



TRENDS AND DEVELOPMENTS

Alaska

JAPANESE FISHERMEN NOT EXTRADITED FOR VIOLATION OF FISHING REGULATIONS:

The State Attorney for Alaska stated on March 16, that Alaska did not plan to extradite three Japanese fishermen arrested in April 1962, during the Shelikof Straits controversy. The captains of three vessels of a Japanese herring fishing fleet were arrested by State of Alaska enforcement agents and charged with violating Alaska's commercial fishing regulations. They were later released on bail and returned to Japan. Reports were that Japanese fishing companies proposed to purchase herring in the Cordova area and chum salmon in the Ketchikan area. The State of Alaska feels the Japanese have, because of those developments, changed their policy in regard to fishing in State claimed waters. Therefore, they considered it unnecessary to press for extradition of the Japanese fishermen arrested in 1962.

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FOREIGN FISHING ACTIVITIES IN BERING SEA AND GULF OF ALASKA:

Soviet and Japanese fishing activity began building up during March. About 120 to 140 Russian vessels were fishing from the vicinity of Unimak Pass northward to the area of the Pribilof Islands. As in past years, they were utilizing the Bering Sea ice pack for protection from the bad weather prevalent in that area during winter and spring. By month's end, Soviet trawlers were sighted in the Gulf of Alaska fishing for Pacific ocean perch, presaging an early return to the grounds the Russian fleet apparently found profitable during the summer of 1962.

The Japanese stern trawlers Akebono Maru No. 51 and No. 52 conducted winter exploratory fishing operations in both the Gulf of Alaska and Bering Sea. By the end of March both vessels were en route to Japan.

The Chichibu Maru accompanied by seven 260-ton trawlers, Nisshin Maru Nos. 50 to 55 and Taiyo Maru No. 11, began fishing for shrimp in the vicinity of the Pribilof Islands early this year. At the end of March, they were reported to be in the vicinity of Unimak Island where they were making good catches.

The freezer ship Chichibu Maru No. 2 and six catcher vessels departed Japan on February 25 and were believed to be fishing on the Eastern Bering Sea trawling grounds.

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EXPANSION OF RUSSIAN AND JAPANESE KING CRAB FISHING INTO GULF OF ALASKA PREDICTED:

Japanese sources were quoted as predicting the expansion of the Soviet Union king-crab fishing in 1963. It was reported that the Russians may move south of the Alaska Peninsula with at least two crab factoryships during the coming season. Previously the Soviