken from the water (i.e., with all the inedible parts), the bulk undergo processing, such as the removal of one or more of the inedible parts, freezing, breading, cooking, drying, and so forth. The various forms in which shrimp are sold to institutional and retail outlets may be grouped as follows: 2/

Fresh (iced), heads-off, shell-on
Frozen, raw, heads-off, shell-on
Frozen, raw, heads-off, split-shell, deveined

1/ This report is concerned primarily with shrimp intended for human consumption inasmuch as U.S. imports of bait shrimp are of little significance. See bait shrimp in the glossary, appendix C.

2/ For more detailed information on various forms in which shrimp are marketed, see the glossary, appendix C.

Frozen, raw, peeled (i.e., shell-off) and deveined
Frozen, cooked, peeled and deveined
Frozen, breaded, raw or cooked
Cured (i.e., dried, salted, spiced, smoked, or pickled)
Canned, wet or dry pack
Canned specialties, such as pastes, soups, stews, aspic, and cocktails
Frozen specialties, such as burgers, chow mein, cocktail, creole, dinners, egg roll, gumbo, patties, steaks, sticks, and stuffed shrimp

The relative importance of the principal forms of shrimp in U.S. consumer markets is shown in the following tabulation, which indicates the approximate proportion of the total 1959 supply of domestic and imported shrimp (in terms of raw, heads-off, shell-on shrimp) that was sold in each form to institutional and retail outlets:

	Percent
Fresh	10
Frozen heads-off, shell-on	43
Frozen breaded	20
Frozen peeled and deveined	13
Canned	12
All other	2
Total	100

The shrimp marketed in the United States as seafood consist principally of species caught in tropical and temperate waters. Of minor importance in the U.S. market are various species of cold-water shrimp. The United States obtains both warm-water and cold-water shrimp from the U.S. fishery and from imports. The principal warm-water species supplied by U.S. craft are brown [1/] (Penaeus aztecus), white [1/] (P. setiferus), and pink [1/] (P. duorarum) all of which are taken in the coastal waters

1/ The designation commonly used in the United States for the specified species. A particular species of shrimp often has dissimilar common names in different countries or even in different localities of the same country (including the United States). Also, a common name, such as brown shrimp, may refer to one species in a certain locality and to another species in a different locality.

extending from North Carolina southward to Florida, in the Caribbean Sea, and in the Gulf of Mexico. A warm-water species of minor commercial importance is the sea bob (Xiphopeneus kroyeri), which is caught chiefly in the estuarial waters of Louisiana. Sea bobs are much smaller in size than other warm-water species landed by the U.S. fleet.

The cold-water shrimp caught by U.S. craft consist primarily of several species of the genus Pandalus taken from the Pacific Ocean in the area extending from northern California to western Alaska. These cold-water species, most of which are pink in color, are much smaller than the shrimp of the genus Penaeus.

Shipments from Mexico, the principal source of U.S. shrimp imports, include the browns, whites, and pinks from the Gulf of Mexico that are the same species as the bulk of the U.S. production, and also several other species of the genus Penaeus from Mexico's west coast. The principal species taken from the Gulf of California and along the Pacific coast of Mexico and Central America and included in U.S. imports are Penaeus stylirostris, P. vannamei, and P. occidentalis, all considered white shrimp; and P. californiensis, known as brown shrimp. Some cold-water shrimp similar to those supplied by the U.S. fishery are imported from Chile, Canada, the Scandinavian countries, and Japan.

The areas where the principal species of the U.S. catch of shrimp are landed and the locations of the major shrimp grounds fished by U.S. and Mexican craft are shown graphically in appendix A. Figure 1 shows U.S. landings 1/ of shrimp, by species, in South Atlantic and Gulf States

1/ The term "U.S. landings" is used to mean the quantity of shrimp brought to U.S. ports by U.S. fishing craft. Foreign fishing craft are not permitted to land shrimp in the United States.

in 1959; figure 2 shows the U.S. catch of shrimp, by species, and by area of capture in the Gulf of Mexico in 1959; and figure 3 shows the locations where the various species of shrimp are caught by Mexican craft off both the west and east coasts of Mexico.

The shrimp landed in the United States by the domestic fleet are fresh shrimp that have been iced in the hold of the craft. A major part of the domestic shrimp catch is beheaded on board the taking craft before being placed in the hold. The cold-water shrimp and the small shrimp of the warm-water species, as well as significant quantities of the larger warm-water types, are landed with the heads on. About 15 to 20 percent of the shrimp production of the domestic fleet is sold in the same form as landed, whether heads-on or heads-off, to institutional and retail outlets; the remainder is delivered fresh to various processors (including freezers), principally those close to the ports where the shrimp are landed. In recent years the freezers, breading plants, and canneries have taken the bulk of the domestic fresh shrimp; the canneries prefer the heads-on shrimp when they are available. Substantial amounts of domestic shrimp are frozen in various forms and styles of packing, partly for distribution to institutional and retail outlets and partly for further processing at a later date. A minor part of the domestic shrimp landings, consisting mainly of very small heads-on, shell-on shrimp, go to drying concerns.

U.S. imports of shrimp consist principally of frozen heads-off, shell-on shrimp but also include significant amounts of peeled and deveined shrimp, canned shrimp, breaded shrimp, and dried shrimp, and minor amounts of various shrimp specialties. The major share of the

imports reach institutional and retail outlets in the United States in the form in which they are entered. Substantial amounts, however, are further processed before reaching ultimate consumers.

For the forms in which domestic and imported shrimp are sold to institutional and retail outlets, the available species are interchangeable in varying degrees. The distinguishing color of a particular kind of shrimp is generally important when the shrimp are sold heads-off, shell-on to institutional and retail outlets, but is of minor significance when the shrimp are sold to certain processors. In the production of breaded shrimp, the pinks, browns, and whites from the domestic catch, as well as various species of imported shrimp, are all used in substantial quantities. Canners in the Gulf States prefer the browns and whites to the pinks, not because of color, but because the browns and whites yield a better canned product.

The size of the individual shrimp is one of the most important factors determining the form in which it reaches the ultimate consumer. For each species there is a wide range of sizes. Sizes are usually indicated by the approximate number (count) of heads-off, shell-on shrimp to the pound. Some shrimp are so large that the count is 1 or 2 to the pound and some so small that the count is 400 or more to the pound. The large sizes generally sell at higher prices per pound than do the smaller sizes. In U.S. markets, the wholesale prices for heads-off, shell-on shrimp are generally quoted for specific size groups, each of which usually has a market designation as follows:

Count	Market designation
Fewer than 15	Extra jumbo
15 to 20	Jumbo
21 to 25	Large
26 to 30	Large-medium
31 to 42	Medium
43 to 65	Small
66 or more	Very small

Shrimp counting up to 25 to the pound are generally sold fresh or frozen, heads-off, shell-on, principally to restaurants, hotels, clubs, and the like. The medium and small sizes, 26-65 to the pound, go principally to breaders, canners, and other processors, and to retail stores. Virtually all of the shrimp that count more than 65 to the pound go to canners, driers, and producers of specialties.

The U.S. Shrimp Fishery

In terms of value of landings, the U.S. shrimp fishery is the most important fishery in this country. In 1959, shrimp accounted for 17 percent of the total value of landings by all U.S. fisheries. In terms of volume expressed in round weight, the shrimp catch ranks third, being exceeded only by the tuna catch and the salmon catch. The fishing fleets of the five States bordering the Gulf of Mexico land the bulk of the domestic shrimp catch. In 1960 the Gulf of Mexico accounted for 83 percent of the total catch, the Atlantic for 12 percent, and the Pacific for 5 percent.

Before World War II, shrimp fishing was mainly a seasonal, daytime operation for white shrimp in waters less than 15 fathoms deep, extending along the U.S. coast from North Carolina to Texas. Fishing was largely carried on with small craft in sounds, bays, and bayous. Shortly after World War II the shrimp fishery initiated night fishing for brown shrimp--principally in the deeper waters off Texas and northeast Mexico. This development encouraged the construction of larger craft suitable for fishing in deeper waters and for traveling greater distances. Later, fishing for brown shrimp spread to the coastal waters of the Gulf States, where white shrimp previously had been the only important species caught. By 1950 the shrimp fleet of the southern States was also engaged in nighttime fishing for pink shrimp in the area off Campeche, Mexico, and in the area of the Dry Tortugas near Key West, Fla. With fishing operations in

so many areas (figure 2), the southern shrimp fishery has become a year-round industry.

Many of the larger craft shift their operations from area to area to take advantage of seasonal concentrations of shrimp. All species are available throughout the year, but each has a peak period of abundance. Catches of pink shrimp reach a peak in the winter; of white shrimp, in the fall; and of brown shrimp, in the summer. Even in periods of peak production, however, the individual craft of the southern shrimp fleet have catches that are small in terms of round weight per day or night of fishing, as compared with those of most other U.S. fishing fleets, such as the groundfish fleet. A catch of 800 pounds of heads-on shrimp (equivalent to less than 500 pounds of heads-off, shell-on shrimp) by a single vessel 1/ is considered good for a typical day or night of fishing in the Gulf of Mexico.

In the late fall, when shrimp fishing drops off in Louisiana, Mississippi, and the South Atlantic States, some of the craft capable of making moderately long trips migrate to Key West and Ft. Myers, Fla., to fish the Tortugas area. Numerous large vessels based in Florida formerly operated in the Campeche area throughout the year; in recent years some of these vessels of the Florida fleet have been migrating to Texas waters for the late summer and fall. Many of the vessels that operate out of Brownsville, Tex., fish off the northeastern coast of Mexico. In 1959 the catch by U.S. vessels off the northeast Mexican

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1/ Each vessel normally has a crew of either 2 or 3 men including the captain.

coast below Brownsville, Tex., accounted for 8 percent of the total U.S. catch. In the same year, the catch off Campeche, Mexico, accounted for another 8 percent.

There is a great variation in the length of fishing trips made by shrimp craft. Most fishing trips in the coastal waters of the South Atlantic and Gulf States last 5 to 6 days; trips in nearby waters last only 1 to 3 days. Fishing trips by vessels based at Brownsville, Tex., take up to 14 days when the vessels fish off the Mexican coast in an area 100 to 150 miles away from the home port. Trips out of Florida ports to the Campeche grounds may last 40 days or longer.

Shrimp from the inshore waters of the Pacific have been utilized commercially since pioneer days, but offshore fishing for shrimp developed in California in the early 1950's and in Oregon, Washington, and Alaska in the late 1950's. The shrimp fleet of the western States may fish throughout the year, and its catch per unit of effort is much greater than that of the fleet of the Gulf of Mexico. In some Alaskan waters catches of 6,000 to 8,000 pounds per 30-minute drag of the net have been made.

Description and size of fleet

In U.S. Government statistics fishing craft of 5 net tons or more are classified as vessels, and those of less than 5 net tons as boats. Vessels are by far the more important type of shrimp craft; they account for at least 80 percent of U.S. landings. In some ports, however, especially those where the canneries are located, boats account for a fairly substantial part of the total landings. Between 1950 and 1959 the number

of vessels increased by 50 percent and the number of boats declined by 10 percent. In 1959 (the latest year for which official data are available) the shrimp fleet consisted of 7,658 craft, including 4,003 vessels and 3,655 boats (table 1, appendix B). In 1960 the addition of about 100 new craft, mostly vessels, and the return of a few vessels from other fisheries approximately offset the losses by sinking, abandonment, and scrapping.

The shrimp fishery usually classifies fishing craft in terms of length rather than net tons, because length is much more indicative of cruising range and catch potential. The shrimp craft classified as boats are generally less than 30 feet in length; some are only 16 feet long. The boats fish for shrimp in inshore waters and short distances offshore only during part of the year. Many shrimp boats also fish for other marine products when shrimp are not available. Shrimp vessels range from about 30 feet to 80 feet in length. The smaller ones fish near shore and the larger ones often travel long distances and remain away from port for extended periods. Most vessels are equipped with depth finders and ship-to-shore radios; many are equipped with electronic automatic pilots. Almost all vessels are built of wood and use diesel power. The larger vessels, when fully equipped, cost $50,000 or more.

Nearly all the craft engaged in fishing for shrimp use otter trawls, which account for more than 95 percent of the U.S. production of shrimp. Beam trawls (used by California craft and a few small vessels that operate in the inshore waters of Washington and Alaska), cast nets (used in coastal waters of Florida, Georgia, and South Carolina), bag nets (in

North Carolina waters), and baited pots (in inshore waters of Washington) account for the remainder.

In otter-trawl fishing, the craft drags a large cone-shaped net across the sea bottom. In a typical operation the crew first drags a small trawl net along the bottom to determine the presence of shrimp. After finding an adequate quantity, the crew drops over the two main nets which the craft tows at a rate of about 3 miles per hour for a period of 2 to 3 hours. Then, each net is pulled in separately by a winch operated by power from the vessel's main engine. The catches are dumped on the deck. The heads of the shrimp are broken off and dumped overboard along with miscellaneous fish 1/ and debris that the net has collected. The crew then packs the heads-off shrimp in flake ice in the hold. During periods of heavy production or when the shrimp are very small, the beheading operation is omitted. In fishing off Campeche, and occasionally off northern Mexico, the vessel will transfer its catch to another fishing vessel that is returning to port. A craft generally transfers its catch about every 7 days. Thus on the return from Campeche, most craft will carry the catches of several other vessels. A few vessels return empty, because the combined capacity of the vessels fishing in the area generally exceeds the catches. Transfers of catch on a rotating basis are also sometimes employed in shrimp fishing in the Caribbean Sea.

The principal recent innovation in shrimp trawling has been the shift from the use of one net about 80 or 90 feet wide to the use of two small nets, each about 40 feet wide. This change began in 1957; by

1/ For every pound of shrimp caught the fishermen discard 1 to 3 pounds of small edible fish and scrap fish.

the end of 1958 most of the shrimp vessels operating in the Gulf of Mexico had changed to the new gear. Inasmuch as the cost of two small nets is equivalent to about two-thirds of the cost of one large net, and inasmuch as the nets have to be replaced frequently, the conversion resulted in a considerable saving. Since a small net is easier to handle than a large net, the use of the smaller nets makes it possible to reduce the fishing crew from three men to two in periods when earnings are low. Although some fishermen maintain that the two-net system produces more shrimp than the one-net system, all the Pacific coast vessels and many of the Atlantic coast vessels continue to use a single net. Small part-time craft operating in inshore waters also continue to use a single net.

In the shrimp ports of Texas, West Florida, and the South Atlantic, many individuals own more than one vessel. Frequently the vessels of several owners are managed by one individual. Some managers own or have a financial interest in one or more craft of the fleet that they control, and in addition they may own, at least in part, the packinghouse where the fleet is unloaded, or other enterprises that service shrimp craft. Craft operating from Louisiana and Mississippi ports are, for the most part, individually owned and captained by the owners.

Government aid programs

The Bureau of Commercial Fisheries of the U.S. Department of the Interior administers three programs that provide for financial assistance to commercial fishing craft: (1) A loan program for craft operation and maintenance, (2) a program for the guarantee of certain loans and mortgages, and (3) a program for the subsidization of craft construction

under certain conditions. The first program was activated in 1956 and the other two in 1960.

The first program, administered under the Fish and Wildlife Act of 1956, provides a revolving fund for loans designed to finance and refinance fishing operations and the maintenance, replacement, repair, and equipment of fishing gear and craft. Loans obtained from the revolving fund are repayable in installments, with a maximum maturity of 10 years. The interest rate of 5 percent per annum is charged on the amount outstanding, and all or part of a loan may be repaid without penalty before it is due. From the beginning of the program to December 31, 1960, 147 applications for loans on shrimp vessels in the South Atlantic and the Gulf States were received; of these applications, 58 were approved for a total of $1,258,000. On February 13, 1961, 7 of the approved loans were delinquent by 2 months or more, and 5 others were in default and had been turned over to the Department of Justice for collection.

Under the second program (Public Law 86-577) the Bureau of Commercial Fisheries will guarantee construction loans, prior to documentation of the craft, in an amount up to 75 percent of the actual cost of the fishing craft and will guarantee preferred ship mortgages in an amount up to 75 percent of the cost of craft construction, reconstruction, or reconditioning. From the beginning of the program in July 1960, to February 13, 1961, there were no applications for this insurance from the shrimp-fishing industry.

The third type of Government financial assistance is a craft-construction subsidy of up to one-third of the cost of construction of a new fishing craft. To be eligible for this subsidy, which was provided for under Public Law 86-516, approved in June 1960, the applicant must submit evidence that the fishery in which the craft is to be operated is being injured or threatened with injury because of increased imports. Up to February 13, 1961, only one application had been received for a construction subsidy for a shrimp trawler; this application was denied because it did not fully comply with regulations issued by the Bureau of Commercial Fisheries.

Production (landings)

In 1930, U.S. landings of shrimp amounted to 55 million pounds, valued at $3 million 1/ (table 2). During the 10-year period 1931-40, shrimp landings increased steadily, reaching 91 million pounds, valued at $6 million, in 1940. In 1950, the first year that a substantial part of the U.S. catch was obtained from the shrimp grounds of the Tortugas area and the Campeche Bank, total U.S. landings were 114 million pounds, valued at $43 million. In the period 1951-54, U.S. landings of shrimp rose from 134 million pounds in 1951 to 135 million in 1952, to 155 million in 1953, and to 160 million in 1954. The steady decline in the volume of landings from 160 million pounds in 1954 to 121 million in 1957 was accompanied by a steady increase in the value from $61 million to $73 million. After 1957, the volume of landings increased to 127 million

1/ In this report, unless otherwise indicated, the volume of landings is shown in terms of heads-off, shell-on shrimp, and the values thereof are computed from ex-vessel prices. The term ex-vessel prices means the prices received for shrimp by the owners of the craft whether the craft are classed as vessels or boats.

pounds in 1958, to 143 million pounds in 1959, and to 148 million pounds in 1960; the total value amounted to $73 million in 1958, to $58 million in 1959, and to $66 million in 1960. The landings were 4 percent larger, in terms of volume, and 14 percent larger, in terms of value, in 1960 than in 1959.

Although shrimp are landed in the United States throughout the year, the bulk of the landings generally are made during the months June to November. During the winter and early spring months, landings are small at all shrimp ports except those on the west coast of Florida. The slack season for the ports of west Florida is in the late summer when many of the Florida vessels are working out of the ports in Texas.

Total U.S. landings of shrimp in 1959 and 1960, by months, were as follows (in millions of pounds):

Month	1959	1960
January	4.6	5.4
February	3.7	3.8
March	3.6	4.2
April	4.9	4.8
May	9.4	7.5
June	16.4	13.9
July	18.7	23.2
August	20.0	21.8
September	19.6	18.8
October	19.9	21.6
November	12.9	14.6
December	9.3	8.8
Total	143.0	148.4

Among the factors affecting the annual landings of individual craft are the equipment used, the skill of the fishermen, the length of time required to reach the fishing grounds, layup time, the intensity of the fishing effort, the abundance of shrimp, and the number of craft operating in the areas fished. Annual shrimp landings per individual craft are considerably larger for the craft operating out of Alaskan ports than for those operating out of ports in any other State. In 1959, for example, many of the 23 vessels in the Alaskan fleet probably landed more than 250,000 pounds each. For the vessels fishing in the Campeche area that year, landings of 60,000-70,000 pounds were considered very good. The individual vessels (each over 5 net tons), of course, ordinarily make much larger annual catches than the individual boats (less than 5 net tons each). Most of the boats engage in shrimp fishing part-time. The 1,600 boats in the Louisiana shrimp fishery, for example, are known to fish for shrimp only during the summer and the early fall months; these boats are the main source of the supply for the local shrimp canneries.

There is also a wide variation in the annual sales values of the landings by individual shrimp craft in the U.S. fleet. Total sales values depend not only on the volume of landings but also on the sizes of the shrimp that comprise the landings. Because of the low ex-vessel prices for the very small shrimp caught by the Alaskan shrimp craft (about 6 cents per pound heads-off weight), compared with the ex-vessel prices for the larger shrimp caught by other U.S. shrimp craft, the

annual sales values of the landings of some craft in Alaska are often lower than the annual sales values of the much smaller landings of the craft elsewhere. Based on the total value of shrimp landings in Alaskan ports in 1959 (table 3), the average sales per vessel for the 23 Alaskan vessels was $22,000. Of the 61 trawlers from the Gulf States that submitted information to the Commission in confidence, 6 reported that their shrimp sales exceeded $30,000 in 1959 and also in 1960. The shrimp sales of 7 others also exceeded $30,000 in 1960. For many of the U.S. shrimp vessels and nearly all the shrimp boats, however, the annual sales values of shrimp landings in recent years have been less than $10,000 each. Of the 61 trawlers mentioned above, 6 reported sales values of less than $5,000 in 1959.

Based on the number of craft (vessels and boats) landing shrimp in the United States, the average landings per craft, by quantity (in terms of heads-off, shell-on shrimp) and by value (computed from prices paid to craft owners), for the period 1950-60, were as follows:

Year	Quantity	Value
	Pounds	
1950	16,935	$6,456
1951	20,277	7,876
1952	20,920	8,523
1953	23,842	11,791
1954	22,264	8,480
1955	20,981	8,913
1956	18,582	9,873
1957	17,782	10,718
1958	17,382	9,959
1959	18,669	7,591
1960 1/	19,400	8,600

1/ Estimated.

More than 90 percent of U.S. landings of shrimp consist of three species that are generally referred to in the market as browns, pinks, and whites. Table 4 shows the breakdown--by market designation and size--of the landings of shrimp in 1958-60 in the eight States bordering the South Atlantic and the Gulf of Mexico. Those eight States accounted for 91 percent of total U.S. landings of shrimp in 1959 and for about 95 percent in 1960. The same eight States accounted for virtually all the domestic landings of shrimp counting 25 or fewer to the pound (heads-off, shell-on). Shrimp of that size category, which comprised about 55 percent of U.S. imports of frozen heads-off, shell-on shrimp in 1960, accounted for about 23 percent of U.S. landings in 1959 and for about 24 percent in 1960; they are generally preferred over smaller sizes by the hotel and restaurant trade, which accounts for a substantial part of U.S. consumption.

Supplies of shrimp available to U.S. fishermen

Since much of the world's shrimp population is in international waters, the supply available to U.S. fishermen is, in theory, extremely large. For economic reasons, however, shrimp fishing by U.S. craft has been confined, as already indicated, mainly to the coastal waters of this country and to the Gulf of Mexico. In the international waters of the Gulf of Mexico the U.S. vessels share the shrimp supply with Mexican vessels. The U.S. vessels operate beyond 9 nautical miles from Mexico's shores inasmuch as Mexico claims up to 9 nautical miles as its territorial waters. To operate in waters more distant than the Gulf of Mexico, the shrimp fleet needs either access to shore establishments in foreign

countries or some large factory-type vessels equipped with freezing apparatus, in order to preserve the shrimp in a suitable condition for the U.S. market. Some U.S. vessels are now landing their shrimp catches in foreign countries for processing (including freezing) before transshipment to the United States. The extent to which this practice can be expanded is conjectural. So far, there has been no significant development in the use of factory-type vessels by the U.S. shrimp fleet.

With respect to the general areas now being exploited by the U.S. shrimp fishery, the evidence available to the Commission indicates that there will be no great change during the next few years in the supply of shrimp taken by U.S. craft, even if operations by the Mexican shrimp fleet are sharply curtailed in the international waters of the Gulf of Mexico. Although the Alaskan waters are reported to be capable of supplying 100 million pounds of heads-on shrimp annually, the shrimp available there are very small and have only a limited use. Increased exploitation of the Alaskan shrimp supply will await the development of new outlets for that type of shrimp.

In the trawlable areas of the continental shelf of the Gulf of Mexico and the South Atlantic, where U.S. shrimp craft now operate, it appears--on the basis of various studies and exploratory fishing trips undertaken by the U.S. Bureau of Commercial Fisheries--that the shrimp population is fairly stable. There are, of course, annual variations, caused primarily by natural phenomena, in the supply of shrimp in each of the fishing grounds of that broad expanse.

The penaeid species that comprise the bulk of the U.S. catch in the South Atlantic and the Gulf of Mexico have a life cycle of about 1 year; they spawn in the open ocean during the spring, summer, or fall. The eggs hatch within a short period, and the young shrimp are carried by the currents to brackish inshore waters, where the young shrimp grow rapidly, reaching marketable size in a period of 3 to 4 months. 1/ After reaching maturity they migrate to the open ocean to spawn. Thus, there is a fresh crop of shrimp each year. Moreover, because of the long spawning season, shrimp of various marketable sizes are available in a particular fishing area during many months of the year. Most biologists agree that there is little danger of depleting the longrun supply of penaeid shrimp by overfishing. The low catch rate of individual vessels in recent years, therefore, did not result from overfishing but from the sharing of a stable supply of shrimp by more vessels.

For the type of gear now used by the shrimp fleet of the southern States, shrimp fishing is not practicable in the deeper waters or in waters where the ocean bottom is very rough or the current very strong. Royal red shrimp have been located in commercial quantities by exploratory vessels of the U.S. Bureau of Commercial Fisheries beyond the edge of the continental shelf of the Gulf and the South Atlantic in depths of 175 to 300 fathoms. These shrimp are not now being taken, however, because the cost of production is prohibitive.

1/ Each of the Gulf States has its own conservation regulations to permit the shrimp to grow to marketable sizes.

Employment and wages

In the period 1950-59 the number of fishermen employed in the U.S. shrimp fishery increased at about the same rate as the number of craft. Although the average size of the craft increased during that period, the average size of the crew per craft remained about the same. For efficiency in fishing and the safety of the vessel, a crew of three, comprised of the captain and two helpers, is considered adequate for an average size modern shrimp vessel. Most of the vessels carry two- or three-man crews, including the captain; and some alternate between two men in the slow season and three men in the season of heavy production. The small craft that fish in the bays usually carry one or two men. The craft that fish day and night during a short season (e.g., some of the Louisiana vessels) frequently have crews of four men.

In 1959, the latest year for which official data are available, there were 10,150 fishermen on U.S. shrimp vessels and 6,057 on boats (table 5). The total number of U.S. shrimp fishermen on vessels and boats was 7 percent larger in 1959 than in 1957, the first year for which such data are available.

After 1950 the expanding U.S. shrimp fleet was confronted with a scarcity of competent, experienced crews. Men who had little fishing experience or were even lacking in seamanship frequently were employed as captains. From the standpoint of efficiency, the increasing dependence of the shrimp fishery on unskilled labor in recent years has offset to some extent the benefits that have accrued from modernization of the fishing craft and the consequent increase in their fishing capacity.

Compensation to fishermen in the shrimp fishery is generally determined by a division of the proceeds from the sale of the catch. There is no uniform system of dividing the proceeds. The general practice is for the owner to retain a proportion--from one-half to two-thirds--of the receipts. The captain divides the remainder among the crew (including himself) on a basis determined by the customary practice in the particular port and by the experience and efficiency of the individual fishermen. On a three-man vessel the captain takes from one-third to one-half of the crew's share. The owners generally pay for the ice, fuel, State license, fishing gear, and materials for repair of the rigging; the crews supply their own groceries and sometimes pay for half of the ice and for part of the repairs of the nets. Fringe benefits to fishermen in the form of advance payments (many of which are not recovered by the craft owners) for groceries and family emergencies are not uncommon.

Information obtained from fleet owners indicates that when shrimp operations are profitable for them the captains of large trawlers earn $7,000 or more a year.

Shrimp Processing in the United States

For purposes of this report, shrimp processing (including shoreside handling and freezing) is divided into categories, according to the type of shrimp product prepared for market by the processing concerns, as follows:

(1) Fresh and frozen shell-on shrimp
(2) Frozen breaded shrimp
(3) Canned shrimp
(4) Frozen peeled and deveined shrimp
(5) Miscellaneous shrimp products

Although the processing concerns may be roughly grouped according to the above categories, many individual concerns produce and market two or more of the products shown.

Fresh and frozen shell-on shrimp

Of the total U.S. landings of shrimp in 1959, nearly one-fifth (about 26 million pounds) were sold as fresh shrimp for table use without further processing; more than two-fifths (about 62 million pounds) were taken by concerns with freezing facilities for processing into frozen heads-off, shell-on shrimp in packages; and the remainder (about 55 million pounds) went to various processors for use in the fresh state in the preparation of breaded shrimp, canned shrimp, peeled and deveined shrimp, cured shrimp, and shrimp specialties. This section of the report relates to the operations of (1) packinghouses that are the first shoreside handlers of shrimp and (2) freezers that produce frozen shell-on shrimp in packages either for distribution in that form or for later use in the production of other processed shrimp.

Packinghouses.--Most shrimp catches are landed at packinghouses, commonly known in the trade as fish houses or shrimp houses. Hundreds of these packinghouses along the coast provide an unloading service for shrimp craft. Many of them also perform other services, such as beheading, washing, grading, weighing, and packing in ice for shipment to various outlets. Most of the packinghouses are small waterfront establishments that are in full operation only part of the year. The owners generally have other interests, such as ownership in one or more shrimp craft, a fuel or fishing-supply business, or a trucking service. In addition, packinghouses frequently advance credit to vessel owners and keep the account books for shrimp craft owned by others. Many of the packinghouses own or are affiliated with freezing plants and often the packing and freezing facilities are in the same building.

A small packinghouse handles the shrimp catch of a limited number of craft. A large one, such as some of those in Texas, may handle the landings of 50 or more home-port trawlers as well as landings of transient craft fishing temporarily in the area.

The packinghouse usually delivers shrimp to a few regular customers, such as breaders, freezers, canners, or wholesalers of fresh shrimp. Many of the packinghouses do not grade shrimp into sizes but simply pack them in ice in trucks for delivery. For short hauls the shrimp are carried iced in bins; for longer hauls they are commonly packed with ice in wooden boxes each containing approximately 100 pounds of shrimp. In some instances the shrimp are graded before being packed in boxes. Some packinghouses divert part of their receipts of shrimp to their own freezers.

Packinghouses may or may not take title to the shrimp they receive, according to the particular arrangements made with craft owners. In many instances a packinghouse owns one or more craft, and the shrimp landed from these craft are, of course, the property of the packinghouse. Operators of craft not owned by the packinghouse sometimes sell their catch outright to the packinghouse. Where the packinghouse does not take title to the shrimp, it nevertheless performs certain services for the craft owners. The shrimp are then either sold by the packinghouse for the account of the craft owner or they are sold by the craft owner himself.

The prices paid to the craft owner (ex-vessel prices) by the packinghouse are determined by the prices that the packinghouse obtains from the sale of the shrimp to his own customers. In arriving at a price, the packinghouse owner and his customer consider published price quotations of frozen raw shrimp in wholesale markets, the trend of cold-storage holdings as regularly reported by the U.S. Bureau of Commercial Fisheries, the quantity of shrimp arriving in the area, prices paid during the preceding 24 hours, and other factors. The total returns to the packinghouse for a given sale are usually determined after the shrimp are landed, washed, graded, and weighed, often after being delivered to the customer's plant. From the proceeds of the sale the packinghouse deducts a fixed fee per pound of shrimp, which depends on the services performed, and pays or credits the difference to the shrimp craft.

Employment of workers in a packinghouse varies with the volume of shrimp being landed in the area, and the workers are often hired on a day-to-day basis. The packinghouses were unable to supply the Commission with meaningful data on employment, man-hours, and average earnings of workers. Employees engaged in unloading, weighing, inspecting, and packing shrimp in boxes or trucks receive wages ranging from 75 cents 1/ to about

1/ Shrimp packinghouses are exempt from minimum-wage and overtime provisions of the Fair Labor Standards Act.

$1.50 per hour. Headers (those who behead shrimp) are usually paid on a piecework basis, which is roughly equivalent to about $1 per hour for an average worker.

Freezers.--More than 100 concerns in the United States freeze heads-off, shell-on shrimp for distribution to institutional and retail outlets, for sale to (or for the account of) other processors, or for their own use in the preparation of processed shrimp products. Many of these concerns also operate as packinghouses; about one-fourth of them produce frozen breaded shrimp, and a few produce canned shrimp. Most of the freezers are located in the Gulf and South Atlantic States.

In a typical freezer operation, heads-off, shell-on shrimp are graded and packed loose (jumble packed) in waxed cardboard cartons containing slightly more than 5 pounds net weight. The cartons of shrimp are frozen in a blast freezer. After the shrimp are frozen they are usually glazed by pouring water directly into the cartons, thus forming a solid block of shrimp and ice within the box. Freezers often perform their service for others on a fee basis. The usual fee for grading, packing, and freezing in 5-pound cartons is 5 cents per pound.

The output of fresh or frozen heads-off, shell-on shrimp in packages during the period 1950-59 is shown in table 6, in the column headed "Heads-off, shell-on, fresh or frozen." Inasmuch as the production of fresh shrimp in packages is known to be insignificant, those figures are a close approximation of the production of frozen heads-off, shell-on shrimp in packages. Accordingly, production of that shrimp product, following the trend in landings of domestic shrimp, rose steadily from 46 million pounds in 1950 to 82 million pounds in 1954 and then

declined to 58 million pounds in 1957; it increased to 63 million pounds in 1958 and amounted to 62 million pounds in 1959. The 1960 output is estimated to have been about 65 million pounds.

The major share of the output of frozen heads-off, shell-on shrimp is sold to wholesale distributors of food products, to retailers, and to the hotel and restaurant trade. The remainder is sold to breading concerns or other commercial processors. The frozen shrimp sold to commercial processors are counted more than once in table 6; they are included in the figures for "Heads-off, shell-on, fresh or frozen" and may also be included in the figures for "Frozen peeled and deveined," for "Frozen breaded," and so on.

For the purpose of presenting data on employment and wages in freezing plants, only those concerns engaged in freezing heads-off, shell-on shrimp and not engaged in the production of other shrimp products (such as breaded shrimp) were classed as freezers. 1/ On this basis, employment and wage data were obtained by the Commission from concerns that accounted for about one-fifth of the U.S. output of frozen heads-off, shell-on shrimp in 1959. Average annual employment of production and related workers by these concerns increased from 1956 to 1957, declined in 1958 and 1959, and then rose significantly in 1960 (table 7). Average hourly earnings of workers engaged in processing shrimp in the plants that reported ranged between 95 cents and $1.02 in the period 1956-60. Wages paid to employees that glaze and pack shrimp in cartons ranged from 75 cents

1/ Some freezers that also act as packinghouses, however, were included.

to $1.25 per hour in 1960. Male laborers who do heavy work, operate grading machines, and work in the freezing and cold storage areas were paid from $1.25 to $1.50 per hour in 1960.

Frozen breaded shrimp

Number and location of plants.--Frozen breaded shrimp were first produced in the United States in 1948 by the Trade Winds Co. of Georgia. By 1959, the most recent year for which official data are available, 48 U.S. concerns were producing this important shrimp product in 50 plants located in 13 States. About 85 percent of the 1959 output of breaded shrimp, however, came from the 24 plants located in 3 States--Texas, Florida, and Georgia. The following tabulation shows the distribution of breaded-shrimp plants, by States, in 1959: 1/

State	Number of plants
Alabama	1
California	7
Florida	9
Georgia	7
Louisiana	3
Massachusetts	2
New Jersey	1
New York	5
North Carolina	1
Pennsylvania	2
South Carolina	1
Texas	8
Virginia	3

Frozen breaded shrimp is the principal product of most of the plants where it is produced. The breaded-shrimp concerns also produce large amounts of other seafoods in many of the same plants. In 1959 about half of the breaded-shrimp plants produced fresh and frozen heads-off, shell-on shrimp (mainly for later manufacture into breaded shrimp). Their production

1/ Compiled from data reported to the U.S. Bureau of Commercial Fisheries.

of frozen shell-on shrimp accounted for more than a fourth of the total U.S. output. In the same year an even larger number of breaded-shrimp plants accounted for about two-thirds of the domestic output of frozen peeled and deveined shrimp in packages, and about eight of the plants produced substantial quantities of frozen shrimp specialties, such as shrimp creole. The total value of the 1959 output of all shrimp products by the breaded-shrimp producers (as reported by them to the U.S. Bureau of Commercial Fisheries) was about $65 million, of which $45 million was accounted for by breaded shrimp.

Raw material.--Breaded-shrimp plants are by far the major buyers of domestic shrimp, as well as important buyers of imported frozen shrimp. Breaders generally prefer to buy locally caught fresh shrimp, partly because the yield therefrom is greater than that from frozen shrimp. 1/

When breaded shrimp were first produced in the United States (in Georgia), the producing concern purchased fresh white shrimp obtained from nearby coastal waters. Soon other concerns in the area began breading shrimp. To meet the growing requirements of the breading concerns in Georgia, raw shrimp were trucked from Florida ports. After a number of breading plants were established in the Florida ports of Tampa, Miami, and Jacksonville, the plants in Georgia and Florida began to use sizable quantities landed in Texas and now also use substantial quantities of imported frozen shrimp. In 1960, when shrimp landings were heavy in Florida and moderate in Texas, the Texas breaders used shrimp from Florida

1/ When frozen shrimp are thawed for use in breading, there is a loss of liquid from the shrimp tissues--known in the trade as drip loss--caused by the rupture of the cell walls during the original freezing process.

to supplement local supplies. The breading plants in Texas also use large quantities of imported frozen shrimp. The breaded-shrimp producers in California, New York, and other States not near to the Gulf of Mexico are either totally or heavily dependent on imports of frozen shrimp.

Many breading concerns prefer to buy ungraded shrimp rather than machine-graded shrimp because they must in any case grade the shrimp in their own plants. The additional cost of obtaining the desired sizes is often lower when ungraded shrimp, rather than graded shrimp, are purchased. Moreover, the ungraded shrimp yield a wider range of sizes, which some concerns desire. For example, the shrimp counting about 41-60 per pound are suitable for breaded shrimp, those counting about 17-40 are used for either peeled and deveined shrimp or breaded shrimp, and the largest sizes (fewer than 17 per pound) are used for packages of either frozen heads-off, shell-on shrimp or peeled and deveined shrimp. Housewives prefer the smaller sizes of breaded shrimp (counting about 35-60), and the restaurants and hotels generally prefer the larger sizes. Restaurants and hotels are also the principal buyers of the frozen heads-off, shell-on shrimp counting fewer than 17 per pound.

Although breaders prefer to use fresh shrimp, as indicated above, almost all--if not all--use frozen shrimp, whenever necessary, to sustain their operations on a year-round basis. Breaders use mainly frozen shell-on shrimp, but there is also some use of imported frozen fantail shrimp (see glossary). At times they use frozen shrimp instead of fresh shrimp because the sizes of shrimp suitable for breading are not available in the day's receipts of fresh domestic shrimp. At other times they

use frozen shrimp because the price of the fresh shrimp is considered too high. Principally because of price, west coast concerns use only imported frozen shrimp for breading. Shrimp taken in west coast waters near the United States consist of sizes that are too small for breading.

Data obtained by the Commission from responses to questionnaires from concerns that accounted for about three-fourths of the U.S. output of breaded shrimp in 1959 show that, of the total quantity of shrimp received by those concerns in 1959, about 63 percent consisted of fresh shrimp from domestic sources; 28 percent was imported shrimp (virtually all frozen), and 9 percent was domestically frozen heads-off, shell-on shrimp. Some of the frozen shrimp received by the breading concerns were resold in the same condition as received, but most of them were used as a raw material for further processing.

Processing operation.--In the typical shrimp-breading plant, the raw heads-off, shell-on shrimp are first put into a vat where they are washed. A conveyor belt takes the shrimp from the vat past inspectors who remove extraneous matter and damaged shrimp and then to a grading machine which sorts the shrimp by sizes. In about half of the U.S. breaded-shrimp plants, part of the available supply of certain sizes of the graded heads-off, shell-on shrimp are packaged and frozen for sale. The sizes and volume of each size processed in that manner at a particular time depend upon market conditions in the customary outlets of the individual plants.

The shell and vein of the graded shrimp not destined for sale as frozen shell-on shrimp are removed, generally by hand or in a combined hand and machine operation. Only a small part of the breaded-shrimp

output is produced from shrimp which have been peeled and deveined by fully automatic machines of the types used in the canning industry. In recent years, some breaders have begun extensive use of a new type of peeling and deveining machine that does not damage the swimming fan, and thus permits the production of fantail shrimp.

In many breaded-shrimp plants, part of the available supply of certain sizes of peeled and deveined shrimp is packaged and frozen for sale. If such shrimp are to be individually frozen (also known as single frozen), they are placed on trays so as not to touch one another and sent to the freezer. After they are frozen, they are glazed (see glossary). The packaging is similar to that described below for breaded shrimp.

The peeled and deveined shrimp intended for sale as breaded shrimp are laid flat on a stainless-steel conveyor belt, which carries the shrimp down into a batter and then through a breading machine. The shrimp may be passed through the batter and the breading machine more than once to increase the amount of breading material that adheres to the shrimp. The cost per pound of the batter and the breading material is much lower than the cost per pound of the shrimp. The weight of the breading is commonly from 40 to 48 percent of the total weight. For high-priced breaded shrimp, the breading may be as little as 20 percent of the total weight, and for low-priced breaded shrimp, as much as 80 percent.

After the shrimp are breaded, they are conveyed either to the packing table or to the cooker. Both raw and cooked breaded shrimp are usually layer packed by hand and counted into the waxed cardboard cartons. The filled cartons are adjusted to an exact

net weight by using larger or smaller shrimp in the top layer. The carton is often wrapped with waxed paper bearing the brand name and other information, including directions for preparing. The packaged shrimp are frozen and the cartons are then packed in corrugated master cartons.

Government inspection and grading.--In 1959, according to the U.S. Bureau of Commercial Fisheries, more than half of the U.S. production of breaded shrimp was Government inspected and graded. This estimate of Government inspected and graded shrimp excludes about 12 million pounds produced for the Armed Forces and inspected by them. Inspection and grading of breaded shrimp became the responsibility of the U.S. Department of the Interior on July 1, 1958. The Bureau of Commercial Fisheries of that Department provides inspection service for a fee to processors that wish to comply with the existing voluntary Federal standards of quality for breaded shrimp. Packages of breaded shrimp produced in accordance with these standards and Government inspected are labeled to indicate the grade--grade A, grade B, or substandard--and also the fact that they were packed under U.S.D.I. continuous inspection.

Although Federal standards for all shrimp products have not yet been promulgated, about a fourth of the U.S. production of peeled and deveined shrimp in 1959 was Government inspected and so labeled. A small part of the production of frozen packaged heads-off, shell-on shrimp in that year was also Government inspected. Since 1959 the U.S. Bureau of Commercial Fisheries has established Federal standards for frozen heads-off, shell-on shrimp; the Bureau has also begun work on standards for cooked peeled and deveined shrimp.

Production and distribution.--In 1950, 2 years after breaded shrimp were first produced, U.S. output thereof reached 6.6 million pounds (table 6). By 1955, production was 39 million pounds, and by 1959 it had risen to 70 million pounds; the estimated output in 1960 was about 75 million pounds.

More than half of the domestic production of breaded shrimp is shipped in retail-size packages, usually containing 8 to 16 ounces each; the remainder is shipped in large packages containing 2 pounds or more for the restaurant and hotel trade. Fantail shrimp, round style or split (butterfly), comprise at least three-fourths of the total production. The remainder is nonfantail; it is packed round style or split. (See breaded shrimp in the glossary for definition of the foregoing trade terms.)

The breading plants have also participated in the increase in the U.S. production of other shrimp products. These plants are primarily responsible for the increase in the U.S. production of raw (uncooked) frozen peeled and deveined shrimp in packages, which rose from 280,000 pounds in 1952 to 11.1 million pounds in 1959 (table 6); they also contributed to the increase in the production of frozen heads-off, shell-on shrimp in packages and of frozen shrimp specialties.

Breaded shrimp are distributed by the manufacturers principally to wholesalers and jobbers. Data from concerns that produce about three-fourths of the domestic output of breaded shrimp show that 64 percent of the sales of such shrimp by the reporting concerns in 1959 were made to wholesalers and jobbers, 28 percent to retailers, 3 percent to institutional buyers, and the remaining 5 percent to the U.S. Government and to export markets. Breaded shrimp are distributed, either by the producers

or by wholesalers and jobbers, to all parts of the United States, but principally to the large population centers.

Employment and wages.--Breaded-shrimp plants furnished fairly steady employment to about 8,000 workers in 1960. Employment and wage data were reported to the Commission by concerns that accounted for about two-thirds of the U.S. output of breaded shrimp in 1959. The average number of production and related workers in the plants of those concerns increased steadily from 3,545 in 1956 to 4,675 in January-September 1960 (table 7). Considerable hand labor is necessary in breading plants for such operations as peeling and deveining, removal of pieces of shell and vein, and the packing of shrimp in cartons. Women comprise by far the greater number of production workers in the breading plants. The women workers generally are not the primary wage earners in their families.

Wages in breading plants are highest in the Los Angeles area, where some concerns pay an average of more than $2 per hour, including fringe benefits. The average is substantially lower in most other areas. For all breading concerns that reported data to the Commission, average hourly earnings of production and related workers engaged in shrimp processing ranged between 85 and 98 cents in the period 1956-60 (table 7). Breaded-shrimp plants are exempt from the minimum-wage and overtime provisions of the Fair Labor Standards Act.

Canned shrimp [1/]

Number and location of plants.--In 1959 there were 46 shrimp-canning plants in the United States, compared with 69 in 1930 and 43 in 1954.

1/ As used here and elsewhere in this report, unless otherwise indicated, the term "canned shrimp" embraces wet and dry packs which do not require refrigeration. The term does not include frozen canned shrimp or canned shrimp specialties (shrimp packed in cans with other ingredients), such as shrimp soups and stews, shrimp aspic, and shrimp in a tomato sauce, generally called shrimp cocktail in the trade.

Four-fifths of the 1959 output of canned shrimp came from plants located in the Gulf States, and one-fifth, from plants in the Pacific Coast States. The distribution of shrimp canneries by States in 1959 is shown in the following tabulation: 1/

State	Number of plants
Alabama	2
Alaska	9
Georgia	1
Louisiana	19
Mississippi	9
Oregon	2
Texas	1
Washington	3

The greatest concentration of shrimp canneries has always been in the vicinity of New Orleans. There was a considerable expansion of canning facilities in the Pacific coast area beginning in 1957, with a shift of facilities from the State of Washington to Alaska in 1958 and 1959. In 1960, however, several of the canneries in the Pacific coast area discontinued production of canned shrimp and most of the others in that area reduced their operations substantially.

The 10 largest U.S. shrimp-canning concerns, which operated 11 plants, accounted for about half of the total output of canned shrimp in 1959. The shrimp canneries, mostly family-owned and operated, are rather small establishments. Although the principal product of most of the shrimp canneries is canned shrimp, several of the canneries also produce frozen shrimp products (namely, heads-off, shell-on raw shrimp

1/ U.S. Bureau of Commercial Fisheries.

and peeled and deveined cooked shrimp), and at least half produce either canned crabmeat or canned oysters. For shrimp-canning concerns in the Gulf area, sales of products other than canned shrimp are small in relation to sales of canned shrimp, but for such concerns on the Pacific coast (including Alaska), sales of other seafood products are greater than sales of canned shrimp. Total U.S. output of canned shrimp in 1959 was valued at $17 million.

Raw material.--The shrimp used for canning in the United States consist largely of iced heads-on, shell-on shrimp from the U.S. catch landed at ports close to the canneries. Small quantities of frozen shrimp (principally imported) are utilized, but when such shrimp are used a lower yield and a less satisfactory product generally result than when fresh shrimp are used. Canners prefer to receive shrimp at their plants in the heads-on condition (as distinguished from heads-off) because of price and yield considerations. The shrimp used for canning in the Gulf area are generally obtained from shallow coastal waters rather than from more distant waters because heads-on shrimp must be processed within a relatively short time after they are caught and because the sizes suitable for canning are found in shallow water. In the Pacific area, nearly all of the shrimp caught are of very small sizes suitable for canning. Inasmuch as shrimp may be taken in this area (including Alaskan waters) the year round, the production of canned shrimp in the Pacific coast canneries is not seasonal as it is in the Gulf area where the canneries pack shrimp only part of the year, usually from April through December. In the off-season many of the latter pack oysters and crabs.

Some of the canners own and operate shrimp craft, and some manage shrimp fleets owned by others. Many canneries unload the shrimp craft at their own plants located on the waterfront; others unload the craft at receiving points and transport the shrimp to their plants by truck. Canneries also purchase shrimp from packinghouses, as well as small quantities of frozen shrimp from importers.

U.S. canneries utilized about one-fifth of the U.S. landings of shrimp in 1959. They are the most important buyers of shrimp counting more than 60 per pound (on a heads-off basis); they also use substantial quantities of shrimp counting from 30 to 60 per pound. In the Gulf States, canneries generally use approximately equal amounts of brown shrimp and white shrimp; they normally do not pack pink shrimp or sea bobs.

The substitution of fully automatic peeling machines for hand labor in the early 1950's enabled the shrimp canneries to increase markedly their use of shrimp counting more than 60 per pound. With these machines, canners have even been able to use shrimp counting 100 or more per pound. With hand labor only, shrimp of that size are too small to process profitably. The introduction of the peeling machine led to the growth of canning operations in the Pacific coast area, where the tiny shrimp available in nearby waters could be utilized.

Canning process.--In a typical shrimp cannery the canning process is largely mechanized. The iced, heads-on shrimp received by the canneries are first dumped into a washing tank. A wire mesh belt moves the shrimp from the tank and carries them past inspectors, who remove unsuitable shrimp, as well as extraneous material. After the inspection, the shrimp are generally weighed in order to determine the volume on which payment is due.

The next step is the removal of heads and shells, 1/ generally a machine process called picking or peeling. If the shrimp are purchased in a heads-off condition, picking involves only the removal of the shell. After the picking process, the shrimp are generally passed over inspection belts for a second quality check. If the shrimp are to be deveined, they are then sent to a deveining machine.

The next step in the canning process consists of blanching (sometimes called precooking) in a boiling saline solution. The blanching time--1-1/4 to 3 minutes--and the strength of the saline solution depend upon the size of the shrimp. The blanching process curls the shrimp, extracts water and certain solubles, and sets the color of the shrimp meat.

The shrimp are then discharged from the blanching apparatus, cooled, and conveyed to an inclined shaker-type grading machine, from which they fall onto trays. Workers inspect the trays of graded shrimp, correct errors made by the grading machine, remove bits of shell and other extraneous matter, and segregate pieces of shrimp from whole shrimp.

1/ The heads and shells are dehydrated by some canning concerns and sold either for use as an ingredient of animal feed or as a fertilizer.

The shrimp are then packed by hand in cans, each can being filled with an exact weight of shrimp. In 1959 two-thirds of the U.S. canned-shrimp pack was put up in cans containing 4-1/2 ounces of shrimp each; one-fourth, in cans containing 5 ounces each; and nearly all the remainder, in cans containing more than 5 ounces each. Before 1950 the bulk of the U.S. canned-shrimp pack consisted of 5-ounce cans.

After being filled with shrimp, the cans are put on a conveyor belt that carries them to the closing machine. If a hot saline solution is added to the contents of the cans before they are sealed, the shrimp are known in the trade as wet pack. Almost all of the canned shrimp sold in retail outlets in the United States are wet pack. Canned shrimp without the saline solution (known as dry pack) are of minor significance and are chiefly for export markets. After being sealed, the cans of shrimp are heated with steam and then cooled immediately.

Production and distribution.--During the 1950's the annual U.S. output of canned shrimp was generally between 12 million and 15 million pounds; in 1957, however, it was only 9.1 million pounds (table 6). The short pack in 1957, which was at least 23 percent smaller than the pack in any other year of the period 1950-60, was due primarily to a shortage of raw shrimp. The 1959 pack was 13.8 million pounds and the 1960 pack, 14.6 million pounds (preliminary estimate).

Data reported to the Commission by concerns that accounted for about two-thirds of the total U.S. output of canned shrimp in 1959 show that about half of their aggregate sales of canned shrimp in that year were distributed to wholesalers and jobbers, about one-third to retailers, and most of the remainder to export markets (principally Canada). Sales were

widely distributed throughout the United States, the principal markets being the Pacific, Middle Atlantic, and New England States. Sales to customers in the Gulf States were also important, but to a large extent these were made to wholesalers and jobbers for more widespread distribution.

Employment and wages.--Although official data relating to employment in the U.S. shrimp-canning plants are not available, there is no doubt that the increased use of automatic machines in the early 1950's caused a substantial decline in the number of production workers employed in those plants. One peeling machine, for example, replaces approximately 40 workers. 1/ Based on the data obtained from responses to questionnaires, the annual average number of production and related workers in U.S. shrimp canneries appears to have been less than 4,000 in recent years. The number of workers employed at the height of the canning season, however, probably would be considerably more than 4,000. Employment and wage data were reported to the Commission by concerns that accounted for about one-half of the U.S. output of canned shrimp in 1959. The data reported to the Commission show that average hourly earnings of workers engaged in the production of shrimp products in the canneries increased from $1.10 in 1956 to $1.15 in 1959 and amounted to $1.14 in January-September 1960 (table 7). Hourly wages paid in 1960 in the Gulf area canneries that reported ranged from $1 to $1.20 per hour for general hand laborers 2/ (unloaders, stackers, weighers, pickers, inspectors, casers, and the like) and from $1.50 to $2.12 per hour for machine operators (such as

1/ U.S. Fish and Wildlife Service, Survey of the United States Shrimp Industry, vol. I, Special Scientific Report--Fisheries No. 277, 1958, p. 297.

2/ Some Gulf canners pay headers and hand peelers on a piece-work basis, but guarantee a minimum of $1 per hour.

those operating peeling machines, labeling machines, and can-closing machines). Typical wages paid in Washington and Oregon canneries were from $1.50 to $1.65 per hour for hand laborers and $1.80 to $2.50 per hour for machine operators. In Alaska the corresponding wages ranged from $2.25 to $3.00 per hour for hand laborers and from $2.75 to $3.00 for machine operators.

Frozen peeled and deveined shrimp

Frozen peeled and deveined shrimp in packages, like frozen breaded shrimp, is a convenience food product. About half of the U.S. output of frozen peeled and deveined shrimp in packages consists of raw, medium or small, 1/ round-style shrimp in retail-size packages generally containing 7 ounces; most of the remainder consists of larger shrimp in packages of 2 pounds or more for sale primarily to restaurants and hotels. Restaurants purchase raw peeled and deveined shrimp in two styles--(1) the round style, fantail off, for shrimp cocktails (shrimp in a tomato sauce) or for breading in their kitchens, and (2) the round style, fantail on, mostly for breading. Restaurants also purchase peeled and deveined shrimp that were cooked before being frozen. Cooked peeled and deveined shrimp are packed in large vacuum-sealed cans, chiefly by several shrimp-canning concerns.

Frozen peeled and deveined raw shrimp in packages were first produced in the United States in commercial quantities in 1950 by several shrimp-breading concerns. In 1959, some 45 U.S. plants produced

1/ Produced from heads-off, shell-on shrimp counting 31 or more to the pound.

frozen peeled and deveined shrimp (raw or cooked) in packages. About half of these plants also produced breaded shrimp. The following tabulation shows the distribution, by States, of the plants where frozen peeled and deveined shrimp in packages were produced in 1959: 1/

State	Number of plants
California	6
Florida	10
Georgia	6
Louisiana	8
New Jersey	1
New York	4
South Carolina	1
Texas	8
Virginia	1

As already indicated, the plants that produce breaded shrimp accounted for about two-thirds of the domestic output in 1959 of frozen peeled and deveined raw shrimp in packages. The processing of shrimp for sale in that form is described in the earlier section on frozen breaded shrimp. The peeling and deveining plants that do not produce breaded shrimp, particularly those located in areas far from the Gulf ports, are, however, more dependent on frozen shrimp (domestic and imported) than are the breaded-shrimp plants. For the production of frozen peeled and deveined shrimp, the plants on the Pacific coast--of which there were six in 1959--use shrimp landed at local ports and also imported frozen heads-off, shell-on shrimp. The output of the Pacific coast plants accounts for only a small part of the total U.S. output of frozen peeled and deveined shrimp in packages.

In 1950 the production of frozen peeled and deveined raw (uncooked) shrimp was so small that it was not reported separately in U.S. statistics;

1/ Compiled from data reported to the U.S. Bureau of Commercial Fisheries.

in the 2-year period 1952-53, domestic production was less than a million pounds, and in 1954 it reached 4.2 million pounds (table 6). In the 4 years 1955-58, production ranged between 6.7 million and 9.4 million pounds, and in 1959 it amounted to 11.1 million pounds. During the period 1950-59, domestic production of frozen peeled and deveined cooked shrimp fluctuated from year to year, ranging from about 0.8 million pounds to 2.5 million pounds; production was 1.9 million pounds in 1959 (table 6).

Miscellaneous shrimp products

The most important shrimp products covered here are shrimp specialties, such as shrimp creole and shrimp cocktail. The less important shrimp products covered here are various kinds of cured shrimp (i.e., dried, salted, spiced, smoked, and pickled). The aggregate amount of raw heads-off, shell-on shrimp used to produce all the products covered in the miscellaneous group has been quite small in recent years--probably no more than about 2 percent of the annual U.S. production and imports. In 1957-59 the value of the domestic production of shrimp specialties amounted to about $3 million annually. The domestic output of cured shrimp in 1959 was valued at $315,000.

Shrimp specialties are of two kinds--frozen and canned. Some of the canned specialties must be kept under refrigeration until ready for use and some may be stored at room temperature. All of the specialties contain peeled and deveined shrimp and foods other than shrimp. For example, frozen shrimp creole contains peeled and deveined shrimp, onions, sweet peppers, celery, bean sprouts, rice, tomato, vegetable oil, and spices. Among the other frozen shrimp specialties are shrimp burgers,

shrimp chow mein, and shrimp sticks. Canned specialties include shrimp cocktail, shrimp soup, and shrimp stew.

Most of the approximately 25 or so plants that produce frozen shrimp specialties (including canned specialties that require refrigeration) are located in three States--New York, Florida, and Georgia. About half of these plants also produce breaded shrimp. Fewer than 10 concerns produce canned shrimp specialties that may be stored at room temperatures.

U.S. production of frozen and canned shrimp specialties increased from 308,000 pounds, valued at $141,000, in 1950 to 3.9 million pounds, valued at $3.0 million, in 1957 (table 6). In 1959, the latest year for which data are available, the output was 3.8 million pounds, valued at $2.7 million.

In 1959 about 25 small concerns produced dried shrimp as their principal or sole product; all their plants were in Louisiana, in the vicinity of New Orleans. The total output of dried shrimp in 1959 was 322,000 pounds, valued at $291,000. In the United States the process of producing dried shrimp consists of (1) boiling very small heads-on, shell-on shrimp, (2) air-drying them on outdoor platforms, and (3) mechanically separating the shrimp meat from the head and shell by placing the dried shrimp in a motor-driven open-mesh cylindrical tumbler. Dried shrimp are usually packed in bags containing 100 pounds and sold by the drying concerns to local food concerns that repackage the dried shrimp in retail-size packages. A considerable part of the U.S. output of dried shrimp is exported.

A few concerns in the United States produce minor quantities of salted, spiced, smoked, or pickled shrimp. The reported output of such products in 1959 was 11,805 pounds, valued at $24,270.

U.S. Exports

Since the end of World War II, U.S. exports of domestic shrimp have risen irregularly. In the official U.S. export statistics shrimp are reported under three classifications: (1) Fresh or frozen shrimp; (2) canned shrimp in airtight containers; and (3) salted, pickled, or dry-cured shrimp (consisting almost entirely of dried shrimp). Exports of products covered by these three classifications combined, which amounted to 4.1 million pounds (with a value of $3.9 million) in both 1956 and 1957, declined to 3.9 million pounds ($4.1 million) in 1958, and then rose to 6.6 million pounds ($5.8 million) in 1960 (table 8).

In terms of raw heads-off, shell-on shrimp, U.S. exports of domestic shrimp in recent years were larger than the figures in table 8 indicate. The number of pounds of heads-off, shell-on shrimp required for a pound of product is approximately 2.20 for canned shrimp and 4.58 for dried shrimp. Information from the trade indicates that in recent years exports of fresh or frozen shrimp have not consisted entirely of raw heads-off, shell-on shrimp but have included increasing quantities of peeled and deveined shrimp, both raw and cooked, and also breaded shrimp. To the extent that the figures in table 8 include breaded shrimp, they overstate--and to the extent they include peeled and deveined shrimp, they understate--somewhat the volume of exports in terms of raw heads-off, shell-on shrimp. Accordingly, in the absence of precise data, the figures reported in the first column of table 8 may be regarded as approximating those in terms of raw heads-off, shell-on shrimp.

On the basis of the information in the preceding paragraph, total U.S. exports of domestic shrimp, in terms of raw heads-off, shell-on

shrimp, were at least 8.8 million pounds in 1959 and 11.1 million pounds in 1960 (table 19), equivalent to 6.2 percent and 7.5 percent, respectively, of total U.S. landings of shrimp in those years.

In terms of value, canned shrimp accounted for 58 percent of the total exports of domestic shrimp in 1960; fresh or frozen shrimp, for 40 percent; and dried shrimp, for 2 percent.

The United States exports shrimp products to many countries. Canada, however, has long been the principal market for exports of fresh or frozen shrimp and of canned shrimp. In 1960, U.S. exports of domestic merchandise to Canada included 2.2 million pounds of fresh or frozen shrimp, valued at $1.7 million (table 9) and 1.8 million pounds of canned shrimp, valued at $1.9 million (table 10). In 1960, the United Kingdom was also an important market for exports of canned shrimp, taking 33 percent of the total quantity, while Canada took 50 percent. Exports of canned shrimp to the United Kingdom in 1960 had an average value of 80 cents per pound; and those to Canada, $1.10 per pound. In 1960 Japan took 56 percent of the total U.S. exports of dried shrimp, and Canada took 28 percent (table 11).

Besides exporting the domestic shrimp products mentioned above, the United States has exported relatively small quantities of shrimp products of foreign origin. In 1960, U.S. exports of foreign shrimp products consisted of 809,000 pounds of fresh or frozen shrimp (valued at $582,000); 5,000 pounds of salted, pickled, or dry-cured shrimp (valued at $3,000); and 34,000 pounds of canned shrimp (valued at $25,000). Canada was the principal market in 1960.

U.S. Imports

Total U.S. imports of shrimp have increased steadily since the early 1930's. They rose from 0.7 million pounds in 1933 to 5.0 million pounds in 1940, to 40.2 million pounds in 1950, and to a record high of 113.4 million pounds in 1960 (table 12). 1/ The foreign value of imports increased from $385,000 in 1940 to $18.8 million in 1950 and to $56.4 million in 1960. Imports of shrimp were 6 percent larger in quantity, and 8 percent larger in value, in 1960 than in 1959.

Before the early 1950's, Mexico was the only important supplier of U.S. imports of shrimp and has since continued to be the outstanding supplier. Other countries, however, have furnished an increasing share of total imports in recent years. In 1950 Mexico accounted for nearly 99 percent of the total quantity, and 98 percent of the total value, of U.S. imports of shrimp; by 1959 that country's share had dropped to 64 percent of the total quantity and 53 percent of the total value. In 1960 Mexico supplied 65 percent of the total quantity and 55 percent of the total value of U.S. imports of shrimp. In 1960 about 25 percent of the imports came from Western Hemisphere countries other than Mexico, principally Panama, El Salvador, Ecuador, British Guiana and Colombia; nearly 8 percent came from Asia, principally Japan, India, Iran, and Pakistan;

1/ As indicated earlier in this report, a few concerns that operate fishing craft under the U.S. flag sometimes land shrimp in a foreign country and later send them to the United States, entering them duty-free under par. 1761 rather than as "products of American fisheries" under par. 1730(a). The extent to which this practice exists is not known, but information obtained by the Commission indicates that it may involve a few million pounds of shrimp each year. Official statistics of U.S. imports, therefore, include significant amounts of shrimp caught by the U.S. shrimp fleet.

and 2 percent came from countries in other areas, but principally from the United Arab Republic. While total U.S. imports of shrimp increased from 106.6 million pounds in 1959 to 113.4 million pounds in 1960, the share supplied by the Western Hemisphere (including Mexico) rose from 86 percent to 90 percent and the share supplied by Asia declined from 12 percent to 8 percent.

From Mexico, El Salvador, and British Guiana, the U.S. imports were, in terms of absolute quantities, substantially larger in 1960 than in 1959 (table 13). Aggregate imports from those three countries rose 12.4 million pounds--or by 17 percent--from 1959 to 1960. Imports from Iran, Pakistan, the United Arab Republic, Chile, and Colombia were also significantly larger in 1960 than in 1959; aggregate imports from those five countries rose 1.9 million pounds--or by 39 percent--from 1959 to 1960.

From 1959 to 1960, U.S. shrimp imports from Japan declined from 7.2 million pounds to 2.9 million pounds, while those from Argentina declined from 0.9 million pounds to less than 0.1 million pounds, and those from Costa Rica, from 1.2 million to 0.5 million. In the same period imports from Panama and Ecuador, both important suppliers of the U.S. market in recent years, also declined; imports from Panama declined from 8.8 million pounds to 8.4 million pounds, and those from Ecuador from 4.7 million pounds to 4.2 million pounds. Imports from Hong Kong amounted to 4.0 million pounds in 1958 and 0.7 million pounds in the first 5 months of 1959. Imports from Hong Kong were prohibited beginning in June 1959 under the Foreign Assets Control Regulations of the U.S. Treasury Department. Official import statistics for 1960, however, show negligible imports from Hong Kong.

The 1960 imports from British Guiana consisted entirely of shrimp that were caught by U.S. vessels and landed in British Guiana for packing and freezing in a plant owned by U.S. nationals. 1/ The imports from Iran resulted primarily from the efforts of a U.S. concern that has been developing Iran as a source of supply since 1958. That concern has a financial interest in the development of shrimp resources in many countries including, among others, Iran, India, Pakistan, El Salvador, Costa Rica, Ecuador, Chile, and Colombia.

Imports of shrimp enter the United States in substantial volume throughout the year, but they are usually heaviest during October, November, and December (table 14).

In the years immediately preceding World War II, U.S. imports consisted largely of fresh or frozen heads-off, shell-on shrimp from Mexico, with relatively small quantities of dried shrimp from Mexico and the Far East, and still smaller quantities of canned shrimp from Mexico and Europe. Since the war, entries have consisted predominantly of frozen heads-off, shell-on shrimp, mainly in 5-pound packages. In recent years, however, imports of other forms of shrimp, especially frozen peeled and deveined shrimp, have increased significantly.

For use in its 1960 report on shrimp, the Commission received responses to its importers' questionnaire from 100 importing concerns that accounted for 95 percent of the total U.S. imports of shrimp in 1959; for use in this report, the Commission received responses from 63 concerns that accounted for 92 percent of the total U.S. imports of shrimp in

1/ Report from U.S. Embassy, Georgetown, British Guiana, 1960.

1960 (table 15). Of the total 1959 imports reported to the Commission, frozen heads-off, shell-on shrimp accounted for 84.2 percent, and frozen peeled and deveined shrimp for 13.6 percent; in 1960, those two categories of shrimp accounted for 81.7 percent and 16.0 percent, respectively. Dried shrimp accounted for about 0.1 percent of the total in both 1959 and 1960. Data on imports of other specific forms of shrimp cannot be published without revealing the operations of individual concerns. Such imports included canned shrimp (wet and dry pack, pastes, sauces, and specialties), breaded shrimp, bait shrimp, fresh or frozen heads-on shrimp, and fresh heads-off, shell-on shrimp--all of which represented only 2.1 percent and 2.2 percent of the imports reported to the Commission for 1959 and 1960, respectively.

About 73 percent of the 1960 imports of frozen heads-off, shell-on shrimp reported to the Commission came from Mexico; significant amounts came from Panama, El Salvador, Ecuador, British Guiana, Iran, and Colombia (listed in the descending order of their importance). Mexico was also the principal supplier of the 1960 imports of peeled and deveined shrimp, accounting for 45 percent of the total; Panama, Ecuador, Japan, and India supplied most of the remainder. In 1960 India and Mexico were the principal suppliers of the imports of canned shrimp, and Mexico and Japan, of imports of dried shrimp. Mexico was the sole supplier of the 1960 imports of breaded shrimp.

U.S. imports include all sizes of shrimp. The Commission requested the data on 1960 imports of frozen heads-off, shell-on shrimp in packages or cartons each containing 5 pounds or more to be reported by size groups.

The proportion of the reported 85.2 million pounds of such imported shrimp in each of the specified size groups was as follows: 1/

Count	Percent
Fewer than 15	26
15 to 20	17
21 to 25	14
26 to 30	9
31 to 40	14
41 to 50	11
51 to 60	5
61 or more	4
Total	100

The data reported to the Commission indicate that Mexico was by far the principal supplier of the 1960 imports of shrimp counting fewer than 15 to the pound and of those counting 15-20 to the pound. Other countries, principally Panama, Ecuador, El Salvador, Colombia, and British Guiana, also supplied substantial amounts of shrimp counting fewer than 15 to the pound, while for 15-20 count shrimp, British Guiana was the only foreign supplier other than Mexico of more than 1 million pounds. The Mexican shrimp counting 20 or fewer to the pound came almost exclusively from the shrimp grounds off Mexico's west coast. 2/ Shrimp imports from Mexico that were obtained from the Gulf of Mexico consist roughly of the same sizes of shrimp as those caught by U.S. craft in the Gulf.

The Commission also requested the data on 1960 imports of frozen peeled and deveined shrimp by size groups. Of the 16.8 million pounds of imported frozen peeled and deveined shrimp reported to the Commission, 28 percent had been processed from heads-off, shell-on shrimp (i.e., green shrimp) counting fewer than 30 to the pound, 24 percent had been processed from green shrimp counting 30-70 to the pound, and 48 percent

1/ For a comparison of the composition, by size groups, of U.S. imports with that of U.S. production, see p. 68.

2/ Nearly three-fourths of Mexico's total catch of shrimp comes from the waters off Mexico's west coast.

from green shrimp counting 71 or more to the pound. Mexico was, by far, the principal supplier of the shrimp in the first two size groups, while Panama, Ecuador, and Japan accounted for 30 percent, 28 percent, and 16 percent, respectively, of the sizes counting 71 or more to the pound. Mexico and India also supplied significant amounts of the shrimp counting 71 or more to the pound.

Table 16 shows the percentage distribution of 1960 sales by 53 U.S. importing concerns of specified styles of imported shrimp by geographic regions. For frozen heads-off, shell-on shrimp, and for frozen raw peeled and deveined shrimp, the Middle Atlantic States (New York, New Jersey, and Pennsylvania) comprised the principal marketing region in 1960. For frozen cooked peeled and deveined shrimp, for frozen breaded shrimp, and for canned shrimp, the Pacific Coast States (Washington, Oregon, and California) were a more important market than any other geographic region in the United States.

More than half of the aggregate sales of imported shrimp by 53 reporting concerns were to wholesalers, jobbers, and brokers who, in turn, sold to retailers, institutional users (hotels and restaurants) and to processors. The proportions of the sales by the importing concerns of imported frozen heads-off shrimp and frozen raw, peeled and deveined shrimp to each type of customer in 1960 were as follows:

Type of customer	Frozen heads-off, shell-on shrimp	Frozen raw, peeled and deveined shrimp
	Percent	Percent
Wholesalers, jobbers, and brokers	66	57
Shrimp processors	22	28
Retailers (including cooperatives, supermarkets, and chain stores)	10	14
Hotels, restaurants, and other institutional users	1	1
Other (including exports)	1	1/
Total	100	100

1/ Less than 0.5 percent.

Cold-Storage Holdings in the United States

Substantial amounts of frozen shrimp products are moved from processing plants to cold-storage warehouses located in the principal consumption areas of the country. Many of these warehouses also handle imported frozen shrimp. The cold-storage holdings are essential for orderly marketing; without them, supplies in the various markets would be subject to wide fluctuations because of seasonal and annual variations in U.S. landings and imports. Moreover, as consumption of shrimp, including a wide variety of shrimp products, increases in established consuming centers and spreads to other areas, a rise in holdings of raw and processed shrimp is a necessary development.

Complete data on cold-storage holdings of shrimp in the United States are not available. However, the U.S. Bureau of Commercial Fisheries regularly publishes data on end-of-month inventories held in virtually all of the public warehouses [1/] and in some of the large warehouses owned by processing and distributing concerns (generally referred to as private warehouses). Although these data do not include all holdings, they account for the major share of the U.S. holdings of both domestic and imported shrimp at the wholesale level and indicate the trend of total holdings. Shrimp holdings usually decline steadily during the first half of the calendar year, reaching a low in June, and then increase steadily during the last half of the year, reaching a peak in December. This annual movement of holdings reflects, in large measure, the seasonal

1/ Information obtained from importers indicates that the bulk of their cold-storage holdings are in public warehouses and therefore included in the Bureau's figures.

variations of U.S. landings and of imports. The Bureau's figures for cold-storage holdings on June 30 and December 31 of the years 1951-60 are shown in table 17; the figures for end-of-month holdings for the years 1958-60 are shown in table 18.

During the period 1951-54, when annual U.S. landings of shrimp increased steadily from 134 million pounds to nearly 160 million pounds and annual imports ranged from 38 million pounds to 43 million pounds, reported year-end cold-storage holdings ranged from 15.4 million pounds in 1952 to 32.2 million pounds in 1954. Reported holdings were 22.7 million pounds at the end of 1955, or 9.5 million pounds smaller than at the end of 1954. More than half of the decline in year-end holdings from 1954 to 1955 resulted from an increase in U.S. consumption of shrimp; other contributing factors were a decline of 2.0 million pounds in the new supply of shrimp available from domestic production and imports combined and an increase of 1.4 million pounds in exports of domestic shrimp. Consumption declined during 1956 but the year-end holdings were only slightly larger (0.7 million pounds) that year than in the preceding year. Consumption continued downward in 1957. Although the new supply of shrimp for domestic consumption and for exports (191.0 million pounds) was smaller in 1957 than in any preceding year since 1952, cold-storage holdings at the end of 1957 increased to 31.2 million pounds. After 1957, annual consumption increased substantially but, with the expanding supply from U.S. production and imports, year-end holdings also increased--to 41.7 million pounds in 1958, to 48.4 million pounds in 1959, and to 54.4 million pounds in 1960. The increase of 5.9 million pounds in year-end holdings from 1959 to 1960 followed an increase of about 12.3 million pounds in the supply from U.S. production and imports combined.

U.S. Consumption

U.S. consumption of shrimp has fluctuated considerably from year to year, primarily as a result of rather wide movements in wholesale and retail prices, but the trend of total consumption has been markedly upward for the past 30 years. Precise data on U.S. consumption of shrimp are not available mainly because statistics on year-end inventories (cold-storage holdings) are not complete. Annual data on new supplies available for domestic consumption (U.S. landings plus imports minus exports), shown in table 19, indicate the general magnitude and trend of consumption but, because changes in year-end inventories are not taken into account, do not reflect actual year-to-year fluctuations in the volume of consumption. The volume of new supplies was at a record high in 1960, when it amounted to approximately 251 million pounds, in terms of heads-off, shell-on shrimp. This amount was 4 percent higher than the volume of new supplies in 1959 and 68 percent higher than that in 1950.

Annual per capita consumption of edible shrimp meat 1/ in the United States rose from less than 1/2 pound in 1939 to approximately 1 pound in the middle 1950's. It reached a record high of 1.18 pounds in 1960. Per capita consumption in 1939 and 1950-60, as reported by the U.S. Bureau of Commercial Fisheries, is shown below:

Year	Pounds	Year	Pounds
1939	0.48	1955	1.03
1950	.78	1956	.99
1951	.93	1957	.88
1952	.98	1958	.96
1953	.98	1959	1.13
1954	.99	1960	1.18

1/ See shrimp meat in the glossary.

Imports have supplied a considerable part of the U.S. consumption of shrimp since World War II. The ratio of imports to the new supply for domestic consumption declined from 27 percent in 1950 to 21 percent in 1954 and then increased steadily to 45 percent in 1960. During the 1950's annual U.S. landings reached a high of 160 million pounds (heads-off, shell-on basis) in 1954 and thereafter ranged between 121 million and 148 million pounds. U.S. imports increased steadily from 42 million pounds in 1954 to 113 million pounds in 1960. The total catch of shrimp in the waters of the Gulf of Mexico and of the South Atlantic States appears to have leveled off because of nearly maximum exploitation of those waters. The catch in Alaskan waters could be greatly expanded, but the species found there are confined almost entirely to very small size shrimp which have a limited market. With the leveling off of the U.S. catch in the Gulf and South Atlantic fisheries, imports have supplied an increasing proportion of domestic consumption in recent years. Moreover, if demand continues to grow, increases in the supply of large- and medium-size shrimp must come principally from imports.

Fresh and frozen shell-on shrimp

Fresh shrimp (not frozen) sold to restaurants, hotels, clubs, and the like, and to retail outlets (hereinafter referred to collectively as the fresh market) are supplied almost entirely from the U.S. catch. The fresh market in this country is confined largely to New York City and other coastal areas. The estimated total U.S. consumption of shrimp in the fresh market declined from about 50 million pounds (heads-off basis) in 1954 to about 20 million pounds in 1958, and amounted to some 26 million pounds in 1959 and in 1960.

Fresh shrimp that go to processors also are obtained almost entirely from the U.S. catch. These shrimp eventually are distributed throughout the country as frozen heads-off, shell-on shrimp, frozen breaded shrimp, frozen peeled and deveined shrimp, canned shrimp, cured shrimp, or shrimp specialties.

The freezing and packaging of shrimp, which began before World War II and developed rapidly after the war, provided a marked impetus to the U.S. consumption of both domestic and imported shrimp. Development of this method of preserving the product opened up new markets in inland areas where shrimp had been virtually unknown before and expanded the market in areas where sales of shrimp had previously been confined largely to the fresh product.

U.S. output in recent years of fresh and frozen heads-off, shell-on raw shrimp in packages (as reported by the U.S. Bureau of Commercial Fisheries) and U.S. imports of frozen shrimp in the same condition (as estimated from importers' responses to questionnaires) are shown below (in millions of pounds):

Year	U.S. output 1/	Imports
1955	69	50
1956	61	64
1957	58	63
1958	63	74
1959	62	90
1960	2/ 65	93

1/ Consists almost entirely of frozen shrimp.
2/ Estimated.

The major share of the domestic and imported shrimp shown in the tabulation above were sold to retailers, restaurants, hotels, and the like, but substantial quantities were also used by processors, such as breaders. A considerable part of the imports consist of shrimp comparable in species, size, and quality to the bulk of the domestic output. Approximately one-fourth of the imports from Mexico, for example, are of the same species and in about the same size groups as the U.S. landings in the Gulf States. Both the domestic and imported shrimp for the most part are frozen in blocks containing 5 pounds of shrimp. There are, however, some significant differences between the domestic and imported products. To a large extent the imported product is packed in layers with the shrimp arranged in rows, whereas most of the domestic output is jumble packed. The imports include substantially greater quantities of large-size shrimp than can be obtained from domestic sources. Although statistics are not available on the U.S. output of frozen heads-off, shell-on shrimp by size groups, the data on U.S. landings of fresh shrimp in the South Atlantic and Gulf States by size categories indicate the quantities of the various sizes of shrimp that are available for freezing in this country (table 4). These data, compared with the data on sizes obtained by the Commission from U.S. importers, show that importers supply the bulk of the domestic consumption of shrimp counting fewer than 15 per pound and the major share of the consumption of those counting 15-20 per pound. For all other sizes, shrimp from domestic sources supply the major share of the U.S. consumption. The following tabulation shows the breakdown by size groups of most of the U.S. landings of shrimp in 1960 and of most

of the U.S. imports of frozen heads-off, shell-on shrimp in the same year:

(In millions of pounds)

Size group (number of heads-off, shell-on shrimp per pound)	U.S. landings 1/	U.S. imports 2/
Fewer than 15	2.3	21.7
15 to 20	12.5	14.3
21 to 25	20.2	11.8
26 to 30	20.5	7.9
31 to 40	35.8	12.3
41 to 50	17.4	9.6
51 to 60	28.3	4.1
61 or more		3.5
Total	137.0	85.2

1/ Data shown are for landings of brown, pink, and white shrimp in the South Atlantic and Gulf States, which accounted for 92 percent of the total U.S. landings of shrimp in 1960.

2/ Data shown are for frozen heads-off, shell-on shrimp reported to the Commission by importers who accounted for at least 90 percent of the total U.S. imports of such shrimp in 1960.

Frozen breaded shrimp

As indicated elsewhere in this report, U.S. consumption of breaded shrimp has increased markedly during the past decade--from less than 7 million pounds in 1950 to more than 75 million pounds in 1960. Until recently the supply came entirely from domestic breading concerns. According to information obtained by the Commission, there are now three foreign producers, all in Mexico. Data on total U.S. imports may not be published because to do so would reveal the operations of individual concerns. It may be stated, however, that imports of frozen breaded shrimp

in 1960 accounted for considerably less than 5 percent of the total supply in that year. Breaded shrimp are sold largely to restaurants, retail stores, and the U.S. Armed Forces. For the retail trade, breaded shrimp are packed in cartons usually containing 8 to 16 ounces each. For restaurants and other outlets, they are put up in packages containing 2 pounds or more of breaded shrimp.

Canned shrimp

U.S. consumption of canned shrimp is supplied largely by domestic canners. There has been no discernible trend in total consumption during the past decade. U.S. production was nearly 14 million pounds in 1959 and somewhat more than 14 million pounds in 1960. Total imports of canned shrimp, estimated on the basis of data obtained by the Commission from importers, amounted to about 0.7 million pounds in 1959 and to about 0.5 million pounds in 1960. 1/

Both domestic and imported canned shrimp are sold largely through grocery stores and are used in the home for salads and other shrimp dishes. Most of the imported canned shrimp are deveined and are packed in cans containing 5 ounces of shrimp; the major part of the domestic product is not deveined and is packed in cans containing 4-1/2 ounces of shrimp.

Frozen peeled and deveined shrimp

A large part of the domestic consumption of frozen peeled and deveined shrimp consists of shrimp that were individually frozen and packed in 2- or 2-1/2-pound cartons for the restaurant trade. Another

1/ Annual imports of canned shrimp in 1955-58 were much smaller than in 1959 and 1960. The data obtained by the Commission for the years 1955-58, however, may not be published because to do so would reveal the operations of individual concerns.

large share of the domestic consumption of peeled and deveined shrimp consists of individually frozen shrimp that were packed in smaller packages for the retail trade. Some peeled and deveined shrimp for use by restaurants and by processing concerns, such as breaders, are frozen in solid blocks. Some of the imported peeled and deveined shrimp consist of fantail shrimp to be used by domestic breading concerns.

U.S. output and imports of frozen peeled and deveined shrimp (including both raw and cooked) in recent years have been approximately as follows (in millions of pounds):

Year	U.S. output	Imports
1955	9	3
1956	10	5
1957	11	7
1958	10	9
1959	13	15
1960	1/ 15	18

1/ Estimated.

Imported and domestic peeled and deveined shrimp are generally comparable in quality. Consumption of sizes under 30 to the pound (before peeling) is supplied in substantial amounts by both domestic processors and importers. Domestic processors supply the major share of the consumption of the peeled and deveined shrimp obtained from 31-70 count shrimp and importers supply the bulk of the consumption of such shrimp obtained from the smaller sizes (71 or more per pound).

Miscellaneous shrimp products

Miscellaneous shrimp products include cured shrimp and numerous frozen and/or canned shrimp specialties, such as chow mein, cocktail,

creole, paste, soup, and stew. U.S. consumption of cured shrimp has declined steadily since 1952; it now amounts to about 1/2 million pounds per year. Consumption of the specialties, as a whole, after increasing considerably during the period 1952-57, leveled off and has amounted to about 4 million pounds annually in recent years. Imports have been small and are largely noncompetitive with the domestic products. The imported products are consumed principally by gourmets and certain nationality groups in the United States.

Prices in the U.S. Market

The prices at which both domestic and imported shrimp are sold in the wholesale (and also the retail) markets of the United States vary with the size and species of the shrimp, the style and size of pack, the channels of distribution, the geographic location, and the brand names. The prices of breaded shrimp and of shrimp specialties also vary depending on the quality and proportion of ingredients other than shrimp in the individual products. Shrimp prices in the United States generally fluctuate seasonally in the wholesale markets as well as at the fishermen's level. In most recent years shrimp prices have moved upward in all markets during the first half of the year, reaching their highest level of the year during the late spring or summer months and their lowest level during the late fall or winter months. The period of lowest prices generally coincides with the period of heaviest landings and imports.

In each port the prices received by fishermen on a particular date depend largely upon the species and the sizes of the shrimp. Shrimp of the same species and size, however, may bring different prices, depending upon the condition of the product and the reputation of the seller for proper handling and quality control. For a particular size of a species, the prices vary from day to day depending upon its abundance in relation to demand.

Ex-vessel prices

Data on prices paid the U.S. shrimp fishery for landings, commonly referred to as ex-vessel prices, are collected daily at the principal shrimp ports by the U.S. Bureau of Commercial Fisheries for the various sizes and species of shrimp. The Bureau publishes the monthly range of these ex-vessel prices for (1) brown shrimp landed in the Port Isabel-Brownsville area of Texas, (2) white shrimp landed in the Morgan City-Berwick-Patterson area of Louisiana, and (3) pink shrimp landed at Tampa, Fla. The published prices are in terms of heads-off, shell-on shrimp.

Although monthly fluctuations in the prices of shrimp are not uniform for the various sizes, the trend of the monthly range of a particular size, say 15-20, gives some indication of the general movement of ex-vessel prices for shrimp in recent years. In 1958, ex-vessel prices for shrimp of that size in the principal Gulf ports, shown in table 20, followed the normal pattern for the movement of U.S. shrimp prices; they moved upward during the first half of the year, and then declined during the second half. The prices were somewhat higher in the last quarter of 1958 than in the corresponding period of the preceding year. In 1959,

however, ex-vessel prices in all three areas moved sharply downward from January to October or later. Ex-vessel prices of 15-20 count brown shrimp in Texas and of the same size white shrimp in Louisiana moved upward beginning in December 1959, while ex-vessel prices of that size pink shrimp in Florida moved upward beginning in January 1960. During 1960, ex-vessel prices of the brown shrimp in Texas reached their peak in July, while those of the other two species reached their peak in June. For all three species ex-vessel prices in December 1960 were somewhat higher than those in December 1959, but appreciably lower than those in December 1958.

Another method of determining the general trend of prices paid to the U.S. shrimp fishery is to compute the average receipts per pound credited to the shrimp craft. Based on data published by the U.S. Bureau of Commercial Fisheries, the average ex-vessel values per pound for the total landings of domestic shrimp in 1950-60 were as follows:

Year	Cents per pound	Year	Cents per pound
1950----------	38	1956----------	5[illegible]
1951----------	39	1957----------	60
1952----------	41	1958----------	57
1953----------	49	1959----------	41
1954----------	38	1960----------	1/ 45
1955----------	42		

1/ Preliminary.

The fluctuations in the average ex-vessel values shown above resulted, in some measure, from annual changes in the distribution of the various sizes of shrimp in the total U.S. landings. At least half of the U.S. landings of shrimp consist of sizes counting 21-40 to the pound (table 4). In 1958 average ex-vessel values of

shrimp of those sizes ranged, depending on market designation, from 74 to 78 cents per pound for the 21-25 count, from 68 to 73 cents for the 26-30 count, and from 60 to 64 cents for the 31-40 count (table 4). Average ex-vessel values of shrimp counting 20 or less to the pound exceeded 82 cents per pound in 1958, while those for shrimp counting more than 40 to the pound ranged from about 6 cents per pound for the very small Alaskan shrimp to 51-54 cents per pound for South Atlantic and Gulf-of-Mexico shrimp counting 41-50 to the pound.

Table 4 indicates that with respect to the shrimp landed in South Atlantic and Gulf States,[1/] average ex-vessel values of each group declined significantly from 1958 to 1959. Table 4 indicates also that there was a significant change during the same period in the distribution of the size groups in the domestic landings. The volume of shrimp counting 20 or less to the pound declined by 9 percent from 1958 to 1959, whereas the volume of shrimp counting 21-40 to the pound increased by 20 percent, and the volume of shrimp counting 41 or more to the pound increased by 6 percent. The volume of landings of Alaskan shrimp, which are substantially cheaper than any other type of shrimp landed in the United States, also increased in the same period--by 66 percent. The changes in the distribution of the size groups noted above contributed in some measure to the decline in average ex-vessel values of total U.S. landings from 57 cents per pound in 1958 to 41 cents per pound in 1959. Among the other factors contributing to this decline were consumer resistance to high prices in 1958 and a substantial increase in the total supplies of shrimp from both domestic and foreign sources.

1/ As previously indicated, these States account for more than 90 percent of the total U.S. landings of shrimp.

Wholesale prices

The wholesale-price quotations shown in tables 21 and 22 for selected shrimp products in important U.S. distributing markets indicate price trends for domestic and imported frozen heads-off, shell-on shrimp and for domestic processed shrimp. Table 21 shows the range of wholesale-price quotations, by months, from January 1958 to December 1960, for 5-pound packages of the principal market designations of both domestic and imported frozen heads-off, shell-on shrimp counting 15-20 to the pound, f.o.b. warehouses in Chicago and New York. The quoted prices in table 21 for each of the market designations were lower in the months of March-December 1959 than in the corresponding months of 1958. During 1960 the quoted prices for each of the market designations moved upward; during October-December 1960 the quoted prices were generally above the level of the corresponding prices in 1959. The quoted prices were, however, 10 to 20 percent lower in the months of October-December 1960 than in the corresponding months of 1958.

Table 22 shows the monthly range of wholesale-price quotations, f.o.b. warehouses in Chicago, during the period January 1958-December 1960, for popular packs of frozen breaded shrimp and frozen peeled and deveined shrimp. During 1959 and 1960 the price quotations for these shrimp products generally moved in the same direction as the price quotations for the frozen heads-off, shell-on shrimp in 5-pound packages, but less sharply. During October-December 1960, the quoted prices of the frozen breaded fantail-style shrimp in packages of 2-4 pounds each and of the peeled and deveined shrimp were somewhat below the corresponding prices in 1959. The October-December quoted prices of the

frozen fantail-style breaded shrimp in 10-ounce packages, like those of the frozen heads-off, shell-on shrimp in 5-pound packages, were higher in 1960 than in the preceding year.

Table 23 shows the indexes (1950=100) of the monthly wholesale-price quotations for 5-pound packages of domestic frozen heads-off, shell-on brown shrimp (from the Gulf States) counting 15-20 to the pound, f.o.b. warehouses in Chicago, during the period January 1950-December 1960. These indexes indicate that the seasonal movement of prices varies somewhat from year to year. In 1960, as in most other recent years, prices in the Chicago market reached the highest level of the year during the late spring or summer months and the lowest level during the late fall or winter months. The period of low prices generally coincides with the period of heavy landings and imports. During 1960 the price index moved upward through July, but remained at a lower level than in July of the preceding four years. The price index here under review was consistently higher in the period September-December 1960 than in the corresponding period of 1959.

In table 24 the annual averages of the indexes shown in table 23 for 1950-60 (and also the monthly indexes for January 1959-December 1960) are compared with the corresponding indexes for all fresh, frozen, and canned fish and shellfish. Table 24 indicates that during the period shown price quotations fluctuated more widely for shrimp than for all fish and shellfish products combined.

The monthly averages of the weekly price quotations for various grades of canned shrimp, f.o.b. plants in the New Orleans area, were shown for the period June 1958-February 1960 in table 27 of the Commission's

1960 report; comparable data are not available for the remainder of 1960. The unit value of the total U.S. pack of canned shrimp, based on estimated selling prices f.o.b. plants (table 6), indicates that prices were generally higher in 1958 than in any other recent year. The average unit value of the U.S. pack of canned shrimp was 15 percent lower in 1959 than in the preceding year. Sales data reported to the Commission by canning concerns that accounted for about two-thirds of the 1959 pack of canned shrimp indicate that the prices of canned shrimp, f.o.b. plants, averaged about the same in 1960 as in 1959.

Transportation Costs to Principal U.S. Consuming Centers

Shrimp and shrimp products in general are transported principally by truck in the United States. Canned shrimp, however, are shipped mainly by rail; some are shipped by ocean freight (e.g., from New Orleans to New York and Boston, and from Alaska to Seattle). Most frozen shrimp (including breaded shrimp and peeled and deveined shrimp) are shipped from U.S. producing centers by truck; parts of a load may be distributed to various markets along the truck route. For long distances, such as from Nogales, Ariz., to New York, frozen heads-off, shell-on shrimp are sometimes shipped by rail.

Shippers of shrimp and shrimp products commonly utilize the services of trucking companies that specialize in hauling seafoods, but some have their own trucks. Processors and wholesalers, for example, have small trucks to supply local stores, restaurants, and hotels; and some packinghouses and freezers operate small and medium-size trucks for fairly distant hauls to processors' plants.

Over long distances, it is more costly to ship fresh shrimp than frozen shrimp. From Georgia to New York City, for example, the truckload rate for fresh shrimp is equivalent to about 4 cents per pound, compared with about 2 cents per pound for frozen heads-off, shell-on shrimp. Imported frozen heads-off, shell-on shrimp commonly have a heavier glaze (more ice per pound of shrimp) than the similar domestic product, and for this reason the cost of transporting a given quantity of the imported product is usually somewhat higher, on a net weight basis, than for the same quantity of domestic frozen shrimp.

Typical transportation costs (in cents per pound, net weight) for truckloads of domestic heads-off, shell-on shrimp from points of origin to large consuming centers in 1960 were as follows:

From	To New York	To Chicago	To Los Angeles
Brownsville	3-1/2	2-1/2	3
New Orleans	2-1/2	2-1/4	-
Tampa	2-1/4	2-1/4	-

The average cost of transporting canned shrimp by rail from New Orleans in 1960 (as reported to the Commission) was about 2-1/4 cents per pound, net weight, to New York, 1-3/4 cents to Chicago, and 3-3/4 cents to Los Angeles.

Transportation costs for bringing imported frozen heads-off, shell-on shrimp to the United States vary widely with the country of origin, the U.S. point of entry, and the method of shipment. Imports arrive at Nogales, Ariz., the principal point of entry, mainly by truck but also by rail. Entries at Brownsville and New York, the other major points of entry, are largely by ocean freight although some entries at Brownsville are by truck. Small quantities of shrimp are imported by chartered plane from several Latin American countries. These air shipments enter at Miami, Tampa, New Orleans, Houston, and Los Angeles. Costs by air vary with each shipment, but on the average run the cost is only slightly more than that by ocean freight. The disadvantages of air shipment include the difficulty of finding cargo for the return flight and a lack of refrigeration facilities on the planes used. Air shipments, therefore, come only from those Latin American countries that are within a few hours flying time of the United States.

Typical costs of transporting frozen shrimp from Mexico to the United States in 1960 were 2 cents per pound (net weight) from Guaymas (figure 3, appendix A) to Nogales, 3 cents from Carmen to Brownsville, and 4 cents from Salina Cruz to Brownsville. 1/ Transportation costs for imported shrimp entering at New York were about 4 cents per pound from Panama; 6 cents from Ecuador, Egypt, and Japan; and 7 cents from India. Transportation costs from Japan to San Francisco were about 5 cents per pound; those from British Guiana to Tampa were about the same. Imported frozen shrimp were shipped from Nogales to Los Angeles in 1960 at a cost of about 1-1/4 cents per pound by truck, to Chicago at about 2-1/2 cents by rail and 3 cents by truck, and to New York at about 3-1/2 cents by rail and 4-1/2 cents by truck.

1/ In addition to transportation costs, other costs incident to bringing shrimp from Mexico to the United States include export duties and taxes levied in Mexico, handling charges in Mexico and at the U.S. point of entry, consular fees, insurance, customs brokerage, and so on. In late 1960 Mexican export taxes and duties were equivalent to about 2-1/2 cents per pound for frozen heads-off, shell-on shrimp; the other incidental costs were equivalent to a fraction of 1 cent per pound.

World Production and the Shrimp Fisheries of Foreign Countries

Virtually the entire world catch of shrimp is taken from the inshore waters, the coastal waters, and the shallower offshore waters of areas in the tropical and temperate zones. Hundreds of species of shrimp are caught in these waters. Species of the family Penaeidae--particularly of the genus Penaeus--account for more than 80 percent of world production.

World production of shrimp has increased substantially since 1948, the earliest year for which adequate data are available. In that year reported production (excluding that of Mainland China) totaled 356 million pounds of heads-off, shell-on shrimp. 1/ In 1953 world production amounted to 581 million pounds and in 1959, to 683 million pounds. Little is known about the production of shrimp in Mainland China; the only data available are estimates of production for 1958 and 1959. If the estimated production of Mainland China in 1959--120 million pounds--is added to the reported production of other areas, total world production in that year was somewhat more than 800 million pounds. Because of the lack of adequate data for Mainland China, however, the following discussion of world production of shrimp--unless otherwise indicated--excludes Mainland China. Production of shrimp, by continent and by country, in 1948, 1953, and 1959, are shown in table 25. Table 26 presents data on production, by continent and by country, for the 4 years 1956-59.

Although the total world output of shrimp in 1959 was nearly double that in 1948 and was considerably greater than that in 1953, it was smaller than that in 1956. The record output of shrimp during the

1/ All data relating to production and potential supplies available are in terms of heads-off, shell-on shrimp.

period 1956-59 was that in 1956, when 730 million pounds were produced. In 1957 and 1958 world production declined to 705 and to 645 million pounds, respectively, but increased to 683 million pounds in 1959. World production of shrimp (excluding Mainland China), in selected years 1948-59, is shown in the following tabulation:

Years	Quantity (Millions of pounds, heads-off, shell-on basis)
1948	356
1953	581
1956	730
1957	705
1958	645
1959	683

Even excluding Mainland China, Asia has been the world's leading shrimp producing area since 1948. In that year reported production of shrimp in Asia (excluding Mainland China) was 146.7 million pounds, or about 200,000 pounds more than in North America, the world's second largest producing area. Europe, the third largest producing area, accounted for 60 million pounds in 1948. In the order of their importance the other producing areas in 1948 were South America, Africa, and Australia; the combined output of these areas in 1948 was less than 5 million pounds.

Production of shrimp increased markedly in all continents after 1948. In 1959 Asia, still the first ranking producer, had an output of 280 million pounds, or 41 percent of world production. North America, the second ranking producer, accounted for 245 million pounds, or 36 percent of the world total, and Europe, 100 million pounds, or 15 percent of the total. In the order of their importance, the other producing areas in 1959 were South America (43 million pounds, or 6 percent of world

production), Africa (11 million pounds, or nearly 2 percent), and Australia (4 million pounds, or less than 1 percent). World production of shrimp by continent, in selected years 1948-59, is shown in the following tabulation:

Continent	1948	1955	1956	1957	1958	1959
	Quantity (millions of pounds, heads-off, shell-on basis)					
Asia	147	244	372	357	285	280
North America	146	205	204	196	214	245
Europe	60	109	107	103	94	100
South America	2	19	33	36	39	43
Africa	1	2	10	10	10	11
Australia	1/	2	4	3	3	4
Total, world 2/	356	581	730	705	645	683

1/ Not available.
2/ Does not include Mainland China.

During the period 1956-59 South America was the only continent whose production of shrimp increased regularly; although the annual increases were small, averaging only about 3 million pounds, the total output in 1959 was about 10 million pounds (or 30 percent) larger than in 1956. Production in Africa and Australia during the period 1956-59 was relatively stable, averaging, respectively 10 million pounds and 3 million pounds. Production in North America fluctuated during the period 1956-59; the trend, however, was upward, with the output in 1959 about 41 million pounds (or 20 percent) more than in 1956. The output in Europe declined irregularly during the same period, with production in 1959 about 7 million pounds (or 7 percent) less than that in 1956. Production in Asia during the period 1956-59 declined in every year from the record high in 1956; the output in 1959 was about 92 million pounds (or 25 percent) less than that in 1956. Virtually the entire decline in Asia's production of shrimp was attributable to the reduced output in India.

World production of shrimp can no doubt be increased by very significant quantities. Except for two continents, it is not possible to venture quantitative estimates of the potential supplies of shrimp with any degree of confidence. For North America (excluding the United States), however, it has been estimated that the minimum potential is on the order of 140 million pounds a year. For South America estimates of potential supplies range from 85 to 115 million pounds a year. These estimates, as well as any country estimates given in the following sections of this report, however, must be regarded as highly speculative.

No data are available that would permit estimates of potential supplies of shrimp for the other four continents. It is clear, however, that each of these other continents possesses a potential far greater than its current production; this is especially true of Asia, where many of the off-shore waters are virtually unexploited. Both Australia and Europe also possess potential supplies of shrimp in excess of present production. Too little is known about the shrimp fisheries of Africa to speak of that continent as a whole. Of the three countries of that continent for which data are available, however, the potential supply of shrimp apparently exceeds significantly the current output of those three countries combined; potential supplies in Egyptian waters alone probably exceed 20 million pounds a year.

Estimates of potential supplies of shrimp in various areas of the world must be viewed in the light of the problems involved in realizing the potential in each specific area. The existence of a potential supply

much greater than present production does not, of course, indicate that potential will be realized within the next several years or even in the forseeable future. Prices for shrimp, costs of production, the demand for shrimp, and the rate at which shrimp fishing and shrimp processing facilities are expanded, as well as natural factors, will determine the extent to which the world's potential shrimp supply will be exploited. The fact that significant unexploited supplies exist throughout most of the world's shrimp producing areas did not lead to increased world production in 1957, 1958, and 1959, compared with the output in 1956. Nor did it prevent significant reductions in the quantities of shrimp produced in Asia in each year from 1956 to 1959, even though that continent perhaps possesses the world's greatest unexploited shrimp resources.

With favorable price levels, the demand for shrimp will no doubt continue to increase because of population growth and of increasing levels of income in many of the world's shrimp consuming areas. Increased production in many areas of the world, however, is largely dependent on the acquisition of additional fishing craft, of processing plants, and other necessary equipment. The rate at which necessary facilities are being acquired by many producing countries indicates that any increase in world production of shrimp will probably be quite gradual. Subsequent sections of this report examine in greater detail the possibility of increasing production of shrimp in each of the six continents of the world.

Also discussed in subsequent sections of this report are wage rates for, or wages paid to, workers who either fish for or process shrimp. The data on wages given in this report have been drawn principally from U.S. Foreign Service reports. 1/ Although the Tariff Commission requested wage data for about 60 shrimp-producing countries and areas of the world, usable wage data were obtained for relatively few producing countries and, in most instances, even those data were fragmentary.

Data available on wage rates for, or wages paid to, various types of workers who engage in shrimp fishing and processing in foreign countries are not, in most instances, comparable. Comparison of wage rates for, or monetary wages paid to, individuals in a foreign country with those of individuals in other foreign countries and in the United States must be made with caution because of the differing bases used for payments in the various countries and because the payments may or may not, in individual instances, reflect certain fringe benefits or certain additional payments received by the workers. Moreover, the fragmentary data available on wage rates, monetary wages, fringe benefits, and workers' output do not provide a sufficient basis for comparing unit labor costs in various shrimp producing and processing countries.

1/ In those instances in which the data on wages had not already been converted into U.S. dollars, they were converted to U.S. dollars by using the pertinent official rate of exchange.

North America 1/

The foreign shrimp fisheries of North America may be divided into three groups: Those of the northern part of North America (Canada and Greenland), those of the Caribbean islands, and those of Middle America (Mexico and the Central American countries). Of these groups of fisheries, only that of Middle America produces shrimp in substantial quantities. Shrimp caught off Canada and Greenland are chiefly of the smaller species; virtually all are landed on the west coasts of those two areas. Many of the Caribbean islands produce shrimp but the shrimp population in nearby waters is very sparse and therefore a few Caribbean shrimp craft operate in certain waters closer to the continents of North and South America where shrimp are found in greater abundance. Large concentrations of shrimp, however, are found off the east and west coasts of Middle America.

Production.--Annual landings for the three foreign shrimp-producing areas of North America for the period 1956-59 are shown in the following tabulation. Data on annual landings of shrimp, by country, for each of the three foreign producing areas during the same period are shown in tables 26 and 27.

Area	1956	1957	1958	1959
	Quantity (millions of pounds, heads-off, shell-on basis)			
Canada and Greenland	1.4	1.8	2.1	1.9
Caribbean islands	2.5	2.5	2.5	2.5
Middle America	66.7	70.1	82.5	97.8
Total 1/	70.6	74.5	87.2	102.2

1/ Because of rounding, figures may not add to the total shown.

1/ In this section of the report data relating to the United States are not included.

Landings of shrimp in the two less productive regions of North America (Canada and Greenland and the Caribbean islands) have never been large. Landings in Canada and Greenland in 1959 amounted to 1.9 million pounds (heads-off, shell-on), compared with 2.1 million pounds in 1958, the largest landings on record. Production of shrimp in the Caribbean islands has always been small. Estimates of the catch in 1959 vary from 2.5 million to 4.0 million pounds; Cuba, with about 2 million pounds, was the largest producer.

Middle America is by far the most important of the three foreign shrimp producing areas of North America; in 1959 it accounted for about 96 percent of the production in the three areas combined. A variety of species, most of which belong to the genus Penaeus, are caught all along both coasts of Middle America. The species of this genus that are found in greatest abundance are P. duorarum, P. schmitti, P. stylirostris, P. occidentalis, P. vannamei, and P. brevirostris. Small brown shrimp (Xiphopeneus riveti and other species) are also taken in abundance in several coastal areas.

Production of shrimp in Middle America has been increasing for many years. Landings, which amounted to about 67 million pounds in 1956 and to about 83 million pounds in 1958, totaled about 98 million pounds in 1959. Nearly all of the 31-million-pound increase between 1956 and 1959 was accounted for by the area's two principal shrimp producing countries--Mexico and Panama. Mexico's production alone increased by nearly 21 million pounds during this period, from 59 million to 80 million pounds, while Panama's output almost doubled, increasing from 6 million to 11 million pounds.

Mexico produced 80 million pounds of shrimp in 1959 and Panama 11 million pounds; together, these two countries accounted in that year for about 90 percent of the total foreign shrimp production in North America (excluding the United States) and 93 percent of all landings in Middle America. In 1956 and 1957 Mexico and Panama accounted for even higher percentages (about 99 percent each year) of total Middle American landings of shrimp, an indication that production in the other Middle American countries (British Honduras, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua) has been increasing at a faster rate even though production in absolute terms still is relatively small. Production in these other Middle American countries increased from less than 1 million pounds in 1956 to more than 6 million pounds in 1959.

Potential supplies.--The three foreign shrimp producing areas of North America each possess a potential supply of shrimp somewhat greater than present production. The potential differs for each area, however, and it is difficult to accept any particular estimate of potential with a high degree of confidence.

North America's greatest potential supply of shrimp (not including the United States) lies in the waters off the coasts of Middle America. The potential for that area has been estimated to be 140 million pounds or more a year (heads-off, shell-on). However, the larger part of this potential is already well exploited; landings in the Middle American countries in 1959 approximated 100 million pounds.

Mexico and Panama possess the largest potential in Middle America. Mexico's potential has been estimated to be 100 million pounds or more a year,

and that of Panama, 18 million pounds. Mexico's production in 1959 was 80 million pounds and it is estimated that production in 1960 may have exceeded 88 million pounds. Mexico's landings of shrimp in the next few years probably will not greatly exceed those in 1960 unless there is a significant increase in the price of shrimp. In addition to the price factor, variations in future annual landings in Mexico will depend primarily on environmental factors and also on the development of fisheries in the deeper waters off the west coast of Mexico.

Panama's potential for all species of shrimp has been estimated at 18 million pounds a year; production in 1959, the highest on record, was more than 11 million pounds. Future realization of Panama's potential will depend on favorable prices, further exploratory fishing in deeper waters, the number of craft equipped to fish the deeper waters, and the vagaries of nature. It is doubtful that annual landings will increase beyond 15 million pounds within the next few years.

The potential for British Honduras, Costa Rica, and Honduras is believed to be relatively small--perhaps only a few million pounds more than present landings in the three countries. The fisheries of El Salvador, Guatemala, and Nicaragua combined are capable of sustaining a larger annual catch, perhaps as much as 15 million pounds more than in 1959. To the extent that port facilities, processing facilities, and the trawling fleet are expanded in these latter three countries, landings will probably increase; some expansion of these facilities is already under way.

The potential shrimp supply in the waters off the Caribbean islands is not considered to be very large because those waters have a coralline bottom and a sparse natural food supply. Landings in this area are not

expected to increase significantly in the future unless the shrimp catch is taken closer to the continental off-shore waters as has been done by shrimp fishermen in Trinidad. Landings in Trinidad may increase if additional trawlers continue to fish the heavily populated waters off the Guiana coast.

The potential supply of shrimp available off Greenland's west coast is considered to be rather large. Landings in both Canada and Greenland may increase during the next few years--especially in Greenland, where new processing facilities are being established.

Wages.--Wages paid to employees who handle shrimp vary greatly both between plants in different countries and among plants within the same country. Plant workers are often paid an hourly rate for general work and a piece rate for beheading, peeling, and deveining shrimp.

The hourly wage equivalent for workers engaged in beheading, peeling, deveining, and packaging shrimp in Costa Rica is reported to be between 90 cents and $1.25 an hour. The specific piece rates paid for beheading, and for peeling and deveining, are 1.5 and 4.5 cents per pound of shrimp, respectively. However, the level of employment is quite erratic, varying with the arrival of the shrimp craft. General laborers in shrimp-processing plants in Mexico are paid at the rate of about 40 to 50 cents an hour and in Panama, at between $1.20 and $1.76 per day. Most employees who peel and devein shrimp in Mexico and Panama are paid on a piece basis. Employees in two shrimp-processing plants in Mexico are paid between 1.5 and 3.6 cents for each pound of peeled and deveined

shrimp meat; the exact rate paid depends on the size of the shrimp. In Panama, the rate for similar work ranges from 1 to 6 cents per pound. In El Salvador, cleaners and packers receive about $2 per day.

Shrimp fishermen are paid on a different basis than are plant employees. Their payment is based on the "lay system" under which receipts from the sale of shrimp are distributed among the captain and crew of each vessel on the basis of agreed percentages. The amount and distribution of payments by Mexican craft owners to fishermen and to others in Ciudad del Carmen and Campeche per ton of shrimp (heads-off, shell-on) landed as of September 17, 1960 are shown in table 28. In Mexico, average monthly earnings of the captains and crews vary with the port. In the Carmen-Campeche area a captain may earn $272 a month; at Mazatlan he may earn as much as $360. Engineers, winchmen, and cooks in the Carmen-Campeche area average $188, $148, and $108 per month, respectively. In addition, the fishermen also are provided with food, the value of which is estimated to be $0.96 per-man-per-day at Salina Cruz and $1.25 per-man-per-day at Mazatlan. The Carmen-Campeche rate is 72 cents per day.

On vessels owned by one concern in Panama payments to captains average between $300 and $700 a month and to crew members, about $200 a month. Members of the crew also earn additional monthly income from the sale of fish that are taken incidentally to shrimp

trawling. On vessels owned by another concern, the average annual net income of captains is about $2,500; that of engine mechanics, $1,800; and that of crew members (two to each vessel) $1,450. The monthly income of fishermen in El Salvador ranges from $120 to $160, but that of captains and ship mechanics is substantially higher.

South America

Shrimp fishing has been conducted off the coasts of South America for centuries, but only in the last decade or so has production increased by significant quantities. A variety of species are landed in South America, most of which belong to the genus Penaeus, but significant quantities of smaller shrimp, such as the sea bob (Xiphopeneus kroyeri) and small cold-water, deep-sea shrimp, are also caught.

Production.--The quantity of shrimp known to have been landed in South America in 1948 was about 2 million pounds, but actual landings may have been considerably more. Since that time, however, landings have increased almost continuously. In 1957 they totaled about 36 million pounds, and in 1959, the most recent year for which complete data are available, about 43 million pounds. Total landings of shrimp in South America, in selected years 1948-59, are shown in the following tabulation.

Year	Quantity (Millions of pounds, heads-off, shell-on basis)
1948	1.9
1953	19.2
1956	33.0
1957	35.8
1958	38.7
1959	43.4

A large part of the increased South American landings of shrimp in recent years has been accounted for by Brazil, but most other South American countries have also increased their production; only in Argentina has there been a significant decline in the quantity landed (tables 25 and 26). Brazil, the leading South American producer of shrimp, produced 10 million pounds in 1953. Its production increased to 21 million pounds in 1956, to 25 million pounds in 1957, and to 26 million pounds in 1959. In recent times Brazil has consistently produced more than half of South America's total output of shrimp; in 1959 it accounted for about 60 percent of the continent's total production. In 1957-59, however, Brazil's annual production of shrimp was relatively stable; most of the increase in South American production during that period came from other countries, such as Ecuador, the continent's second largest producer in 1959 (6.3 million pounds), and Colombia (3.5 million pounds).

Potential supplies.--The waters off the continent of South America have a potential supply of shrimp much greater than the 43 million pounds of shrimp produced in 1959. Estimates of potential supplies vary greatly, but generally range between 85 million and 115 million pounds (heads-off, shell-on). Not all of this potential can be realized during the next several years, but it is expected that landings will continue to increase, especially in certain areas.

Brazil has the largest potential supply of shrimp in South America, a potential which has been estimated at 36 million to 60 million pounds annually. Preliminary data indicate that Brazil's landings of shrimp in

1960 was about 32 million pounds, or 6 million pounds more than in 1959. Any increases in landings beyond the 1960 catch will not only depend on natural factors, but also on an increase in the number of vessels that fish for shrimp.

The waters off the coast of the Guianas are also a substantial potential source of shrimp. The recent discovery of large quantities of shrimp in these waters makes it quite probable that the potential annual supply available to the three countries in the immediate area--British Guiana, French Guiana, and Surinam--may exceed 10 million pounds, as contrasted to total 1959 landings for the three countries of about 3 million pounds. The possibility of increased landings in the future largely depends on the number of vessels fishing the area; indications are that the number of vessels will continue to increase and that landings will increase commensurately. The very significant increase in the number of shrimp fishing vessels in Colombia in 1960 is also expected to result in substantial increases in shrimp production in that country during the next few years. Except for Peru and Uruguay, whose potential supplies of shrimp appear to be rather limited, landings in most other South American countries probably will also continue to increase during the next few years.

Wages.--Recent wage data for plant workers and fishermen were available for only a few countries in South America; in most instances such data were rather meager. Even less information was available with respect to fringe benefits, which in some instances may be substantial.

In Brazil, workers who peel and devein shrimp are reportedly paid between 1.9 cents and 2.3 cents per pound, and those who freeze shrimp receive $37.11 per month in Santa Catarina and $41.24 per month in Rio Grande de Sul. Manual laborers in British Guiana shrimp plants receive about 24 cents per hour. No recent wage data were available for individuals who handle shrimp in Chilean plants but costs of production for various phases of the shrimp producing operation in Chile were obtained. These costs, which are listed below, may be somewhat higher than the corresponding piece rates paid to employees. Not included in the itemized costs are social security payments, which in Chile are equal to 36 percent of employee earnings.

Process	Cents per pound
Peeling	4.8
Washing and cooking	2.4
Unloading, molding, freezing, and packing	15.7

Costs, rather than wages, were also the only data available for certain processes performed in Colombian shrimp plants. Cost of peeling, deveining, and freezing a pound of shrimp on the Pacific coast of Colombia averages between 10 and 12 cents a pound. The approximate cost of producing a pound of frozen shrimp for export in Peru is 48 cents. A breakdown of this total reveals only one or two cost elements which are entirely attributable to wages. The various cost elements involved in producing shrimp for export in Peru, in 1959-60, are shown in the following tabulation.

Item	Cost per pound
Price paid to fishermen	$0.35
Packing	.03
Labor used in packing	.02
Freezing, including ice used on vessels	.02
Export duties	.06
Total	.48

As in most shrimp-producing areas of the world, the captains and crews of shrimp vessels in South America generally receive a percentage of the value of the catch; this percentage is distributed in some customary manner. Average incomes received by captains and crews in three selected countries are listed below. Captains and crew members probably also receive additional income in the form of fringe benefits but in most instances data on these benefits are not available.

Worker	Brazil	British Guiana	Chile
	Average income		
Captain	$500 per month at Belem.	1/	$475 per month.
Member of crew	$49.02 per month and food at Belem.	$89.48 per month for Guianese member of crew.	$95 per month.

1/ Not available. The 31 shrimp vessels operating out of Georgetown, British Guiana, in late 1960 were U.S. flag vessels.

Europe

Many European countries have long exploited the shrimp resources in the waters off their coasts. The most common species of shrimp taken in European waters are the small sized Crangon crangon (C. vulgaris) and Pandalus borealis, but substantial quantities of the genus Penaeus and minor quantities of species of other genera are also landed. Of that portion of the European catch of shrimp that is used for human consumption, substantial quantities are particularly suitable for canning. Because the catch in European waters consists principally of small-size shrimp, substantial quantities of the shrimp landed in certain European countries are used for poultry feed. In West Germany, for example, 80 to 85 percent of the catch is used for that purpose; the "count" of shrimp so used ranges from 1,000 to 1,400 a pound. In the Netherlands about two-thirds of the shrimp catch is used for poultry feed.

Production.--Since World War II production of shrimp in Europe has increased significantly. Landings of shrimp in Europe amounted to about 100 million pounds in 1959, about 67 percent more than the 60 million pounds landed in 1948. Available data indicate that the record production of shrimp in Europe took place in 1953 and 1956; in each of those years the output amounted to about 108 million pounds, or about 8 million pounds more than in 1959. The decline in shrimp production in European countries between 1956 and 1959 is attributable almost entirely to reduced landings in West Germany, the Netherlands, and Belgium--particularly West Germany (tables 25 and 26). Total landings of shrimp in European countries, in

selected years from 1948 to 1959, are shown in the following tabulation:

Year	Quantity (Millions of pounds, heads-off, shell-on basis)
1948	1/ 59.6
1953	1/ 108.7
1956	107.2
1957	102.6
1958	93.9
1959	99.6

1/ Includes Algeria.

Despite the decline in their production in recent years, which was probably attributable to natural factors, West Germany and the Netherlands still rank as Europe's leading producers of shrimp. In 1959 Germany produced 34 million pounds of shrimp, or 34 percent of total European production, and the Netherlands, about 17 million pounds, or 17 percent of the total. Spain, Europe's third largest producer of shrimp, landed a quantity (16.7 million pounds) almost as large as that taken by the Netherlands. Norway, the fourth ranking producer of shrimp in Europe, produced 12.8 million pounds. Other shrimp producing countries of Europe, with their landings in 1959, include Sweden (4.2 million pounds), Italy (4.0 million), France (3.5 million), Denmark (3.1 million), the United Kingdom (2.5 million), and Belgium (1.4 million).

Potential supplies.--European countries have probably exploited the potential shrimp resources in the waters off their coasts more intensively than have any of the other major shrimp-producing areas of the world. Although there are no reliable estimates of the potential shrimp supply in European waters, it is probable that total production of shrimp in European countries will not exceed 130 million pounds annually within the next few years.

Any significant increase in landings probably will be in West Germany; landings in that country declined by about 10 million pounds between 1956 and 1959, presumably as a result of natural factors which conceivably may become more favorable. The shrimp resources in the waters off other European countries exceed their present landings and there are indications that these countries may exploit their shrimp resources more intensively in the near future.

Wages.--In European shrimp-processing plants most employees engaged in performing specific tasks, such as peeling and deveining, are paid on a piece basis; most other workers are paid by the hour. Data on piece rates paid in shrimp-processing plants in 1960 are available only for the Netherlands and West Germany; hourly rates of pay are available only for West Germany, Belgium, Denmark, Norway, and Sweden.

In the Netherlands, piece rates for peeling shrimp range from 15 to 18 cents per pound of peeled meat. Unlike the piece rates in the Netherlands, rates at which workers in West Germany are paid for peeling shrimp, principally for canneries, are based on the weight of unpeeled (probably whole) shrimp. The rates average about 3 cents per pound of such shrimp, but are supplemented by incentive payments based on the yield of meat per given quantity of unpeeled shrimp.

The average hourly rate of pay for workers in West German shrimp canneries is 47 cents per hour; in Belgium the hourly rate is 44 cents for women and 56 cents for men. Female employees in Danish shrimp-processing plants are paid about 59 cents per hour. In Norway most female workers in shrimp-processing plants are paid on a piece basis, but a few are paid an hourly rate that ranges from 42 to 46 cents; male

employees average between 66 and 70 cents per hour. The average hourly wage in Swedish shrimp-processing plants is about 77 cents. Average hourly rates in 1960 in shrimp-processing plants for specified European countries are shown in the following tabulation.

Country	Male	Female	Average, all employees
	Cents per hour		
Belgium	1/ 56	1/ 44	2/
Denmark	2/	59	2/
West Germany	2/	2/	1/ 47
Norway	66-70	42-46	2/
Sweden	2/	2/	77

1/ Rates for canneries only.
2/ Not available.

Virtually all shrimp fishermen in European countries are paid on a share basis. Inasmuch as most European shrimp trawlers fish for other edible marine products besides shrimp, the available data on income received by fishermen generally cover all marine products taken; data on income from shrimp fishing alone are not available. Fishermen in Belgium earn about $1,500 annually and those in the United Kingdom, between $1,120 and $2,250. Captains of Belgian fishing craft may earn as much as $4,500 a year; at one Danish port the average annual income of captains is about $2,610. In Norway, it is reported, fishermen earn more in the shrimp fishery than in other fisheries, and somewhat more than the average industrial worker.

Asia

Asia, which produces more shrimp than any other continent, accounts for nearly half of the world output. A wide variety of species are taken in Asiatic waters. Shrimp of the family Penaeidae -- principally of the genera Penaeus and Metapenaeus --account for a large proportion of the Asiatic catch. Large quantities of non-penaeid shrimp are also landed, however, especially in India.

The largest part of Asia's shrimp catch is taken in the continent's shallow coastal and inshore waters. Most of the craft that fish for shrimp in the deeper offshore waters do so only as an incident to their other fishing operations. Shrimp are also produced by culture in some brackish Asian waters but the quantities produced by this method are relatively small.

Production.--Mainland China, with an estimated production of 120 million pounds in 1959, is probably Asia's leading producer of shrimp. Little is known about the production of shrimp in Mainland China for years other than 1958 and 1959, for which years only estimates are available. The following discussion, therefore, excludes Mainland China.

Total production of shrimp in Asia (excluding Mainland China) increased sharply between 1948 and 1956. Since 1956 production has declined markedly, although the output in 1959 was still nearly twice that in 1948. Production in 1948 by Asiatic countries for which data are available totaled 147 million pounds; the output of countries for which data are not available may possibly have been as much as 10 million pounds. Production increased rapidly during the next 5 years; in 1953 (not including the output in the Philippines and

Vietnam, for which adequate data are not available) it totaled 244 million pounds. Between 1953 and 1956 production of shrimp in Asiatic countries continued to increase; in the latter year it amounted to about 372 million pounds. After 1956, however, production declined markedly; in 1957, it amounted to 357 million pounds, and in 1958, to 285 million pounds. In 1959 production totaled about 280 million pounds--only 36 million pounds more than the output in 1953. Virtually all of the decline in the Asiatic production of shrimp between 1956 and 1959 is attributable to the reduced output in India.

Aside from Mainland China, Japan and India were the leading Asiatic producers of shrimp in 1959. Japan's production in 1959 was estimated to be 89 million pounds, or about double that in 1948 and 64 percent greater than in 1953. 1/ Production of shrimp in India increased from 48 million pounds in 1948 to 211 million pounds in 1956--an increase of 163 million pounds. During the next 3 years, however, production declined by 125 million pounds; in 1959 it amounted to only 86 million pounds. There is no adequate explanation for this sharp reduction in the quantity of shrimp produced in India; it may, however, have been caused in part by the reclamation of backwater areas for paddy cultivation.

In the order of their importance the next three Asiatic producers of shrimp in 1959 were Korea (26 million pounds), whose output in recent years has been relatively stable; Pakistan (about 20 million pounds), whose production

1/ The estimate of Japan's production of shrimp in 1959 is based on landings for the first 8 months of that year, projected on the basis of landings in 1958.

ranged from 15 million to 21 million pounds a year from 1956 to 1959; and the Philippines (18 million pounds). Other Asiatic countries that produced significant quantities of shrimp in 1959 were Thailand (11 million pounds), Hong Kong (8 million), Burma (7 million), Taiwan (Formosa) (7 million), Vietnam (7 million), and Iran (2 million).

Available information indicates that the sharp decline that took place in the production of shrimp in Asia between 1956 and 1959 perhaps has been arrested. Production of shrimp apparently may be expected to increase in the future but the rate of increase and the length of time it will take to restore production to anything approaching the 1956 level cannot, of course, be predicted.

Potential supplies.--The potential supply of shrimp in the waters off the continent of Asia is very extensive. Both the areas which currently produce large quantities of shrimp and the areas where production is not now so great have a potential for much higher levels of production.

The most intensive exploitation of the shrimp resources in Asia takes place in the inshore and shallow coastal waters; potential supplies in the deeper offshore waters are, in the main, relatively unexploited. Perhaps the greatest unexploited supplies of shrimp are to be found in the waters off Pakistan and India; in both of these countries the inshore and offshore potentials are very large. The waters off Japan, on the other hand, are already fished intensively. Although the catch in these waters can no doubt be

increased somewhat, the possibility for increase is not as great as in other areas of Asia. A possible source of a greatly increased supply of shrimp in Japan, however, is the production of shrimp by culture; capital has already been invested in facilities for this purpose. It is too early to predict the results of this experiment, which began in 1960. Indications are, however, that it may be successful and that shrimp culture may be feasible in several areas along the Japanese coast, and may provide an additional supply of several millions of pounds of shrimp annually. A significant supply of shrimp--the exploitation of which has only recently begun--also exists in the Persian Gulf, and production in this area may be expected to increase substantially. Nearly all other Asiatic areas that now produce shrimp have additional supplies available; until further surveys are made, however, they can only be described as very extensive.

Potential supplies are not, of course, in themselves sufficient to assure an increase in the production of shrimp; the existence of large shrimp resources in Asian waters did not prevent the sharp reduction in the output of shrimp in that continent between 1956 and 1959. Prerequisite to greatly increased exploitation of the shrimp resources of Asia is additional capital investment in shrimp fishing and shrimp-processing facilities. Some countries of Asia are gradually acquiring additional equipment and facilities. Such acquisition will result in a gradually increasing output of shrimp.

The exploitation of the potential supply of shrimp in Indian waters will require extensive capital investment in ports, vessels, and plants; the construction of many such facilities is already under way. In Pakistan the government has authorized construction of eight additional shrimp freezing plants and two shrimp canneries, as well as other necessary facilities. The number of shrimp trawlers in Pakistan increased during 1959 and 1960. Since landings of shrimp by the larger fleet were expected to tax the capacity of the existing processing plants, it is probable that significant future increases in landings will await the completion of new plants. Even without new facilities, however, some increased quantities may be landed for use in the dried form.

Capital equipment with which to exploit offshore waters and to process shrimp is also being acquired by other Asiatic countries. In many instances however, new investment is not great and, for some countries, there is no indication of any significant expansion.

Wages.--Wage data for shrimp fishermen and workers in shrimp processing plants are available for only seven Asiatic countries. Much of the data, however--especially that which concerns plant workers--relate to a single plant or area and are not necessarily representative of wages paid in a particular country.

Both the level of wages and the basis of payment for plant workers vary greatly in Asiatic countries. Some employees are paid on a piece basis,

whereas others are paid a daily, weekly, or monthly wage. Data on fringe benefits are available in only a few instances.

Rates of pay for workers who process shrimp in Burma--usually in a primitive fashion--range from 32 to 75 cents a day. The only recent wage data available for India are for the states of Madras and Karala. In Madras the rates of pay for peeling, deveining, and brining shrimp range from 31 to 63 cents a day. The average daily wage of workers in freezing plants in Karala is reported to be 63 cents. The average wage rate for processing dried shrimp in Taiwan (Formosa) is between $10 and $15 a month. For one company that freezes shrimp in Vietnam, the daily wage ranges from $1.43 to $1.71. Individuals who peel and devein shrimp in freezing and canning plants in Pakistan receive somewhat less than 1 cent for each pound of unpeeled shrimp. Workers who operate freezing and canning equipment in that country are paid 62 cents per 8-hour daytime shift and 82 cents per 8-hour nighttime shift.

Individuals who handle shrimp for concerns in Hong Kong are usually paid by the day or month. According to reports, one Hong Kong processing firm pays from $1.05 to $1.23 for an 8-hour day to workers who behead, peel, devein, and weigh shrimp. The average monthly wage of workers in another Hong Kong concern, which processes and freezes shrimp as well as other food products, is reported to be $43.85; a supervisor in the firm is paid $175 a month. This concern also provides its employees with numerous fringe benefits, including free quarters, free medical service for workers and their dependents, sick pay, 18 days of vacation each year, uniforms, and a company contribution to a pension fund which amounts to one-tenth of the employees' basic wages.

Unlike fishermen in most other continents, Asiatic fishermen in the employ of other individuals usually work for wages rather than for a share of the value of the catch. In Burma the rates paid to fishermen during the fishing season range from $9.50 to $25 a month plus food. The daily income of fishermen in the Indian state of Madras ranges from $0.31 to $2.10, depending on the catch.

Although most of the craft used to fish for shrimp in Hong Kong are individually owned, there are some fleet operated vessels. One fleet operator pays his fishermen an average of about $17.55 a month; he also provides crew members with free food, and pays them an incentive bonus equal to 30 percent of the value of the catch. The average pay of captains who operate craft for this concern is $26.30 a month.

In Pakistan some fishermen are paid on a share basis, but most of them are paid a wage plus food and a bonus. Average monthly rates of pay for captains and crew members are as follows: Captains, $126; mates, $63; engineers, $42; and crew members (including cooks), $31.50. Besides their wages, fishermen may earn bonuses ranging from $6.30 to $8.40 for a good catch. During June, July, and August, when the trawlers are tied up because of the monsoons, the captains and engineers receive one-half of their basic monthly pay. The average annual income of fishermen in Pakistan--including bonuses, but excluding the value of food provided--is estimated to be between $336 and $368.

Africa

Very little is known about the production of shrimp in African countries and the potential supplies of shrimp that are available in the waters off the African coast. Such information as is available relates mainly to countries of the northern part of the continent, particularly Algeria, Morocco, and the Egyptian Region of the United Arab Republic. Even for these countries there are no data available on wage rates for shrimp fishermen or for workers employed in shrimp processing plants.

Production.--Production of shrimp in Algeria, Morocco, and Egypt combined amounted to not more than about 4 million pounds a year before 1953. Between 1953 and 1956, however, production increased significantly; in 1956, and in each subsequent year through 1959, about 10 million pounds of shrimp were produced. The Egyptian Region of the United Arab Republic--the largest producer in Africa--accounted for 7.7 million pounds in 1959, or about 72 percent of the total.

Potential supplies.--The potential supply of shrimp in the waters off the coasts of Algeria, Morocco, and Egypt significantly exceeds the 1959 production of those three countries combined. The greatest known potential--that in the waters off the Mediterranean and Red Sea coasts of Egypt--has been estimated at 20 million pounds or more a year (heads-off, shell-on).

Failure of the above mentioned shrimp-producing areas of Africa--especially Algeria and Egypt--to increase their production of shrimp in recent years is largely attributable to the small number and the poor quality of the

existing craft that fish for shrimp. Shrimp are reported to be plentiful in the waters off Algeria that are deeper than those which are now being fished. Trawling for shrimp in these deeper waters, however, would require either a fleet of modern fishing craft or a modernization of the gear on existing craft. As far as is known, no projects are underway to replace antiquated vessels with new craft or to modernize existing craft. Shrimp resources off the coast of Morocco also exceed the present level of production, but there are no plans under way to significantly increase the annual catch. In Egypt, an insufficient number of fishing vessels is the chief if not the sole reason why production of shrimp has not increased significantly since 1956. Present processing capacity in Egypt, including that of the sardine- and shrimp-canning plant which was completed in October 1960, is more than sufficient to meet the present and immediate future requirements of the Egyptian shrimp-processing industry. If present plans to increase the number of vessels that fish for shrimp off the Egyptian coasts mature, production will probably increase commensurately.

Australia

Before 1948 most of the shrimp landed in Australia were caught in the shallow coastal or inshore waters. After that time, however, trawling for shrimp in deeper offshore waters significantly increased. The more important species taken in Australian waters are Penaeus merguiensis, P. plebejus, and Metapenaeus macleayi.

Production.--In 1953 Australia produced about 2.0 million pounds of shrimp and in 1956, about 3.7 million pounds. Production varied irregularly in the following years; in 1959, because of the increased domestic demand for shrimp, it amounted to 4.0 million pounds, a record high

Potential supplies.--Exploration in the waters off the coast of Australia during the past several years has revealed additional areas from which shrimp can be taken. Although potential supplies of shrimp in Australian waters are known to be significant, the sea bottom in some of the newly discovered areas is rough, and fishing for shrimp in those areas may not be profitable. Production in other areas, however, is expected to increase, mainly in response to the growing domestic demand for shrimp.

Wages.--No data are available on the income of shrimp fishermen in Australia. As is the case in most other shrimp-producing areas of the world, however, Australian shrimp fishermen are usually paid on a share basis.

Most workers who handle shrimp in processing plants in New South Wales and Queensland are paid a basic wage of between $31.32 and $33.36 a week and an additional payment of up to $3.40 a week, depending on the skill of the individual worker. Many workers who handle shrimp, however, are paid on a piece basis. In 1957 workers paid on a piece basis in Queensland received 0.9 cent per pound to grade shrimp, 1.0 to 1.8 cents per pound to remove the heads and to grade the shrimp, and from 0.9 cent to 1.8 cents a pound to "layer pack" shrimp.

World Trade

A substantial proportion of the world's production of shrimp enters international trade in one form or another. Excluding direct exports from Mainland China and reexports of shrimp from Hong Kong that originated in Mainland China, it is estimated that in 1959 the shrimp-producing countries of the world exported a total of about 150 million pounds of shrimp in all forms. Inasmuch as this figure of 150 million pounds relates to the weight of shrimp in the particular forms in which it was exported, it is not useful for making comparisons with the data on total world production of shrimp, which are on a heads-off, shell-on basis. On a heads-off, shell-on basis, the quantity of shrimp that entered international trade in 1959 would be substantially greater than the 150 million pounds here mentioned. Estimates of the world trade in shrimp in 1959 on a heads-off, shell-on basis are made later in this section of the report.

The principal forms in which shrimp are exported are frozen, dried, canned, and fresh. Countries that export shrimp generally record their exports of that product under each of these categories, as a combination of two or more of these categories, or as part of their exports of other crustaceans. Data on the quantities of shrimp exported in each particular form are not available, therefore, for all countries.

In 1959, 15 countries for which data are available exported about 136 million pounds of shrimp in various forms, or about 90 percent of all shrimp that entered international trade channels that year (excluding direct exports of shrimp from Mainland China and reexports of shrimp from

Hong Kong that originated in Mainland China) (table 29). For most of these countries the export statistics were already broken down to show at least some of the major forms in which shrimp are exported, but for other countries they were not. For these latter countries, and to the extent necessary for the countries first mentioned, exports by category have therefore been estimated.

In 1959 by far the greater part of the shrimp exported by the 15 major shrimp exporting countries was shipped in the frozen form. It is estimated that about 114 million pounds, or 84 percent of total exports of shrimp from these 15 countries were in the frozen form and that about 22 million pounds, or 16 percent, were in other forms. Estimates of exports in these other forms are as follows: Dried (11.6 million pounds, or 8 percent of total exports), canned (7.7 million pounds, or 6 percent) and fresh (2.7 million pounds, or 2 percent).

Mexico is by far the world's chief shrimp-exporting country; in 1959 it exported more shrimp (in terms of net weight of product as shipped) than the other 14 major shrimp-exporting countries combined. The 69.7 million pounds of shrimp that Mexico exported in that year were virtually all in the frozen form, and nearly all of the exports went to the United States. India, the next largest exporter of shrimp in 1959, exported more than 12 million pounds, the largest part of which was shipped in the dried form to Asiatic markets. In the order of their importance, the next largest exporters in 1959 were Norway (9.3 million pounds), Panama (8.8 million), Japan (8.5 million), the Netherlands (6.5 million), the United States (5.1 million), and Ecuador (4.7 Million). As a group, these countries exported most of their shrimp in the frozen form.

The United States was the chief country of destination for the aggregate shrimp exports by the 14 other leading shrimp-exporting countries in 1959 (table 30). In 1959 about 99.4 million pounds, or 76 percent of total exports of shrimp from those countries, went to the United States. The United Kingdom and France were the next ranking importers of shrimp. Because many shrimp-exporting countries do not completely record their exports of shrimp by country of destination, it is not possible to indicate with any degree of accuracy the order of importance of shrimp-importing countries other than the United States, the United Kingdom, and France.

Determination of the actual proportion of the total world production of shrimp that enters international trade requires conversion of the export statistics for shrimp to a common basis, such as heads-off, shell-on--the basis on which data on world production were presented earlier in this report. Such conversion not only raises the problems that are discussed in the section of this report on U.S. exports, but is also further complicated because the data for exports of shrimp from many of the leading exporting countries had to be estimated. On the basis of available information, it is estimated that in 1959 the 15 leading shrimp-exporting countries exported the equivalent of 187 million pounds of shrimp on a heads-off, shell-on basis, or about 27 percent of total world production of shrimp (excluding Mainland China). Excluding direct exports from Mainland China and reexports from Hong Kong that originated in Mainland China, it is estimated that total world exports of shrimp in 1959 were equivalent to between 200 and 225 million pounds of shrimp on a heads-off, shell-on basis, or between 29 and 33 percent of total world production (excluding Mainland China).

Many countries impose duties and taxes on exports of shrimp. However, of the five leading shrimp-exporting countries--Mexico, India, Norway, Panama,

fishing in a particular year also affects the volume of landings by individual craft. The ex-vessel prices of shrimp in the United States are determined by the interplay of demand and supply not only for domestically caught shrimp but also for imported shrimp.

In most years during the 1950's when the annual U.S. supply of shrimp from domestic production and imports was rising, 1/ shrimp fishing provided generally satisfactory returns to both fishermen and craft owners. In fact, earnings were sufficiently high to encourage the expansion of the domestic fleet. In some years, however--particularly 1954 and 1959--returns to fishermen and craft owners were unusually low. The total U.S. supply of shrimp rose sharply from 1958 to 1959--by 37 million pounds. This sharp increase in total supply had a depressing effect on ex-vessel prices. From 1959 to 1960 the U.S. supply of shrimp rose moderately--by 12 million pounds--and returns to U.S. fishermen and craft owners were again generally satisfactory.

Domestic producers of fresh raw shrimp are concerned about imports of both unprocessed and processed shrimp. Landings by U.S. producers supply nearly all the raw shrimp used by U.S. shrimp canners and producers of peeled and deveined shrimp, as well as a large share of that used by breaders. Thus, with regard to imports of canned shrimp, peeled and deveined shrimp, and breaded shrimp, the producers of raw shrimp and the various processors have a common interest. Rising imports of processed shrimp would tend to depress ex-vessel prices for domestic shrimp since such imports would operate to weaken processors' demand for domestic fresh shrimp.

1/ In the period 1950-54 the annual increases in the U.S. supply of shrimp were almost entirely from U.S. landings, while in the period 1955-59 the annual increases were predominantly from imports (table 19).

Packinghouses that unload the fishing craft, pack the shrimp in ice, and deliver the iced shrimp to processors--whether they operate as principals or as agents--are very much interested in maintaining the domestic shrimp fishery at its maximum level. The financial success of their operations is little affected by the price of shrimp; it depends primarily upon the volume of shrimp handled. Inasmuch as handling fresh shrimp is not a full-time operation, owners of packinghouses are generally engaged in other enterprises. Frequently, the success of their other operations is also closely tied to the profitability of the U.S. shrimp fishery. For example, many owners of fish houses have a financial interest in one or more shrimp craft; some operate marine-supply stores, shipyards, or trucking concerns; and still others own freezing facilities for shrimp.

The operators of freezing establishments that produce domestic frozen heads-off, shell-on shrimp are directly concerned with imports of shrimp, inasmuch as the great bulk of the imports enter in the same form as their product. Since many of the freezers operate on a fee basis, their financial experience depends primarily on the volume of shrimp they handle. Freezers who buy outright the shrimp that they freeze in their plants sell such shrimp in competition with imported frozen shrimp in many areas of the United States and therefore are affected by changes in prices that occur while they own the shrimp.

While many processors of shrimp rely heavily on the output of fresh domestic shrimp for their operations, shrimp processors in the aggregate--excluding freezers--use substantial quantities of frozen shrimp, both

domestic and imported. The respective proportions of domestic and imported frozen shrimp used by domestic processors are governed principally by the comparative prices at which suitable sizes and species of shrimp are offered. Breaders in the Pacific coast States and producers of shrimp specialties in the Northeast as well as elsewhere are totally or heavily dependent on imported frozen shrimp for their supplies of raw shrimp. Large breading plants located in, or close to, the ports where large amounts of domestic shrimp are landed also use substantial quantities of frozen shrimp, including imports. Even a few canneries in the Gulf States use small amounts of imported frozen shrimp in periods of short supply of domestic shrimp of sizes suitable for their product.

Virtually all domestic processors (except freezers) of shrimp have an interest in maintaining both a domestic shrimp fishery and duty-free treatment of imported raw frozen shrimp. The existence of alternate sources of supply operates to lower the cost of raw material. Without imports, moreover, many shrimp processors would have to curtail production and even cease operations when suitable sizes of shrimp are not available from domestic landings. Curtailment of production generally results in a loss of income to both employees and plant owners and a rise in the unit cost of production. With respect to imports of processed shrimp, however, especially that processed in the same manner as their own particular products, U.S. processors (including freezers) are generally opposed to unlimited duty-free imports.

Wholesalers who distribute to retail outlets and the retailers themselves are interested in increasing the amounts of shrimp and shrimp products that they sell, whether such shrimp and shrimp products are

domestically produced or imported. While the wholesalers' and retailers' concern appears to be primarily with volume, they are also interested in price, an important factor determining the quantity purchased by the ultimate consumer. Trade sources throughout the United States have reported that the 1960 level of retail prices of shrimp and shrimp products was an important factor contributing to the increase in sales for home consumption. 1/ The availability of a wide variety of shrimp products of generally good quality was another important factor contributing to the growth of retail sales.

Many buyers for the institutional trade have rigid, high standards for the quality of the various sizes and styles of shrimp that they purchase. They generally have fairly rigid upper limits to the prices they will pay for shrimp to be used in particular dishes. For example, the buyer for a luxury-type restaurant, when confronted with an increase in the price of jumbo-size shrimp to serve as an appetizer, may instead buy the next smaller size (i.e., large); or he may decide not to buy any shrimp to be served as an appetizer. Such reaction by institutional buyers to rising prices occurs primarily because of their general reluctance to change prices to ultimate consumers even when costs of supplies change markedly.

In recent years shrimp and shrimp products have gained wider acceptance in consumer markets of the United States. Consumers like shrimp

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1/ As shown earlier in this report, wholesale prices for shrimp and shrimp products--and therefore retail prices thereof--were generally somewhat higher in 1960 than in late 1959; the 1960 prices, however, were substantially lower than the prices in several other preceding years.

because they can be prepared in a great number of ways to add taste appeal and variety to the diet. Moreover, shrimp contain highly digestible proteins and are a good source of vitamins and minerals.

Ultimate consumers are not generally concerned whether the shrimp they are eating were caught by domestic or foreign fishermen or were processed in domestic or foreign plants. Consumers are concerned, however, with quality and price. Although the initial shipments of shrimp to the United States by some foreign producers may be of poor quality, most of the shrimp available to U.S. consumers are of good quality. Importers, like domestic producers, are concerned with the quality of their products since they are anxious for repeat sales. Since a large supply operates to lower the cost of shrimp in retail markets, restriction of imports of shrimp and shrimp products may be expected to have the opposite effect, and thus would not be in the interest of the ultimate consumer.

Probable Results of Application of the Import Restrictions Suggested by the Resolution

The resolution of the Senate Finance Committee calls for "an analysis of 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 as well as an analysis of the possible results of a tariff quota under which all imports not in excess of the imports in the calendar year 1960 shall enter free of duty and all imports in excess of those in 1960 shall be dutiable at 50 percent ad valorem." This section of the report describes the probable economic effects of the indicated import restrictions on those segments of the U.S. economy directly concerned with the production, handling, processing, importing, and marketing of shrimp. No attempt is made to set forth the possible effects on our foreign relations and other aspects of the national interest or on the economic welfare of the numerous foreign countries involved.

In attempting to forecast the results of the imposition of a duty on shrimp, the Commission has premised a more or less constant per capita purchasing power during the next several years. Should a duty of 35 percent ad valorem be imposed on imports of shrimp, it is unlikely that the major foreign suppliers of the U.S. market could reduce their prices sufficiently to absorb most or all of the duty. Nor would the reduction or elimination of export duties and taxes now levied in certain foreign countries have a significant effect on the ability

of foreign suppliers to overcome a U.S. duty of 35 percent ad valorem. 1/ The application of such a duty, therefore, would result in a substantial reduction of total U.S. imports of shrimp in all forms; the reduction in imports would be accompanied by a sharp increase in prices and a curtailment of consumption in the U.S. market. With a restricted supply and a continuation of high prices in the United States, a limited expansion of the domestic catch of shrimp might be expected within a year or two. This could be accomplished by an extension of the operations of the U.S. shrimp fleet to new areas, where fishing costs would be substantially higher than in the areas now exploited, and by a somewhat larger catch of shrimp in the Gulf of Mexico. If Mexico's exports of shrimp to the United States were sharply reduced by the imposition of a U.S. duty, the Mexican shrimp fleet presumably would be forced to reduce its operations in the Gulf of Mexico, thereby permitting the U.S. fleet operating in the same waters to increase its catch. The extent of the increase would be limited, however, because the U.S. fleet probably would not be permitted to fish in Mexico's territorial waters. 2/ At present, nearly three-fourths of Mexico's total shrimp catch is taken from the Gulf of California and other west-coast waters near the

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1/ Present export duties and taxes on frozen shrimp in Mexico, the major supplier of U.S. imports of shrimp, are equivalent to about 2-1/2 cents per pound. Based on the reported foreign value of U.S. imports of shrimp from Mexico in 1960, a 35-percent duty would be equivalent to an average of 14.9 cents per pound. It would be considerably higher on large-size shrimp, such as those counting fewer than 15 per pound, which account for a considerable share of Mexico's exports to the United States.

2/ The total catch of shrimp by Mexican craft in the Gulf of Mexico in 1959 was about 22 million pounds, of which an unknown part was caught in Mexican territorial waters.

Mexican shore. If Mexican fleet operations were curtailed in these waters, it is unlikely that the U.S. shrimp fleet could extend its operations to the west coast of Mexico. It appears from the foregoing that only a small part of the loss of U.S. imports resulting from the imposition of a 35-percent duty on shrimp could be made up by an increase in U.S. production of shrimp from the Gulf of Mexico and from areas not now being exploited.

With a net reduction in the total supply of shrimp available in the U.S. market, prices in all channels of distribution would increase sharply and undoubtedly would remain higher than at present. High prices would be especially beneficial to domestic craft owners and fishermen, but not to processors (including freezers) who must purchase raw shrimp in the open market. As previously indicated, high prices would result in a curtailment of total consumption in the United States, particularly in those areas that are now dependent on imports partly because of their distance from domestic landing ports and processing facilities. Many institutional users throughout the country would replace shrimp with other food products, and household consumers would reduce their purchases of shrimp in favor of other seafoods, poultry, and meats.

From the foregoing, it appears that the imposition of a 35-percent duty on shrimp would result in increased financial returns to the U.S. shrimp fleet as a whole. It would also result in higher average returns per shrimp craft and per fisherman at least in the short run.

How long individual craft owners and fishermen would receive the benefit of increased financial returns is conjectural. High ex-vessel prices and enhanced profits to craft owners could be expected to encourage additions to the domestic shrimp fleet. With more vessels and boats fishing for a limited resource, the average annual catch per craft would eventually decline. As a result of the smaller catch per craft, the average annual income per craft and per fisherman also would decline from the high levels attained immediately after the imposition of the duty.

Certain packinghouses and freezers of shrimp are able to avoid the hazards of price fluctuations by charging a fixed fee per pound of shrimp for the services they perform, irrespective of market prices; the welfare of this group, therefore, is determined largely by the quantity of shrimp handled. Such packinghouses and freezers would benefit from any increase in domestic landings of shrimp; they would not, however, benefit from increased prices unless they were able to raise their fees.

A duty of 35 percent on all shrimp and shrimp products undoubtedly would arrest the increasing imports of frozen peeled and deveined shrimp and frozen breaded shrimp and reduce the imports of canned shrimp. Domestic breaders, canners, and producers of frozen peeled and deveined shrimp apparently are concerned about the expansion in recent years of processing facilities abroad and the possibility of a substantial increase in imports of the processed products. Whether imposition of a 35-percent duty would eliminate such imports entirely cannot be determined, but it would certainly discourage the expansion of facilities abroad to process shrimp for exportation to the United States. Elimination of the possibility of more intense competition

from imports of processed shrimp would be of little benefit to domestic processors since restriction of imports of all shrimp would cause more intense competition among the processors in the purchase of raw material and would arrest the expansion of shrimp-processing operations in the United States. Certain processors, particularly breaders, now rely heavily on imports of frozen heads-off, shell-on shrimp for their raw material supplies. If such imports were greatly reduced, some processors outside the South Atlantic and Gulf States might have to curtail their operations substantially or even discontinue production of processed shrimp. For processors in the South Atlantic and Gulf States, some of which rely partly on imported frozen shrimp, increased raw-material costs would tend to reduce the extent and profitableness of their operations. A uniform duty on all shrimp, therefore, would be generally detrimental to shrimp processors.

A U.S. duty of 35 percent on shrimp, and the resultant high prices in the U.S. market, would no doubt cause a substantial reduction of the U.S. exports of shrimp. In terms of heads-off, shell-on shrimp, domestic exports were equivalent to 7-1/2 percent of total U.S. landings of shrimp in 1960.

Imposition of the tariff quota specified in the resolution of the Senate Finance Committee would have a less drastic effect on the shrimp trade than would a 35-percent duty on all imports of shrimp. Provision for the annual duty-free entry of imports equal to the quantity of shrimp imported in 1960 would not reduce the total supply of shrimp available in the U.S. market and presumably would not immediately cause a marked upturn in prices. However, should the quota be stated in terms of pounds--

irrespective of the form in which the shrimp were imported--it might result in a substantial shift in the composition of imports from frozen heads-off, shell-on shrimp to more advanced forms of processed shrimp. On the one hand, such a shift would work to the disadvantage of domestic producers of the more advanced forms of processed shrimp, not only because of increased competition from imports of the processed products, but also because of a reduced supply of imported frozen heads-off, shell-on shrimp, which are used as raw material by many processors. On the other hand, domestic craft owners, fishermen, and freezers of raw shrimp would benefit from the shift in imports; because of the smaller supply of imported frozen heads-off, shell-on shrimp, the demand for domestic raw shrimp by retail and institutional outlets would be increased.

Should a separate quota be established for each form of shrimp, based on imports in 1960, it would halt the development of facilities abroad to process shrimp for exportation to the United States. Although domestic processors would benefit from restriction of imports of the processed products, the quota on raw shrimp would preclude a continued expansion of processing operations in the United States because of a restricted supply of raw material. Craft owners and fishermen would be aided by the assurance that they could expect no more competition from imports than that encountered in 1960. 1/ Restriction of imports of each form of shrimp to the 1960 level presumably would prevent the price-depressing effects of sudden sharp increases in imports and might provide a measure of stability to the shrimp market, which would be beneficial to all segments of the shrimp trade.

1/ As indicated later, imports of shrimp at the over-quota rate of 50 percent ad valorem probably would be insignificant.

A global annual quota on imports of shrimp, without allocation by country of origin, would affect the supplying countries in varying degrees. Those countries able to ship to the United States early in the year could fill the quota and prevent other countries from sharing in it. Country quotas based solely on the level of imports in 1960, as implied in the resolution of the Senate Finance Committee, would be most detrimental to those countries whose shipments to the United States were smaller in 1960 than in earlier years (e.g., Japan, Costa Rica, Peru, Australia, Norway, Korea, Argentina, Sweden, West Germany, Israel, British Honduras, and the United Kingdom). Moreover, if one or several supplying countries could not fill their quotas in a particular year, a shortage might develop in the U.S. market and affect many segments of the shrimp trade.

It is unlikely that there would be any significant imports of shrimp at the over-quota rate of 50 percent ad valorem. Shipments arriving in the United States after the quota was filled probably would be diverted to other markets or held in bonded warehouses in the United States for entry at the opening of the new quota year.

It should be recognized that if the supply of shrimp is not restricted and if prices thereof do not increase greatly, the long-run expansion of the total U.S. consumption of shrimp may be expected to continue. Several factors, in addition to the growth in population, point to this conclusion. Potential markets exist in some areas of the United States where shrimp are regarded as a luxury item and where only small quantities are now purchased for home use. The nutritional value, the low-calorie content, and the taste appeal of shrimp are not yet widely known in the

mass consumer market. The increasing acceptance of individually frozen peeled and deveined shrimp, which can be served in the home with little preparation, may be expected to continue. The rising consumption of breaded shrimp has not yet shown a tendency to level off. Of the major processed shrimp products, canned shrimp is the only type that has not grown in popularity in U.S. consumer markets in the past decade.

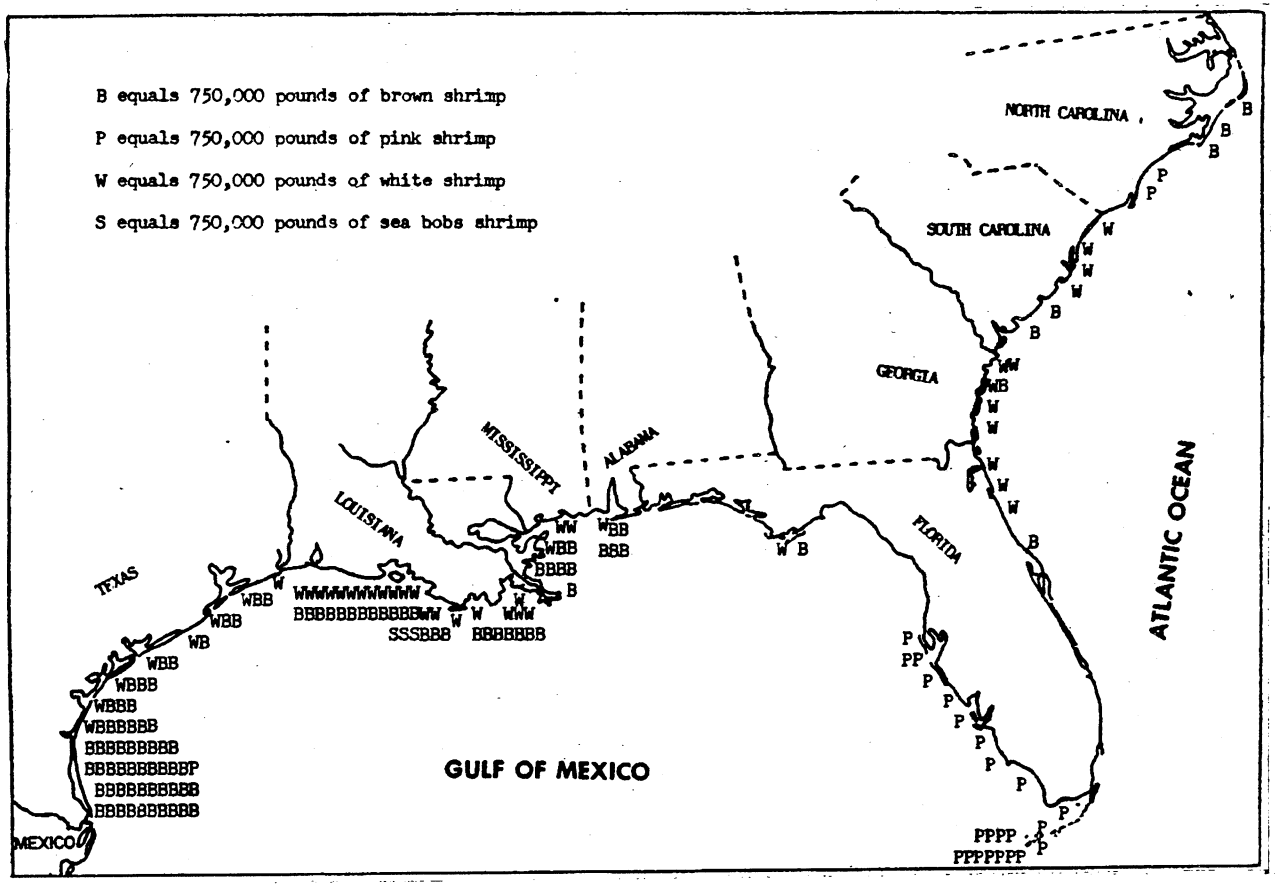
The imposition of either of the import restrictions on shrimp and shrimp products suggested in the resolution of the Senate Finance Committee would limit the supply of shrimp available in the U.S. market and thereby arrest the long-run expansion of shrimp consumption in the United States. If imports were restricted to the 1960 level or lower, any increase in consumption above the present level would have to be supplied by domestic production. Although the U.S. catch of shrimp may vary from year to year, there appears to be little probability of a sustained increase in the catch, even on the west coast where the large potential supply consists almost entirely of small-size shrimp suitable primarily for the production of canned shrimp, a product which has a relatively stable but limited market in the United States.

APPENDIX A

Figures

Figure 1

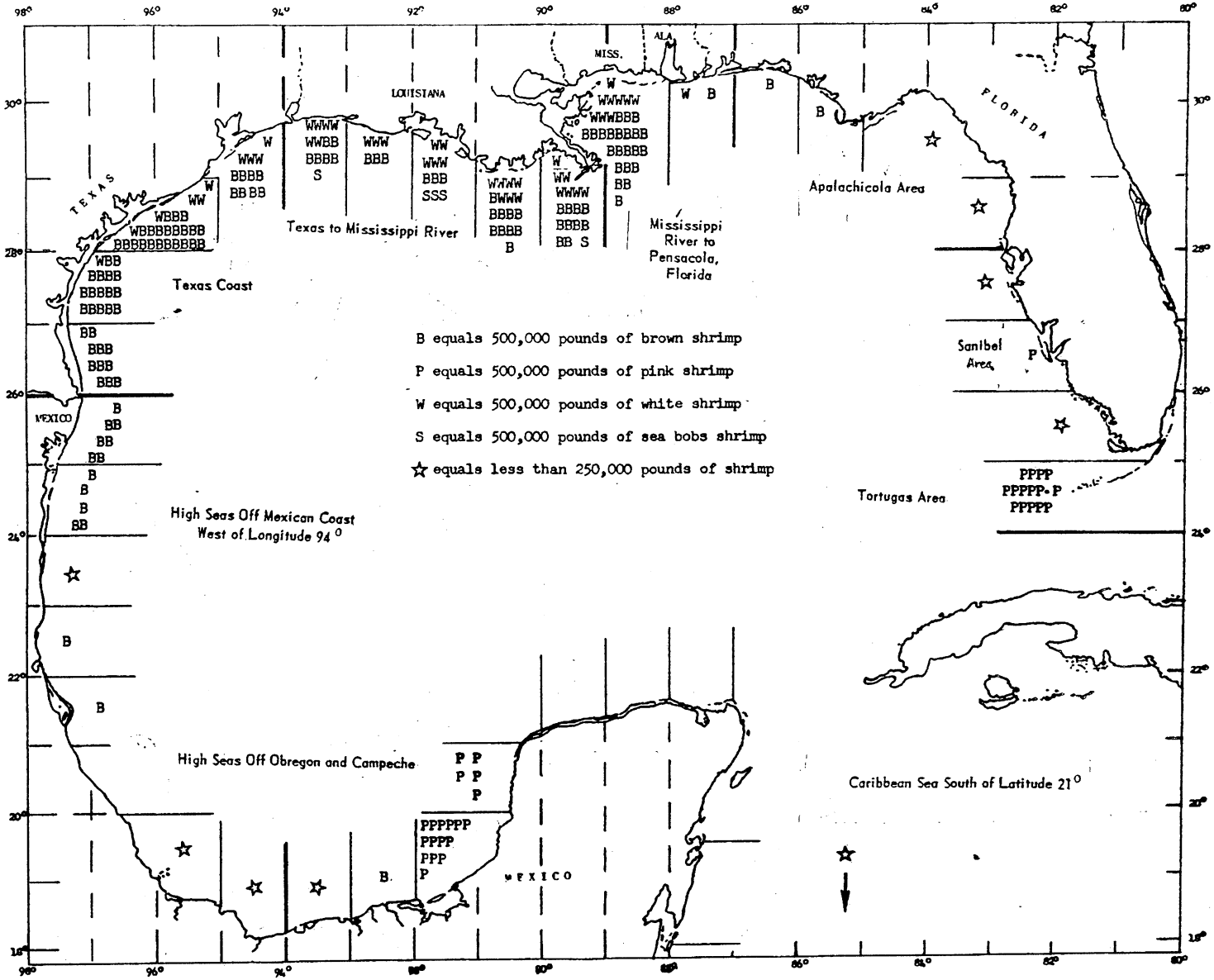
U.S. LANDINGS OF SHRIMP IN SOUTH ATLANTIC AND GULF STATES, 1959



Source: Shrimp Landings, 1959, U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

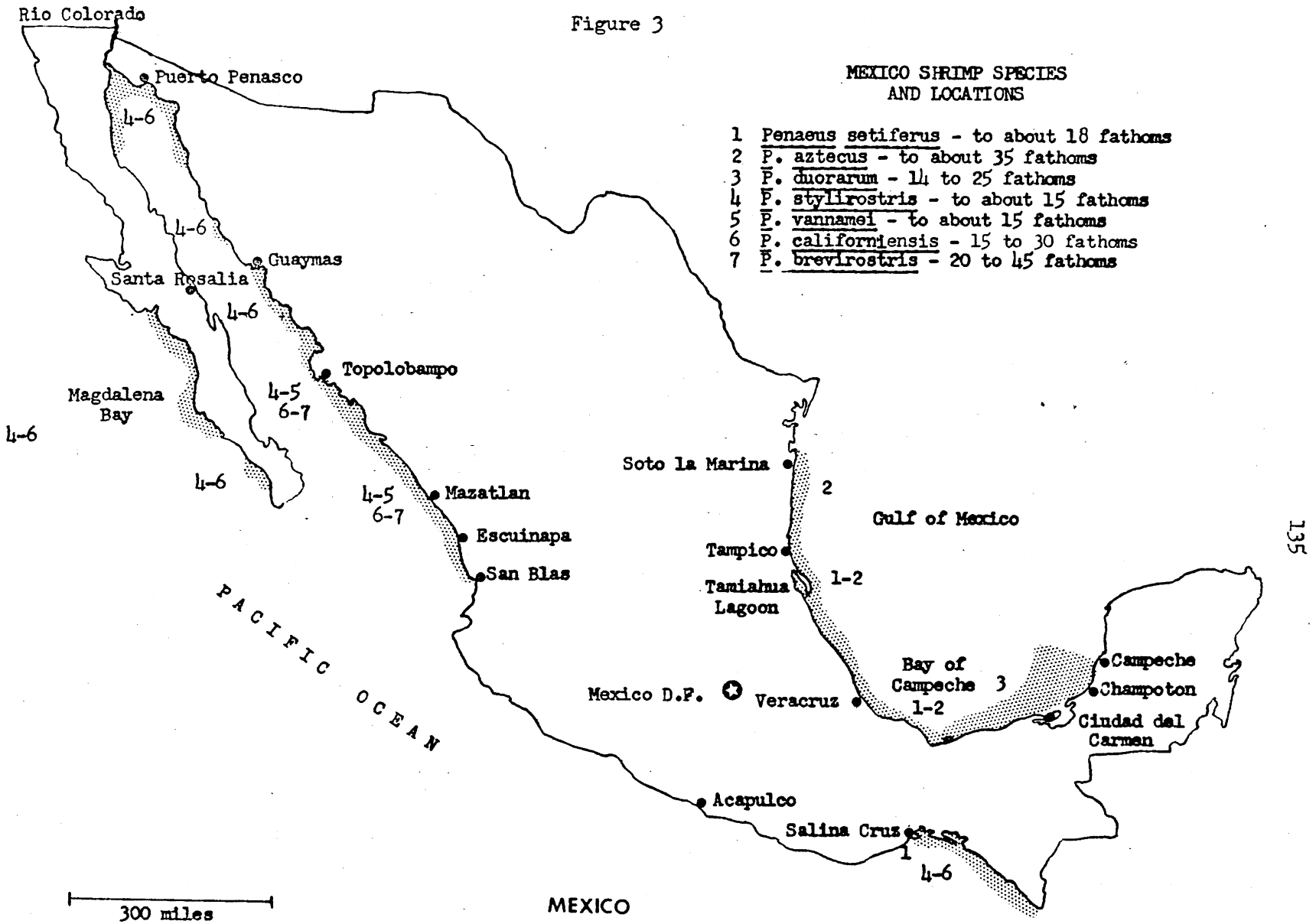
Figure 2

U.S. SHRIMP CATCH IN GULF OF MEXICO BY AREA OF CAPTURE, 1959



Source: Shrimp Landings, 1959, U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Figure 3



Source: Survey of Shrimp Fisheries of Central and South America, U.S. Fish and Wildlife Service.

APPENDIX B

Tables

Table 1.--Number of U.S. shrimp vessels and boats, 1/ by geographic areas of landings, 1950-59

Year	South Atlantic States	Gulf States	Pacific Coast States	Total, exclusive of duplication
	Vessels (capacity of 5 net tons or more)			
1950	806	1,973	-	2,674
1951	975	2,087	-	2,909
1952	908	2,265	-	3,013
1953	918	2,222	-	3,011
1954	855	2,626	-	3,267
1955	933	2,637	-	3,288
1956	1,043	2,655	1	3,363
1957	1,095	2,749	19	3,509
1958	1,065	3,046	52	3,896
1959	1,098	3,129	57	4,003
	Boats (capacity of less than 5 net tons)			
1950	847	3,209	-	4,056
1951	762	2,914	-	3,676
1952	738	2,714	-	3,452
1953	837	2,652	-	3,489
1954	761	3,146	-	3,907
1955	675	2,969	-	3,644
1956	758	3,060	-	3,818
1957	835	2,481	-	3,316
1958	833	2,594	-	3,427
1959	888	2,765	2	3,655

1/ Includes only vessels and boats using otter-trawl gear. These craft account for nearly all of the U.S. landings of shrimp.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 2.--Shrimp: U.S. landings, 1930, 1940, and 1950-60

Year	Quantity (heads-off, shell-on basis)	Sales value, ex vessel	Average unit value
	1,000 pounds	1,000 dollars	Cents per pound
1930	54,957	3,134	6
1940	91,208	6,003	7
1950	113,973	43,452	38
1951	133,522	51,862	39
1952	135,251	55,103	41
1953	154,974	76,641	49
1954	159,724	60,832	38
1955	145,439	61,785	42
1956	133,438	70,898	53
1957	121,359	73,148	60
1958	127,287	72,930	57
1959	142,965	58,133	41
1960 1/	148,374	66,068	45

1/ Preliminary.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 3.--Shrimp: U.S. landings, 1/ by port locations, 1956-60

Port location	1956	1957	1958	1959 2/	1960 2/
	Quantity, heads-off basis (1,000 pounds)				
Gulf ports in--					
Texas	38,770	45,729	44,617	50,334	48,126
Florida, west coast	29,235	24,953	27,146	19,198	26,713
Louisiana	36,186	20,299	24,410	36,139	36,919
Mississippi	6,405	5,606	3,855	6,737	6,562
Alabama	4,564	3,592	3,160	4,773	4,244
Total	115,250	100,269	103,187	115,180	122,564
South Atlantic ports in--					
Georgia	4,757	5,231	5,206	4,525	6,192
North Carolina	3,716	4,722	1,499	3,796	3,564
South Carolina	3,327	3,982	3,461	4,473	4,780
Florida, east coast	3,390	3,083	3,276	2,685	3,700
Total	15,190	17,018	13,443	15,480	18,236
Pacific Coast ports in--					
Alaska	1,812	1,417	4,680	7,769	4,762
Washington	46	1,462	4,006	1,813	1,071
California	1,124	935	1,057	1,083	1,205
Oregon	4	240	906	1,627	536
Total	2,986	4,054	10,650	12,293	7,574
Ports in other States 3/	12	18	8	12	4/
Grand total	133,438	121,359	127,287	142,965	148,374
	Sales value, ex vessel (1,000 dollars)				
Gulf ports in--					
Texas	23,650	32,107	29,665	23,193	4/
Florida, west coast	17,581	16,460	16,312	9,752	
Louisiana	16,292	10,233	13,533	13,067	
Mississippi	2,753	2,617	2,377	2,345	
Alabama	2,223	1,871	1,984	1,991	
Total	62,499	63,288	63,871	50,348	4/
South Atlantic ports in--					
Georgia	2,662	2,987	2,939	1,837	4/
North Carolina	1,594	2,263	719	1,413	
South Carolina	1,393	1,751	2,091	1,917	
Florida, east coast	2,157	2,149	2,209	1,360	
Total	7,806	9,150	7,958	6,527	4/
Pacific Coast ports in--					
Alaska	396	309	278	506	4/
Washington	18	204	535	313	
California	155	138	161	184	
Oregon	1	29	117	246	
Total	570	680	1,091	1,249	4/
Ports in other States 3/	23	30	10	9	4/
Grand total	70,898	73,148	72,930	58,133	66,068

1/ Caught by all types of gear, including otter trawls, cast nets, bag nets, beam trawls, and pots.
2/ Preliminary.
3/ Hawaii is included for all years.
4/ Not available.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

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

Table 4.--Shrimp: Landings in South Atlantic and Gulf States, by market designations and sizes, 1958-60

(Quantity in terms of heads-off weight)

Market designation and size (number of heads-off shrimp per pound)	1958			1959			1960		
	Quantity	Sales value, ex vessel	Unit value 1/	Quantity	Sales value, ex vessel	Unit value 1/	Quantity	Sales value, ex vessel	Unit value 1/
	1,000 pounds	1,000 dollars	Cents per pound	1,000 pounds	1,000 dollars	Cents per pound	1,000 pounds	1,000 dollars	Cents per pound
Brown:									
Under 15	2,104	1,847	87.8	1,420	1,025	72.2	2,030	1,468	72.4
15-20	7,314	6,029	82.4	6,774	4,444	65.6	8,006	5,362	67.0
21-25	9,239	6,954	75.3	10,351	5,661	54.7	10,100	5,964	59.0
26-30	9,138	6,331	69.3	11,724	5,630	48.0	8,652	4,576	52.9
31-40	14,334	8,866	61.9	20,716	8,489	41.0	19,566	8,901	45.5
41-50	6,461	3,401	52.6	9,396	3,104	33.0	8,387	3,389	40.4
51-67	4,436	2,011	45.3	5,226	1,525	29.2	5,415	1,990	36.8
68 and over	3,934	1,576	40.1	10,040	2,345	23.4	9,256	2,542	27.5
Total	56,960	37,014	65.0	75,649	32,223	42.6	71,413	34,192	[illegible]
Pink:									
Under 15	20	18	89.0	49	39	78.8	63	46	72.2
15-20	1,447	1,187	82.0	895	664	74.2	1,156	754	65.3
21-25	4,618	3,578	77.5	3,966	2,470	62.3	4,532	2,719	60.0
26-30	3,996	2,901	72.6	3,764	2,100	55.8	5,063	2,852	56.3
31-40	4,804	3,084	64.2	5,057	2,569	50.8	6,818	3,409	50.0
41-50	3,515	1,882	53.5	2,835	1,267	44.7	4,088	1,618	39.6
51-67	3,765	1,598	42.4	1,446	466	32.2	3,166	984	31.1
68 and over	3,366	1,043	31.0	1,739	408	23.5	2,455	478	19.5
Total	25,531	15,289	59.9	19,752	9,982	50.5	27,341	12,860	[illegible]
White:									
Under 15	76	66	87.7	87	63	72.0	229	169	73.6
15-20	2,570	2,123	82.6	3,149	2,013	63.9	3,352	2,339	69.8
21-25	4,857	3,583	73.8	6,298	3,393	53.9	5,825	3,448	59.2
26-30	5,135	3,511	68.4	6,067	2,886	47.6	6,459	3,401	52.7
31-40	7,551	4,577	60.4	8,474	3,469	40.9	9,472	4,385	46.3
41-50	4,394	2,244	51.1	3,334	1,173	35.2	4,949	1,858	37.5
51-67	3,900	1,677	43.0	3,363	903	26.8	5,188	1,578	30.4
68 and over	4,460	1,487	33.3	2,129	486	22.8	2,791	703	25.2
Total	32,943	19,269	58.5	32,902	14,385	43.7	38,265	17,881	[illegible]
Royal red (all sizes)	-	-	-	4	3	65.5	-	-	-
Sea bobs (all sizes)	1,118	196	17.5	2,354	279	11.9	1,616	251	15.5
Grand total	116,552	71,769	61.6	130,660	56,872	43.5	138,635	65,184	47.0

1/ Calculated from the unrounded figures.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

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

Table 5.--Number of fishermen on U.S. shrimp vessels and boats, by geographic areas and States, 1957-59

Area and State	1957			1958			1959 1/		
	On vessels	On boats		On vessels	On boats		On vessels	On boats	
		Regular 2/	Casual 3/		Regular 2/	Casual 3/		Regular 2/	Casual 3/
South Atlantic States:									
North Carolina	846	971	-	694	686	-	795	714	-
South Carolina	795	194	-	650	301	-	548	264	-
Georgia	574	168	51	708	177	211	667	200	239
Florida, east coast	838	65	1	990	90	-	984	50	-
Total, exclusive of duplication	2,357	1,398	52	2,258	1,254	211	2,354	1,228	239
Gulf States:									
Florida, west coast	2,437	100	29	2,669	219	6	2,520	149	2
Alabama	411	344	37	518	348	43	577	340	34
Mississippi	1,218	355	120	1,221	322	145	1,261	270	185
Louisiana	2,095	2,829	-	2,749	2,824	13	3,235	2,789	35
Texas	3,685	583	76	4,592	645	87	4,222	768	50
Total, exclusive of duplication	7,514	4,211	262	8,171	4,358	294	8,225	4,280	306
Pacific Coast States:									
Oregon	33	-	-	66	-	-	79	2	-
Washington	44	-	-	144	-	-	47	-	-
Alaska	4/	-	-	14	-	-	77	2	-
Total, exclusive of duplication	69	-	-	178	-	-	192	4	-
Grand total, exclusive of duplication	9,186	5,609	314	10,046	5,612	505	10,150	5,512	545

1/ Preliminary.
2/ A person that normally fishes for a livelihood.
3/ A person that obtains his livelihood from an occupation other than fishing, but fishes now and then to supplement his income.
4/ Not available.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 6.--Packaged and canned shrimp and shrimp products: U.S. output, by method of preparation, 1950 and 1952-59

Year	Heads-off, shell-on, fresh or frozen	Frozen peeled and deveined: Raw	Frozen peeled and deveined: Cooked	Frozen breaded, raw and cooked	Frozen or canned specialties 1/	Canned 2/	Cured 3/
	Quantity (1,000 pounds)						
1950	46,180	4/	1,520	6,583	308	11,794	164
1952	59,536	280	2,548	17,265	467	12,269	1,105
1953	61,990	610	759	17,438	410	15,236	923
1954	82,416	4,156	1,607	24,802	829	14,021	990
1955	69,122	6,745	1,758	38,991	1,944	13,516	567
1956	61,355	7,512	2,237	50,888	3,478	13,636	508
1957	58,269	9,375	1,444	51,085	3,949	9,120	424
1958	63,276	7,622	2,080	60,865	3,910	14,308	406
1959	61,598	11,096	1,891	69,764	3,813	13,832	334
	Value (1,000 dollars) 5/						
1950	24,503	4/	1,955	4,226	141	12,773	149
1952	35,919	192	3,350	12,840	225	12,999	1,095
1953	41,497	382	1,124	13,393	205	18,935	903
1954	43,115	2,605	2,056	17,579	561	13,691	611
1955	39,690	5,895	1,798	26,907	1,368	13,562	490
1956	42,633	7,304	3,101	37,301	2,024	16,421	663
1957	45,070	9,952	2,488	37,764	3,017	13,136	664
1958	48,214	8,450	3,405	43,622	3,032	20,791	586
1959	36,980	9,945	2,816	45,314	2,744	16,948	315
	Unit value (per pound) 6/						
1950	$0.53	4/	$1.29	$0.64	$0.46	$1.08	$0.91
1952	.60	$0.69	1.31	.74	.48	1.06	.99
1953	.67	.63	1.48	.77	.50	1.24	.98
1954	.52	.63	1.28	.71	.68	.98	.62
1955	.57	.87	1.02	.69	.70	1.00	.87
1956	.69	.97	1.39	.74	.58	1.20	1.31
1957	.77	1.06	1.72	.74	.76	1.44	1.57
1958	.76	1.11	1.64	.72	.78	1.45	1.44
1959	.60	.90	1.49	.65	.72	1.23	.94

1/ Includes products such as cocktail, soup, stew, aspic, burgers, chow mein, creole, dinners, egg roll, gumbo, patties, steaks, sticks, and stuffed shrimp.

2/ Does not include canned shrimp that require refrigeration. Quantities reported are in terms of drained net weight.

3/ Includes dried, salted, spiced, smoked, and pickled shrimp.

4/ Not reported separately; included with heads-off shell-on, fresh or frozen shrimp.

5/ Based on selling price, f.o.b. plant.

6/ Based on unrounded figures.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 7.--Average number of employees, and man-hours worked, total wages paid, and average hourly earnings of production and related workers in certain U.S. plants engaged in processing shrimp, by type of plant, 1956-59 and January-September 1960

Type of plant and period	Average number of employees		Man-hours worked by production and related workers on--		Total wages paid to production and related workers employed on--		Average hourly earnings of production and related workers employed on--	
	All persons	Production and related workers	All products	Shrimp only	All products	Shrimp only	All products 1/	Shrimp only 1/
			Thousands	Thousands	1,000 dollars	1,000 dollars		
Freezers: 2/								
1956	524	400	509	350	558	343	$1.10	$0.96
1957	546	413	487	377	551	360	1.13	.95
1958	543	404	557	375	593	367	1.06	.98
1959	524	395	649	429	709	439	1.09	1.02
1960 (Jan.-Sept.)	[illegible]	460	511	370	567	376	1.11	1.02
Breading plants: 3/								
1956	3,931	3,545	5,809	4,294	5,697	3,767	.98	.88
1957	3,984	3,580	6,027	4,615	5,860	3,938	.97	.85
1958	4,266	3,832	6,662	5,093	6,411	4,379	.96	.86
1959	4,908	4,427	7,455	5,771	7,662	5,523	1.03	.96
1960 (Jan.-Sept.)	5,176	4,675	6,182	4,893	6,460	4,799	1.04	.98
Canneries: 4/								
1956	2,087	1,953	1,878	1,454	2,069	1,596	1.10	1.10
1957	1,794	1,654	1,486	992	1,686	1,096	1.13	1.10
1958	1,702	1,554	1,426	1,131	1,660	1,242	1.16	1.10
1959	1,802	1,652	1,552	1,238	1,877	1,426	1.21	1.15
1960 (Jan.-Sept.)	1,918	1,764	1,402	1,055	1,720	1,204	1.23	1.14

1/ Calculated from the unrounded figures.
2/ The data shown are for 14 freezers that accounted for about 1/5 of the U.S. output of frozen heads-off, shell-on shrimp in 1959.
3/ The data shown are for 26 plants that accounted for about 2/3 of the U.S. output of breaded shrimp in 1959.
4/ The data shown are for 15 canneries that accounted for about 1/2 of the U.S. output of canned shrimp in 1959.

Source: Compiled from data supplied the U.S. Tariff Commission by domestic producers.

Table 8.--Shrimp: U.S. exports of domestic merchandise, by types, 1956-60

Year	Fresh or frozen	Canned	Dried	Total
	Quantity (1,000 pounds)			
1956	1,550	2,451	70	4,071
1957	1,780	2,296	48	4,124
1958	1,648	2,161	52	3,861
1959 1/	2,090	2,876	85	5,051
1960 1/	2,989	3,482	108	6,579
	Value (1,000 dollars)			
1956	1,202	2,650	85	3,937
1957	1,471	2,410	52	3,933
1958	1,463	2,548	52	4,063
1959 1/	1,682	2,898	88	4,668
1960 1/	2,303	3,383	90	5,776

1/ Preliminary.

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

Table 9.--Shrimp, fresh or frozen: U.S. exports of domestic merchandise, by principal markets, 1956-60

Year	All countries	Canada	Mexico	Japan	All other
	Quantity (pounds)				
1956	1,550,154	1,312,323	2,500	1,500	233,831
1957	1,780,453	1,567,094	10,350	-	203,009
1958	1,647,985	1,472,476	11,600	-	163,909
1959 1/	2,089,733	1,691,605	155,800	-	242,328
1960 1/	2,988,732	2,195,967	277,730	258,900	256,135
	Value				
1956	$1,202,093	$977,286	$1,470	$1,500	$221,837
1957	1,471,108	1,248,779	6,795	-	215,534
1958	1,462,826	1,275,486	7,784	-	179,556
1959 1/	1,681,616	1,395,945	8,624	-	199,425
1960 1/	2,302,615	1,741,922	139,464	195,691	225,538

1/ Preliminary.

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

Table 10.--Shrimp, canned: U.S. exports of domestic merchandise, by principal markets, 1956-60

Year	All countries	Canada	United Kingdom	Venezuela	All other
	Quantity (pounds)				
1956	2,451,114	1,948,629	2,850	164,833	334,802
1957	2,296,443	1,673,194	-	145,419	477,830
1958	2,161,451	1,717,693	288	159,160	284,310
1959 1/	2,876,493	1,802,459	448,852	176,987	448,195
1960 1/	3,482,247	1,746,291	1,145,410	112,509	478,037
	Value				
1956	$2,650,227	$2,125,486	$7,745	$184,808	$337,188
1957	2,409,840	1,741,281	-	178,711	489,848
1958	2,548,019	1,994,731	3,024	211,008	339,256
1959 1/	2,898,453	1,893,647	350,384	213,078	441,344
1960 1/	3,383,034	1,926,999	914,410	114,128	427,497

1/ Preliminary.

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

Table 11.--Shrimp, dried: U.S. exports of domestic merchandise, by principal markets, 1956-60

Year	All countries	Canada	All other
	Quantity (pounds)		
1956	69,683	41,878	27,805
1957	47,957	25,055	22,092
1958	51,690	25,757	25,933
1959 1/	85,204	17,800	67,404
1960 1/	108,040	30,090	2/ 77,750
	Value		
1956	$85,493	$51,601	$33,892
1957	51,572	19,129	32,443
1958	51,962	25,336	26,626
1959 1/	87,581	19,791	67,790
1960 1/	89,863	24,595	2/ 65,268

1/ Preliminary.
2/ Includes 60,000 pounds, valued at $48,000, exported to Japan.

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

Table 12.--Shrimp: U.S. imports for consumption, 1940 and 1945-60

Year	Quantity	Foreign value
	1,000 pounds	1,000 dollars
1940	5,024	385
1945	7,876	2,358
1946	12,244	3,756
1947	13,275	5,161
1948	21,563	10,020
1949	29,673	13,606
1950	40,198	18,847
1951	41,824	19,409
1952	38,471	18,505
1953	43,100	20,898
1954	41,519	18,551
1955	53,772	24,532
1956	68,618	32,986
1957	69,676	35,415
1958	85,394	43,162
1959 1/	106,555	52,305
1960 1/	113,418	56,406

1/ Preliminary.

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

Table 13.--Shrimp: U.S. imports for consumption, by sources, 1955-60

Source	1955	1956	1957	1958	1959 1/	1960 1/
	Quantity (pounds)					
Mexico	45,417,374	53,693,622	47,906,554	56,098,068	68,654,257	73,583,122
Republic of Panama	4,224,385	5,845,755	8,379,231	7,917,082	8,805,254	8,422,516
El Salvador	-	-	66,260	1,130,371	1,836,010	6,696,846
Ecuador	1,604,363	2,950,450	3,867,413	4,436,919	4,711,665	4,191,161
British Guiana	1,134	2,058	-	-	967,081	3,567,579
Japan	905,711	2,587,878	2,865,197	2,551,824	7,227,200	2,946,694
India	125,200	1,012,185	1,251,915	1,699,347	2,866,054	2,891,549
Colombia	362,100	100,050	486,805	891,134	1,898,305	2,173,712
United Arab Republic (Egypt region) 2/	-	3,164	39,951	449,738	1,309,240	1,667,364
Iran	-	-	-	-	738,514	1,226,200
Pakistan	4,050	229,070	472,000	636,558	639,990	1,017,735
Chile	1,100	84,027	45,340	163,636	327,691	739,168
Costa Rica	140,820	421,321	227,224	716,530	1,156,932	460,954
Surinam	3,272	37,019	64,866	80,835	288,545	380,900
Honduras	-	-	-	835,608	313,550	360,840
Venezuela	-	-	137,198	122,079	370,351	343,530
Canada	100,522	145,636	242,740	261,869	133,779	331,883
Nicaragua	8,300	-	882	277,588	212,942	266,421
Guatemala	-	-	-	38,894	182,232	257,444
Peru	385,414	250,109	626,274	486,157	279,639	256,167
Spain	-	4,000	21,800	228,685	191,813	224,777
Trinidad	-	-	-	-	-	194,275
Kuwait	-	-	-	-	-	146,000
Australia	19,550	168,730	177,838	363,050	285,613	129,325
Norway	221,156	168,090	132,361	143,814	161,323	110,346
Vietnam 3/	-	-	-	1,102	1,500	97,237
Republic of Korea	-	3,968	58,219	128,108	170,045	92,599
Iceland	49,842	90,840	63,558	16,400	32,180	92,215
Denmark	5,998	29,675	20,229	45,929	196,793	80,916
Cuba	71,119	221,946	607,549	391,389	227,704	79,375
Bahamas	30,000	-	7,482	4,350	-	79,000
Saudi Arabia	-	-	-	-	-	77,400
Argentina	-	22,600	137,297	606,320	947,008	63,928
Brazil	-	-	-	-	79,748	42,550
Thailand	-	-	-	-	52,650	40,250
New Zealand	-	-	-	-	-	25,780
Greenland	-	1,150	10,125	40,931	-	25,348
Republic of the Philippines	-	-	2,910	4,533	970	7,630
Indonesia	-	-	-	-	-	6,600
Taiwan	-	-	2,394	-	15,000	3,451
Hong Kong	29,876	410,558	1,586,414	4,029,143	666,690	3,420
Sweden	1,693	1,500	8,356	20,473	11,002	2,870
West Germany	7,789	420	6,631	86,114	83,749	2,526
Netherlands	-	1,001	263	763	2,164	2,060
Israel	-	-	15,288	13,650	43,570	2,000
British Honduras	-	-	-	3,860	41,170	1,360
Belgium and Luxembourg	-	-	-	415	500	932
United Kingdom	865	2,850	-	2,402	61,362	708
Union of South Africa	-	-	-	-	-	350
Italy	99	-	59,531	268,050	184,750	-
Canal Zone	40,350	116,000	42,250	193,472	63,980	-
Netherlands Antilles	-	6,089	18,900	-	46,000	-
Jamaica	-	-	-	-	47,550	-
Leeward and Windward Islands	-	-	-	-	12,700	-
Lebanon	-	-	-	-	5,000	-
Turkey	10,100	6,485	2,752	5,104	2,202	-
Singapore and British Borneo 4/	-	-	-	-	750	-
Finland	-	-	-	-	625	-
Austria	-	-	-	750	-	-
British East Africa	-	-	-	500	-	-
Greece	-	-	14,500	-	-	-
France	-	180	-	-	-	-
Total	53,772,182	68,618,426	69,676,498	85,393,544	106,555,342	113,417,813

See footnotes at end of table.

Table 13.--Shrimp: U.S. imports for consumption, by sources, 1955-60--Continued

Source	1955	1956	1957	1958	1959 1/	1960 1/
	Foreign value 5/					
Mexico	$19,217,678	$23,098,497	$20,346,095	$23,785,436	$27,805,993	$31,284,709
Republic of Panama	2,787,392	4,233,599	6,260,988	5,800,927	6,258,894	5,674,259
El Salvador	-	-	59,801	660,060	1,297,255	4,213,720
Ecuador	1,073,868	2,085,449	2,873,074	3,121,845	2,942,797	2,793,060
British Guiana	430	926	-	-	621,420	2,328,264
Japan	455,745	1,580,007	1,855,007	1,619,428	5,050,753	1,879,772
India	52,451	419,104	539,896	793,371	1,357,349	1,251,000
Colombia	215,655	76,980	351,133	577,815	1,306,912	1,568,358
United Arab Republic (Egypt region) 2/	-	1,654	19,872	238,047	732,357	1,003,037
Iran	-	-	-	-	309,342	987,993
Pakistan	1,215	82,372	198,774	303,838	313,191	404,764
Chile	449	36,798	40,345	115,882	202,903	518,112
Costa Rica	71,813	205,484	99,302	369,707	585,456	241,271
Surinam	1,414	28,154	63,513	46,897	228,290	289,561
Honduras	-	-	-	435,333	118,406	133,794
Venezuela	-	-	97,759	78,160	242,883	148,989
Canada	58,989	118,610	227,798	250,511	153,479	181,916
Nicaragua	3,400	-	540	147,884	99,790	145,589
Guatemala	-	-	-	17,595	133,375	111,155
Peru	238,329	169,079	378,105	383,487	226,567	203,093
Spain	-	2,880	4,444	68,598	104,130	127,156
Trinidad	-	-	-	-	-	123,646
Kuwait	-	-	-	-	-	59,677
Australia	18,416	105,396	141,848	307,361	258,190	87,960
Norway	153,274	130,314	106,457	103,587	128,136	82,052
Vietnam 3/	-	-	-	577	573	37,064
Republic of Korea	-	1,682	24,267	70,247	78,520	44,000
Iceland	51,413	96,993	68,379	17,320	28,142	87,173
Denmark	14,198	33,311	29,992	53,356	129,480	94,965
Cuba	39,079	119,054	308,288	196,146	125,413	42,544
Bahamas	21,975	-	2,469	870	-	43,859
Saudi Arabia	-	-	-	-	-	37,141
Argentina	-	6,102	57,242	347,192	468,993	38,259
Brazil	-	-	-	-	46,154	39,936
Thailand	-	-	-	-	29,588	26,886
New Zealand	-	-	-	-	-	26,470
Greenland	-	1,300	16,724	27,633	-	21,242
Republic of the Philippines	-	-	620	2,340	160	3,677
Indonesia	-	-	-	-	-	2,515
Taiwan	-	-	972	-	5,860	5,284
Hong Kong	15,282	249,857	1,117,885	2,803,015	502,401	1,567
Sweden	2,066	1,863	10,599	25,428	11,398	3,336
West Germany	5,369	262	4,463	51,457	56,370	2,479
Netherlands	-	1,159	372	1,151	1,382	1,707
Israel	-	-	12,556	10,518	26,532	1,000
British Honduras	-	-	-	1,544	24,777	680
Belgium and Luxembourg	-	-	-	207	272	547
United Kingdom	1,002	1,091	-	1,585	37,130	652
Union of South Africa	-	-	-	-	-	288
Italy	59	-	35,515	179,046	138,740	-
Canal Zone	27,485	89,108	36,898	144,132	41,112	-
Netherlands Antilles	-	4,397	15,120	-	32,200	-
Jamaica	-	-	-	-	27,232	-
Leeward and Windward Islands	-	-	-	-	9,008	-
Lebanon	-	-	-	-	4,000	-
Turkey	3,668	3,650	760	1,776	799	-
Singapore and British Borneo 4/	-	-	-	-	253	-
Finland	-	-	-	-	1,600	-
Austria	-	-	-	525	-	-
British East Africa	-	-	-	200	-	-
Greece	-	-	6,968	-	-	-
France	-	456	-	-	-	-
Total	24,532,114	32,985,588	35,444,840	43,161,994	52,305,342	56,406,178

1/ Preliminary.
2/ Classified in U.S. import statistics as Egypt prior to July 1, 1958.
3/ Classified in U.S. import statistics as Vietnam, Laos, and Cambodia, 1955-57. Vietnam was separately classified beginning Jan. 1, 1958.
4/ Classified separately in U.S. import statistics beginning Jan. 1, 1958; previously classified with British Malaya.
5/ Examination of the entry papers revealed that some importers (or their customs brokers) declared the c. & f. (cost and freight) values rather than the foreign values.

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

Table 14 --Shrimp: U.S. imports for consumption, by months, January 1958-December 1960 1/

Year and month	Quantity	Foreign value
	Pounds	
1958:		
January	5,696,220	$2,991,980
February	4,466,179	2,469,897
March	4,985,989	2,592,674
April	5,446,299	2,871,093
May	5,666,288	2,935,777
June	6,017,874	2,982,879
July	6,339,672	3,344,911
August	6,627,738	3,319,886
September	7,620,313	3,677,967
October	11,463,057	5,447,664
November	10,616,968	5,327,781
December	10,446,947	5,199,485
Total	85,393,544	43,161,994
1959:		
January	8,237,557	4,261,094
February	7,480,857	3,861,290
March	8,492,413	4,288,689
April	9,051,325	4,863,120
May	8,264,060	4,399,845
June	8,300,254	4,353,258
July	7,860,986	3,950,713
August	5,106,531	2,566,728
September	7,540,988	3,615,266
October	15,339,712	6,022,618
November	10,269,361	4,997,722
December	10,611,298	5,125,511
Total	106,555,342	52,305,854
1960:		
January	8,596,001	3,910,467
February	7,656,945	3,778,780
March	8,544,772	4,230,944
April	7,732,868	3,806,428
May	9,902,387	5,549,787
June	8,932,020	4,537,639
July	7,318,566	3,729,278
August	6,406,307	3,195,779
September	8,190,032	4,093,551
October	14,211,340	7,005,955
November	13,515,846	6,445,859
December	12,410,729	6,121,711
Total	113,417,813	56,406,178

1/ Preliminary.

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

Table 15.--Shrimp: U.S. imports entered by certain importing concerns, by specified categories of shrimp, 1955-60

(In thousands of pounds)

Description	1955 1/	1956 1/	1957 1/	1958 1/	1959 1/	1960 2/
Frozen, heads-off, shell-on:						
In packages or cartons each containing 5 pounds or more	37,159	50,724	55,168	68,982	84,427	85,185
Other	12	25	316	460	1,155	398
Frozen, peeled (or peeled and deveined)--raw or cooked	2,298	3,697	5,836	8,632	13,777	16,809
Dried	33	57	87	126	117	150
Other 3/	127	165	187	1,432	2,103	2,284
Total	39,629	54,668	61,594	79,632	101,579	104,826

1/ Data shown were reported by 100 importing concerns that accounted for 95 percent of total shrimp imports in 1959.

2/ Data shown were reported by 63 importing concerns that accounted for 92 percent of total shrimp imports in 1960.

3/ Includes shrimp in the following forms: Canned (wet and dry pack, pastes, sauces, and specialties); breaded; fresh or frozen, heads-on; fresh heads-off, shell-on; and bait shrimp.

Source: Compiled from data submitted to the U.S. Tariff Commission by importers.

Table 16.--Shrimp: Percentage distribution of sales by 53 U.S. importing concerns of specified styles of imported shrimp, 1/ by geographic regions, 1960

(Based on quantity)

Geographic region	Frozen heads-off, shell-on	Frozen peeled (including deveined)		Frozen breaded	Canned or in jars, not frozen (drained weight)
		Raw	Cooked		
New England (Maine, N.H., Vt., Mass., R.I., Conn.)	6	6	3	2	13
Middle Atlantic (N.Y., N.J., Pa.)	28	51	17	11	23
South Atlantic (Del., Md., D.C., Va., W. Va., N.C., S.C., Ga., Fla.)	13	8	3	2	1
East North Central (Ohio, Ind., Ill., Mich., Wis.)	7	8	2	3	14
East South Central (Ky., Tenn., Ala., Miss.)	2/	2/	2/	2/	2/
West North Central (Minn., Iowa, Mo., N. Dak., S. Dak., Nebr., Kans.)	1	1	2/	3	2/
West South Central (Ark., La., Okla., Tex.)	15	5	2/	3	8
Mountain (Mont., Idaho, Wyo., Colo., N. Mex., Ariz., Utah, Nev.)	2	1	2/	17	3
Pacific (Wash., Oreg., Calif.)	26	20	74	58	33
Other (including export markets)	2	2/	1	1	5
Total	100	100	100	100	100

1/ The 53 concerns accounted for 81 percent of the total U.S. imports of shrimp in 1960.
2/ Less than 0.5 percent.

Source: Compiled from data supplied the U.S. Tariff Commission by importers.

Table 17.--Frozen shrimp: End-of-month cold-storage holdings in the United States of domestic and imported merchandise, June and December 1951-60 1/

(In thousands of pounds)

Year and month	Raw, heads-off, shell-on	All other (including breaded)	Total
1951:			
June	2/	2/	15,802
December	2/	2/	27,352
1952:			
June	2/	2/	15,836
December	2/	2/	15,390
1953:			
June	2/	2/	9,381
December	2/	2/	26,390
1954:			
June	2/	2/	17,488
December	28,286	3,898	32,184
1955:			
June	9,004	3,509	12,513
December	17,369	5,296	22,665
1956:			
June	7,090	4,489	11,579
December	17,199	6,190	23,389
1957:			
June	7,007	4,031	11,038
December	21,719	9,506	31,225
1958:			
June	10,664	5,556	16,220
December	32,844	8,840	41,684
1959:			
June	19,283	7,450	26,733
December	37,866	10,572	48,438
1960:			
June	15,338	7,571	22,909
December	40,913	13,441	54,354

1/ Includes holdings in virtually all public cold-storage warehouses and in some large private cold-storage warehouses. Inasmuch as data are not available for the remaining cold-storage warehouses, the holdings reported in this table understate total U.S. holdings by a considerable amount.

2/ Not available.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 18.--Frozen shrimp: End-of-month cold-storage holdings in the United States of domestic and imported merchandise, by months, January 1958-December 1960 1/

(In thousands of pounds)

Year and month	Raw, heads-off, shell-on	All other (including breaded)	Total
1958:			
January	17,963	8,565	26,528
February	16,359	5,889	22,248
March	14,501	6,044	20,545
April	12,211	6,116	18,327
May	11,013	5,360	16,373
June	10,664	5,556	16,220
July	12,351	6,223	18,574
August	15,274	5,564	20,838
September	18,079	7,131	25,210
October	24,620	8,101	32,721
November	30,211	10,017	40,228
December	32,844	8,840	41,684
1959:			
January	30,858	9,347	40,205
February	27,555	8,966	36,521
March	24,893	8,953	33,846
April	23,331	7,751	31,082
May	21,137	7,577	28,714
June	19,283	7,450	26,733
July	22,352	7,477	29,829
August	23,780	9,907	33,687
September	26,119	10,058	36,177
October	33,057	10,131	43,188
November	37,334	10,719	48,053
December	37,866	10,572	48,438
1960:			
January	34,332	10,133	44,465
February	29,063	10,271	39,334
March	23,232	8,126	31,358
April	23,331	8,199	28,701
May	17,540	7,387	24,927
June	15,338	7,571	22,909
July	17,397	9,135	26,532
August	20,171	12,277	32,448
September	24,492	12,407	36,899
October	31,092	12,450	43,542
November	37,264	14,695	51,959
December	40,913	13,441	54,354

1/ Includes holdings in virtually all public cold-storage warehouses and in some large private cold-storage warehouses. Inasmuch as data are not available for the remaining cold-storage warehouses, the holdings reported in this table understate total U.S. holdings by a considerable amount.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 19.--Shrimp: U.S. landings, imports for consumption, domestic exports, and new supply for domestic consumption, 1950-60

(In terms of heads-off, shell-on shrimp)

Year	U.S. landings	Imports for consumption 1/	Domestic exports 2/	New supply for domestic consumption 3/	Ratio of imports to--	
					U.S. landings	New supply for domestic consumption
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	Percent	Percent
1950	113,973	40,198	4,949	149,222	35	27
1951	133,522	41,824	6,828	168,518	31	25
1952	135,251	38,471	6,795	166,927	28	23
1953	154,974	43,100	5,666	192,408	28	22
1954	159,724	41,519	7,628	193,615	26	21
1955	145,439	53,772	9,000	190,211	37	28
1956	133,438	68,618	7,262	194,794	51	35
1957	121,359	69,676	7,052	183,983	57	38
1958	127,287	85,394	6,640	206,041	67	41
1959 4/	142,965	106,555	8,808	240,712	75	44
1960 4/	148,374	113,418	11,144	250,648	76	45

1/ Quantities shown are net weights as reported in official statistics. The imports consist principally of heads-off, shell-on shrimp, but they also include significant quantities of shrimp in other forms. Hence, the import data are not strictly comparable with the data on U.S. landings.

2/ Includes from the official export statistics (1) the quantity of fresh or frozen shrimp as reported, (2) the quantity of canned shrimp multiplied by 2.20, and (3) the quantity of dried shrimp multiplied by 4.58.

3/ Landings plus imports minus exports; excludes carryover. Complete data on carryover (cold-storage holdings) not available (see footnote 1 to table 18).

4/ Preliminary.

Source: Landings, official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries; imports, official statistics of the U.S. Department of Commerce.

Table 20.--Brown, white, and pink shrimp, raw, heads-off, shell-on, counting 15-20 per pound: Range of ex-vessel prices 1/ at specified Gulf of Mexico areas, by months, January 1958-December 1960

(In cents per pound)

Year and month	Brown shrimp at Port Isabel-Brownsville area, Tex.	White shrimp at Morgan City, Berwick, and Patterson area, La.	Pink shrimp at Tampa, Fla.
1958:			
January	79-86	81-82	73-79
February	88-90	85-97	75-86
March	86-88	86-94	85-86
April	81-86	81-86	85-86
May	83-93	81-87	82-86
June	89-94	87-90	84-89
July	88-93	89-90	88-89
August	88-91	-	84-89
September	75-86	80	78-85
October	78-80	70-80	78-79
November	80-85	78-88	78-79
December	82-85	84-88	78-80
1959:			
January	82	82-84	79-80
February	78-82	77-82	79-82
March	78	77	75-80
April	76-78	72-79	75-78
May	73-76	74-77	74-78
June	75	72-74	70-75
July	73-75	74	70-71
August	67-75	74-75	70-71
September	55-68	67-75	58-71
October	55-58	62-66	58-59
November	58	62	55-59
December	58-62	62-64	55-58
1960:			
January	61-67	64-70	57-58
February	65-68	70	57-69
March	67-71	70	64-74
April	70-71	72	69-77
May	70-72	72-75	72-77
June	72-73	75-78	72-77
July	72-76	70-73	67-77
August	67-72	74	67-68
September	62-67	69-70	67-68
October	64-69	70	67-68
November	64-69	67-70	63-68
December	62-65	67	63-64

1/ Represent receipts per pound credited to the account of the shrimp craft by the first purchasers.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 21.--Frozen shrimp, raw, heads-off, shell-on, counting 15-20 per pound: Range of quoted prices at Chicago and at New York, of specified market classifications, by months, January 1958-December 1960 1/

(Per pound)

Year and month	At Chicago, brown from Gulf States	At New York			
		Brown from Texas, Louisiana, and east coast of Mexico	Brown from west coast of Mexico	White from Texas, Louisiana, and east coast of Mexico	White from Panama
1958:					
January	$0.91-$0.97	$0.92-$0.96	$0.95½-$0.98½	$0.99-$1.00	$0.97-$1.01
February	1.00- 1.03	.92- .96	.95½- .98½	.99- 1.00	.97- 1.01
March	.99- 1.03	.98- 1.02	.98 - 1.01½	1.00- 1.02	1.00- 1.04
April	.94- .99	.95- 1.00	.92 - .98½	.98- 1.00	.96- 1.00
May	.95- 1.06	.95- 1.02	.92 - .99	.97- 1.05	.97- 1.03
June	1.03- 1.08	1.00- 1.05	.98 - 1.03	1.03- 1.08	1.02- 1.06
July	1.02- 1.05	1.00- 1.04	.99 - 1.03	1.04- 1.06	1.01- 1.05
August	1.02- 1.04	.99- 1.03	.95 - 1.00	1.02- 1.06	1.00- 1.04
September	.91- 1.01	.92- 1.00	.93 - .99	.99- 1.03	1.00- 1.04
October	.90- .94	.91- .93	.92 - .95	.95- 1.00	.97- 1.00
November	.93- .97	.94- .98	.96 - .98	.96- 1.02	.99- 1.03
December	.97- .99	.94- .98	.96 - .99	.98- 1.02	.98- 1.02
1959:					
January	.96- .98	.94- .96	.96 - .98	.97- 1.00	.98- 1.01
February	.93- .97	.92- .97	.95 - .99	.95- 1.00	.94- .99
March	.93- .95	.93- .94	.93 - .95	1.00	.95- .98
April	.90- .95	.89- .95	.83½- .92	.92- .98	.92- .97
May	.86- .92	.86- .90	.81½- .83½	.87- .92	.82- .91
June	.88- .89	.86- .90	.80½- .85	.90- .96	.83- .90
July	.88- .89	.87- .92	.83 - .85½	.91- .95	.88- .92
August	.84- .89	.83- .89	.82 - .85½	.88- .92	.88- .90
September	.69- .81	.71- .83	-	.88- .93	.87- .90
October	.69- .70	.71- .75	.76½- .77	.80- .90	.88- .90
November	.72- .75	.73- .75	.75 - .76½	.80- .83	.86- .89
December	.74- .77	.74- .78	.75 - .76½	.78- .84	.83- .87
1960:					
January	.76- .81	.76- .80	.75½- .76½	.78- .82	.82- .86
February	.81- .83	.77- .83	.76½- .81	.80- .85	.82- .84
March	.80- .84	.82- .84	.78½- .85½	.80- .88	.82- .86
April	.84- .85	.80- .86	.83 - .86½	.83- .90	.85- .88
May	.85- .87	.84- .90	.85½- .88	.87- .91	.87- .91
June	.87- .88	.87- .88	.83 - .86½	.88- .91	.89- .92
July	.87- .88	.82- .90	.83 - .85	.87- .91	.88- .91
August	.82- .88	.82- .85	.81 - .85	.85- .89	.86- .90
September	.78- .84	.79- .83	.78 - .85	.85- .90	.87- .90
October	.79- .83	.82- .85	.78½- .83	.88- .90	.88- .92
November	.79- .83	.80- .84	.82 - .84	.80- .90	.88- .93
December	.78- .80	.81- .82	.79½- .82	.78- .83	.85- .90

1/ Quoted selling prices per pound for customary wholesale quantities in 5-pound packages, f.o.b. warehouse, Chicago or New York. Prices are reported once a week by original receivers (including dealers, brokers, and other primary distributors).

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 22.--Frozen shrimp, breaded, and peeled and deveined: Range of quoted wholesale prices at Chicago, by months, January 1958-December 1960 1/

Year and month	Breaded shrimp, fantail		Peeled and deveined shrimp, not fantail, 2- to 2½-lb. package, "21-25" 3/
	10-oz. package	2- to 4-lb. package, "15-20" 2/	
	Per package	Per pound	Per pound
1958:			
January	$0.46-$0.50	$0.82-$0.89	$1.35-$1.50
February	.48- .51	.82- .97	1.45- 1.55
March	.49- .52	.85- .97	1.45- 1.55
April	.50- .52	.85- .91	1.40- 1.45
May	.50- .52	.85- .91	1.40- 1.48
June	.50- .52	.85- .92	1.40- 1.45
July	.47- .52	.82- .92	1.40- 1.50
August	.47- .49	.82- .88	1.40- 1.50
September	.47- .48	.82- .88	1.40- 1.45
October	.45- .48	.80- .88	1.35- 1.45
November	.47- .48	.80- .88	1.35- 1.46
December	.47- .48	.80- .85	1.35- 1.46
1959:			
January	.47- .48	.80- .85	1.35- 1.46
February	.47- .48	.80- .85	1.35- 1.40
March	.47- .48	.80- .85	1.35- 1.40
April	.45- .48	.80- .85	1.35- 1.40
May	.45- .46	.80- .81	1.32- 1.37
June	.45- .46	.80- .81	1.32- 1.37
July	.41- .46	.75- .81	1.27- 1.37
August	.41- .43	.75- .78	1.27- 1.30
September	.40- .43	.74- .78	1.20- 1.30
October	.40- .41	.74- .76	1.20- 1.30
November	.40- .41	.72- .76	1.20- 1.30
December	.40- .41	.72- .76	1.20- 1.26
1960:			
January	.40- .41	.70- .76	1.20- 1.26
February	.40- .42	.70- .76	1.20- 1.26
March	.40- .44	.70- .77	1.22- 1.30
April	.42- .44	.75- .77	1.25- 1.30
May	.42- .44	.75- .77	1.25- 1.30
June	.42- .44	.75- .77	1.25- 1.30
July	.42- .44	.75- .77	1.25- 1.30
August	.41- .44	.70- .77	1.21- 1.30
September	.41- .42	.70- .75	1.21- 1.25
October	.41- .42	.70- .75	1.20- 1.25
November	.41- .43	.70- .75	1.20- 1.25
December 4/	.42- .43	.70- .75	1.20- 1.25

1/ Quoted selling prices for customary wholesale quantities of shrimp products produced in U.S. plants, f.o.b. warehouse Chicago. Prices are reported once a week by original receivers (including dealers, brokers, and other primary distributors).

2/ "15-20" is reported to be the size of the heads-off, shell-on shrimp used in making this product.

3/ "21-25" is reported to be the size of the heads-off, shell-on shrimp used in making this product.

4/ Preliminary.

Source: Compiled from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 23.--Frozen brown shrimp from the Gulf States, raw, heads-off, shell-on, counting 15-20 per pound: Indexes of quoted wholesale prices at Chicago, by months, January 1950-December 1960 1/

(1950=100)

Month	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960
January	100	86	91	125	116	86	131	135	140	144	117
February	100	86	96	128	110	93	132	138	153	141	122
March	102	86	100	132	118	97	124	142	153	140	122
April	106	88	100	139	108	95	124	151	147	138	126
May	110	94	98	170	103	103	125	153	154	132	128
June	110	101	103	146	98	112	128	153	155	132	130
July	110	103	107	136	94	115	136	159	155	132	130
August	108	87	109	127	100	112	136	159	154	129	127
September	95	92	107	121	89	104	129	142	149	112	121
October	90	91	102	117	89	100	126	133	137	103	121
November	83	87	107	118	86	121	136	136	141	109	121
December	86	88	117	119	85	127	133	136	146	112	118

1/ Computed from the midpoint of the range of quoted selling prices per pound for customary wholesale quantities in 5-pound packages, f.o.b. warehouse Chicago. Prices are reported once a week by original receivers (including dealers, brokers, and other primary distributors).

Source: Computed from official statistics of the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Table 24.--All fish and shellfish, fresh, frozen, and canned, and frozen shrimp: Indexes of quoted wholesale prices in the United States, 1950-60, and by months, January 1959-December 1960

(1950=100)

Year and month	All fish and shellfish, fresh, frozen, and canned	Frozen shrimp 1/
1950	100	100
1951	107	91
1952	106	103
1953	106	132
1954	106	100
1955	105	106
1956	114	130
1957	119	145
1958	129	149
1959	125	127
1960	127	124
1959:		
January	135	144
February	134	141
March	128	140
April	123	138
May	122	132
June	124	132
July	123	132
August	120	129
September	122	112
October	121	103
November	121	109
December	123	112
1960:		
January	122	117
February	122	122
March	123	122
April	123	126
May	127	128
June	126	130
July	130	130
August	124	127
September	128	121
October	129	121
November	132	121
December	133	118

1/ Based on wholesale-price quotations in Chicago for customary wholesale quantities in 5-pound packages of frozen brown shrimp from the Gulf States, raw, heads-off, shell-on, counting 15-20 per pound; quotations published by the U.S. Fish and Wildlife Service, Bureau of Commercial Fisheries.

Source: Compiled from official statistics of the U.S. Bureau of Labor Statistics, except as noted.

Table 25.--Shrimp: Estimated world production, by continent and by country, 1948, 1953, and 1959

(In millions of pounds, heads-off, shell-on basis)

Continent and country	1948	1953	1959
Africa:			
Algeria	1/	1/	1.3
Egypt	0.9	2.0	7.7
Morocco	.1	.1	1.7
Total Africa	1.0	2.1	10.7
Asia:			
Burma	2/	10.3	6.9
Hong Kong	.1	.3	3/ 8.4
India	48.5	118.8	86.4
Iran	.1	.1	1.6
Japan	44.0	54.1	4/ 88.7
Korea	43.3	27.6	25.9
Pakistan	5/	18.2	20.0
Philippine Republic	6/	6/	18.5
Taiwan (Formosa)	2/	3.3	6.7
Thailand	10.7	11.3	10.7
Vietnam	2/	2/	6.6
Total Asia:			
Excluding mainland China	146.7	244.0	280.4
Including mainland China	7/	7/	400.4
Europe:			
Belgium	1.8	2.6	1.4
Denmark	1.2	1.2	3.1
France	8/ 3.9	8/ 5.1	3.5
Germany (Federal Republic)	18.6	52.4	34.1
Italy	2.2	3.3	4.0
Netherlands	10.5	21.2	17.3
Norway	2.5	5.0	12.8
Spain	14.5	12.4	16.7
Sweden	1.0	1.7	4.2
United Kingdom	3.4	2.5	2.5
Total Europe	59.6	108.7	99.6
Australia	2/	2.0	4.0
North America:			
British Honduras	2/	2/	.1
Canada	.4	1.2	.6
Caribbean Islands	2.0	2.0	2.5
Costa Rica	2/	2/	1.5
El Salvador	2/	.1	2.0
Greenland	2/	2/	1.3
Guatemala	2/	2/	.3
Honduras	2/	2/	1.5
Mexico	44.6	45.6	80.1
Nicaragua	2/	2/	1.0
Panama	.1	.9	11.3
United States	99.4	154.9	143.0
Total North America	146.5	204.7	245.2

See footnotes at end of table.

Table 25.--Shrimp: Estimated world production, by continent and by country, 1948, 1953, and 1959--Continued

(In millions of pounds, heads-off, shell-on basis)

Continent and country	1948	1953	1959
South America:			
Argentina	1.7	7.2	1.2
Brazil	2/	10.5	25.8
British Guiana	2/	2/	1.2
Chile	2/	2/	1.2
Colombia	2/	.3	3.5
Ecuador	2/	.4	6.3
Peru	2/	.3	.3
Surinam	2/	2/	1.3
Venezuela	.1	.4	2.1
Other	.1	.1	.5
Total South America	1.9	19.2	43.4
Grand total:			
Excluding mainland China	355.7	580.7	683.3
Including mainland China	7/	7/	803.3

1/ Included with France.
2/ Not available, or less than 50,000 pounds. Maximum production in 1948 for countries for which data were not available or for which production was less than 50,000 pounds is estimated to have been about 22 million pounds.
3/ Includes unknown quantities caught by Hong Kong craft but landed in mainland China.
4/ Estimate for full year 1959 is based on production for the first 8 months of that year, projected on the basis of production in 1958.
5/ Included with India.
6/ Not available. Production is estimated at between 1 million and 10 million pounds in 1948 and between 2 million and 10 million pounds in 1953.
7/ Statistics not available for mainland China. Production in 1958 and 1959 is estimated at 120 million pounds.
8/ Includes Algeria.

Source: Food and Agriculture Organization series, Yearbook of Fishery Statistics; U.S. Fish and Wildlife Service, Report on Fresh, Frozen, and Processed Shrimp, 1960, and Survey of Shrimp Fisheries of Central and South America, Special Scientific Report - Fisheries, No. 235, and Foreign Shrimp Fisheries Other Than Central and South America, Special Scientific Report - Fisheries No. 254; and U.S. Department of State, Foreign Service reports.

Table 26.--Shrimp: Estimated world production, by continent and by country, 1956-59

(In millions of pounds, heads-off, shell-on basis)

Continent and country	1956	1957	1958	1959
Africa:				
Algeria	1.9	2.0	1.9	1.3
Egypt	7.0	7.0	7.0	7.7
Morocco	1.2	1.2	1.5	1.7
Total Africa	10.1	10.2	10.4	10.7
Asia:				
Burma	8.4	8.6	8.7	6.9
Hong Kong	6.2	6.7	1/ 7.5	1/ 8.4
India	211.2	180.9	112.5	86.4
Iran	.1	.1	.6	1.6
Japan	66.3	62.7	73.2	2/ 88.7
Korea	25.7	36.2	23.1	25.9
Pakistan	15.0	20.7	19.1	20.0
Philippine Republic	15.8	11.9	17.2	18.5
Taiwan (Formosa)	5.1	5.1	5.4	6.7
Thailand	11.4	17.6	10.7	10.7
Vietnam	6.6	6.6	6.6	6.6
Total Asia:				
Excluding mainland China	372.0	357.1	284.6	280.4
Including mainland China	3/	3/	404.6	400.4
Europe:				
Belgium	4.2	1.3	1.0	1.4
Denmark	1.2	1.8	2.3	3.1
France	4.0	3.7	3.4	3.5
Germany (Federal Republic)	43.5	46.0	37.6	34.1
Italy	3.2	3.8	4.2	4.0
Netherlands	21.6	15.3	14.4	17.3
Norway	8.3	9.3	9.6	12.8
Spain	16.2	15.5	15.7	16.7
Sweden	2.0	2.8	2.8	4.2
United Kingdom	2.9	3.1	2.8	2.5
Total Europe	107.2	102.6	93.9	99.6
Australia	3.7	3.0	2.8	4.0

See footnotes at end of table.

Table 26.--Shrimp: Estimated world production, by continent and by country, 1956-59--Continued

(In millions of pounds, heads-off, shell-on basis)

Continent and country	1956	1957	1958	1959
North America:				
British Honduras	4/	4/	4/	0.1
Canada	0.7	1.0	1.1	.6
Caribbean Islands	2.5	2.5	2.5	2.5
Costa Rica	.6	.2	.8	1.5
El Salvador	.2	.3	1.4	2.0
Greenland	.7	.9	1.0	1.3
Guatemala	4/	4/	.1	.3
Honduras	.1	.1	.9	1.5
Mexico	59.4	59.7	69.3	80.1
Nicaragua	.1	.1	.7	1.0
Panama	6.3	9.8	9.3	11.3
United States	133.4	121.3	127.3	143.0
Total North America	204.0	195.9	214.4	245.2
South America:				
Argentina	3.3	2.1	1.8	1.2
Brazil	20.7	24.8	24.4	25.8
British Guiana	4/	4/	.5	1.2
Chile	.2	.2	.5	1.2
Colombia	.8	1.0	2.0	3.5
Ecuador	5.2	4.7	5.8	6.3
Peru	.4	.8	.5	.3
Surinam	1.0	.5	1.2	1.3
Venezuela	1.0	1.3	1.5	2.1
Other	.4	.4	.5	.5
Total South America	33.0	35.8	38.7	43.4
Grand total:				
Excluding mainland China	730.0	704.6	644.8	683.3
Including mainland China	3/	3/	764.8	803.8

1/ Includes unknown quantities caught by Hong Kong craft but landed in mainland China.

2/ Estimate for full year 1959 is based on production for the first 8 months of that year, projected on the basis of production in 1958.

3/ Statistics not available for mainland China. Production in 1958 and 1959 is estimated at 120 million pounds.

4/ Not available, or less than 50 thousand pounds.

Source: Food and Agriculture Organization series, Yearbook of Fishery Statistics; U.S. Fish and Wildlife Service, Report on Fresh, Frozen, and Processed Shrimp, 1960, and Survey of Shrimp Fisheries of Central and South America, Special Scientific Report - Fisheries, No. 235, and Foreign Shrimp Fisheries Other Than Central and South America, Special Scientific Report - Fisheries No. 254; and U.S. Department of State, Foreign Service reports.

Table 27.--Shrimp: Estimated production of North America, excluding the United States, by area and by country, 1956-59

(In thousands of pounds, heads-off, shell-on basis)

Area and country	1956	1957	1958	1959
Canada and Greenland:				
Canada	728	957	1,144	624
Greenland	697	888	1,002	1,253
Total Canada and Greenland	1,425	1,845	2,146	1,877
Caribbean Islands	2,500	2,500	2,500	2,500
Middle America:				
British Honduras	30	30	35	70
Costa Rica	591	187	782	1,472
El Salvador	180	266	1,380	2,000
Guatemala	30	30	100	330
Honduras	50	50	943	1,547
Mexico	59,449	59,671	69,261	80,095
Nicaragua	110	115	716	1,000
Panama	6,269	9,790	9,320	11,300
Total Middle America	66,709	70,139	82,537	97,814
Grand total North America (excluding United States)	70,634	74,484	87,193	102,191

Source: Food and Agriculture Organization series, Yearbook of Fishery Statistics; U.S. Fish and Wildlife Service, Report on Fresh, Frozen, and Processed Shrimp, 1960, and Survey of Shrimp Fisheries of Central and South America, Special Scientific Report - Fisheries No. 235, and Foreign Shrimp Fisheries Other Than Central and South America, Special Scientific Report - Fisheries No. 254; and U.S. Department of State, Foreign Service reports.

Table 28.--Amount and distribution of payments by craft owners to fishermen and to others in Ciudad del Carmen and Campeche per ton of shrimp (heads-off, shell-on) landed as of Sept. 17, 1960

Item	Payment per ton of--	
	Large shrimp 1/	Small shrimp 2/
Crew share:		
Captain	$61.69	$26.13
Engineer	47.17	22.50
Winchman	29.03	17.42
Cook	29.03	15.96
Total	166.92	82.01
Cooperative share:		
Severance tax	15.97	15.97
Administration	14.51	14.51
Total	30.48	30.48
Total per ton	197.40	112.49

1/ Under 31 count.
2/ 31 count and over.

Source: Report from U.S. Embassy, México, D.F., 1960.

Note.--In addition to the payments per ton of shrimp, other payments by boatowners are as follows:

Groceries per man per day	$0.72
Social security tax per boat per month (Boatowners of Ciudad del Carmen make a payment of $32 in lieu of this social security payment until such time as social security is inaugurated there.)	40.00
Wages, daily, while boat is under repair:	
Captain	2.00
Engineer	1.60
Winchman	1.20
Cook	1.20

Table 29.--Shrimp: Estimated exports by 15 selected countries, by types, 1959

(In thousands of pounds)

Country	Frozen	Dried	Canned	Fresh	Total
Mexico	69,638.4	-	0.1	15.8	69,654.3
India	2,715.8	9,314.4	200.0	-	12,230.2
Norway	2,868.2	-	3,743.8	2,707.2	9,319.2
Panama	8,805.3	-	-	-	8,805.3
Japan	7,590.9	861.0	65.3	-	8,517.2
Netherlands	6,505.7	-	1/	-	6,505.7
United States	2/ 2,090.0	85.0	2,876.0	-	5,051.0
Ecuador	4,711.7	-	-	-	4,711.7
Egypt	1,944.9	-	-	3/ 4.0	1,948.9
Colombia	1,898.3	-	-	-	1,898.3
El Salvador	1,886.0	-	-	-	1,886.0
Pakistan	640.0	785.3	79.6	-	1,504.9
Costa Rica	1,214.8	-	-	-	1,214.8
Morocco	1,117.7	-	95.3	-	1,213.0
Germany (Federal Republic)	-	584.5	593.2	-	1,177.7
Total	113,627.7	11,630.2	7,653.3	2,727.0	135,638.2

1/ Not available.
2/ Fresh and frozen.
3/ Fresh, salted, or cooked.

Source: Compiled from official statistics of the Food and Agriculture Organization and the U.S. Department of Commerce, and from U.S. Foreign Service reports.

Table 30.--Shrimp: Exports by 15 selected countries, by principal area of destination, 1959 1/

(In thousands of pounds)

Exporting country	Destination										
	United States	United Kingdom	France	Burma	Ceylon	Canada	Belgium-Luxembourg	Sweden	Hong Kong	Other 2/	Total
Mexico	68,654.3	-	22.0	-	-	-	-	-	-	978.0	69,654.3
India	2,866.1	2.4	21.1	3,688.0	3,976.2	4.0	-	0.9	923:0	748.5	12,230.2
Norway	161.3	6,962.1	374.8	-	-	110.2	-	1,097.9	-	612.9	9,319.2
Panama	8,805.3	-	-	-	-	-	-	-	-	-	8,805.3
Japan	7,227.2	-	-	-	-	-	-	-	-	1,290.0	8,517.2
Netherlands	2.2	22.0	4,056.5	-	-	-	2,425.0	-	-	-	6,505.7
United States	-	491.1	42.7	-	-	3,511.9	41.9	17.2	-	946.2	5,051.0
Ecuador	4,711.7	-	-	-	-	-	-	-	-	-	4,711.7
Egypt	1,309.2	-	-	-	-	-	-	-	-	639.7	1,948.9
Colombia	1,898.3	-	-	-	-	-	-	-	-	-	1,898.3
El Salvador	1,836.0	-	-	-	-	-	-	-	-	50.0	1,886.0
Pakistan	640.0	177.4	-	394.8	13.2	-	-	-	117.6	161.9	1,504.9
Costa Rica	1,156.9	-	-	-	-	-	-	-	-	57.9	1,214.8
Morocco	-	.2	1,200.7	-	-	-	2.6	-	-	9.5	1,213.0
Germany (Federal Republic)	83.7	117.3	251.5	-	-	2.2	105.2	-	-	617.8	1,177.7
Total	99,352.2	7,772.5	5,969.3	4,082.8	3,989.4	3,628.3	2,574.7	1,116.0	1,040.6	6,112.4	135,638.2

1/ Includes unknown quantities that were reexported. Preliminary.
2/ Includes unknown quantities exported to countries specifically indicated.

Source: Compiled from official statistics of the Food and Agriculture Organization and the U.S. Department of Commerce, and from U.S. Foreign Service reports.

APPENDIX C

Glossary

BAIT SHRIMP--Include (1) live shrimp sold to sport fishermen, (2) fresh or frozen shrimp that are suitable for human consumption, and (3) specially treated or spoiled shrimp not suitable for human consumption. Data relating to live bait shrimp and to bait shrimp not suitable for human consumption are not included in the official statistics of U.S. landings as shown in this report. Data on bait shrimp are included in the statistics of imports. Data are not available on the amounts of fresh or frozen shrimp that are suitable for human consumption but used as bait.

BATTER AND BREADING--Batter is used as a dip in the breading process before the shrimp are passed through a breading mixture. The batter is made by adding water to a commercially prepared batter mix, which is a powder made from dried milk, cereals, and flavorings; in some instances fresh eggs or dried eggs are included. Breading contains the same ingredients as the batter mix but is more coarsely ground. Breading may also contain breadcrumbs or cracker meal.

BREADED SHRIMP--Deveined and wholly or partly peeled shrimp that have been dipped in batter and coated with breading. Breaded shrimp are marketed either split or round. In either case, the shrimp have been split lengthwise to remove the vein. The "round" shrimp are breaded at that stage, but the "split" shrimp are cut deeper and the two sides are spread so that the shrimp are given a flattened shape. When the fantail and a small part of the adjacent shell are retained, the split or round type breaded shrimp are known as fantail shrimp. A split breaded shrimp retaining the fantail is also known as butterfly shrimp.

BROWN SHRIMP--In the U.S. market, include Penaeus aztecus from the waters of the South Atlantic States and the Gulf of Mexico, and P. californiensis from Mexico's west coast. Brown shrimp usually account for one-half or more of the total U.S. catch. See also PINK SHRIMP, WHITE SHRIMP, and GROOVED SHRIMP.

BUTTERFLY SHRIMP--See BREADED SHRIMP.

CANNED SHRIMP (NOT FROZEN)--Generally consist of peeled shrimp that have been blanched (precooked) and packed in brine in airtight cans containing 4-1/2 or 5 ounces, drained weight. Most of the imported canned shrimp are deveined, but a large share of the domestic are not. Canned shrimp do not require refrigeration; they are ready to eat without further cooking.

DEVEINED SHRIMP--See PEELED AND DEVEINED SHRIMP.

FANTAIL SHRIMP--See BREADED SHRIMP.

GLAZED SHRIMP--Heads-off, shell-on shrimp are glazed by pouring water into a carton or pan of frozen shrimp. This type of glazing produces a solid block of shrimp and ice. Individually quickfrozen peeled and deveined shrimp are glazed, either by dipping frozen shrimp in cold water or by passing them through a cold-water spray, to produce a thin transparent coating of ice on each shrimp.

GREEN SHRIMP--Market designation for heads-off, shell-on shrimp of any species.

GROOVED SHRIMP--In the U.S. market the term refers to both brown shrimp and pink shrimp. These shrimp are identified by a noticeable groove on the head.

HEADLESS SHRIMP--Market designation for HEADS-OFF, SHELL-ON SHRIMP.

HEADS-OFF, SHELL-ON SHRIMP--Shrimp from which the head and thorax (containing almost all the viscera) have been removed. This operation is done by hand, generally on board the shrimp craft but sometimes by the packers or the first purchasers. The head and thorax, which are generally discarded, account for about 40 percent of the original weight of the shrimp when caught. Alternative designations: (1) Green shrimp, (2) shrimp tails, (3) headless, (4) heads-off, or (5) shrimp.

I.Q.F. SHRIMP--Abbreviation for individually quickfrozen shrimp. See SINGLE FROZEN SHRIMP and GLAZED SHRIMP.

LANGOSTINO--In the U.S. market, the term refers to the peeled and deveined meat from the tail of a crustacean of the family Galatheidae and imported exclusively from Chile. It is distantly related to hermit crabs and king crabs. In appearance, however, the Chilean langostino closely resembles, but is smaller than, the rock lobster. Chilean langostinos are more competitive with shrimp than with other shellfish.

In Latin American countries, except Chile and Mexico, langostino is the Spanish word for large shrimp, and cameron is the Spanish word for small shrimp. In Mexico, the word for all salt-water shrimp is cameron, irrespective of size; fresh-water shrimp are known as langostinos. In Chile, cameron is used for both salt-water shrimp and fresh-water shrimp.

MEXICAN BROWN SHRIMP--When caught off the east coast of Mexico, identical with brown shrimp of the U.S. catch; when caught off the west coast of Mexico, however, a different species, known in the U.S. market as Mexican west coast brown shrimp. See BROWN SHRIMP.

OTTER TRAWL--The otter trawl used in shrimp fishing is a cone-shaped net that is dragged on the ocean floor. This type of net derives its name from the otter boards (or trawl doors) used to hold open the mouth of the net.

P&D--Abbreviation for peeled and deveined shrimp.

PANAMA WHITE SHRIMP--Include three species of large shrimp. About 80-85 percent of Panama's output of frozen heads-off white shrimp count less than 15 per pound. The bulk of the output is exported to the United States. See WHITE SHRIMP.

PEELED AND DEVEINED SHRIMP--Heads-off shrimp from which the shell, swimmerets, and vein have been removed. The vein, the lengthwise dark streak, sometimes called the sand vein, that is actually the lower intestine, was not removed by the beheading process. See SHRIMP MEAT.

PINK SHRIMP--In the U.S. market, the term refers to Penaeus duorarum from the waters of the South Atlantic States and the Gulf of Mexico. This is also a local term on the Pacific coast for two small shrimp, Pandalus jordani of California, Oregon, and Washington, and Pandalus borealis of Alaska. Pink shrimp, Penaeus duorarum, is one of three species of shrimp that account for the bulk of the U.S. catch. See also BROWN SHRIMP, GROOVED SHRIMP, and WHITE SHRIMP.

PRAWNS--A term for larger shrimp.

ROYAL RED SHRIMP--Common name for Hymenopenaeus robustus, a species of the deeper waters of the Gulf of Mexico and of the South Atlantic States. The catch of this species has been negligible.

SEA BOBS--Common name for Xiphopeneus kroyeri, a small shrimp (usually counting more than 68 heads-off, shell-on shrimp to the pound) found in the shallow coastal waters of the Gulf of Mexico.

SHRIMP MEAT--Generally refers to (1) peeled and deveined shrimp, without any inedible parts and (2) pieces of peeled and deveined shrimp. The small shrimp are not always deveined.

SINGLE FROZEN SHRIMP--Frozen peeled and deveined shrimp that may be removed individually from the package. Before freezing, the peeled and deveined shrimp are spaced on trays so that they do not touch one another; after freezing, the shrimp are glazed. Also known in the trade as I.Q.F. shrimp.

STUFFED SHRIMP--Split peeled and deveined shrimp stuffed usually with crab meat and other ingredients.

TIGER SHRIMP--Imported shrimp identified by dark stripes and generally less expensive than other shrimp of the same size.

TITI--In the U.S. market, the term refers to certain small shrimp landed in Panama and other Latin American countries. Titi shrimp are usually peeled and deveined before being shipped to the United States.

WHITE SHRIMP--In the U.S. market, include Penaeus setiferus from the waters of the South Atlantic States and the Gulf of Mexico; and P. stylirostris, P. vannamei, and P. occidentalis from the Pacific waters of Mexico, El Salvador, Ecuador, Panama, and Colombia. White shrimp (P. setiferus) is one of the three species of shrimp that account for the bulk of the U.S. catch. See also BROWN SHRIMP and PINK SHRIMP.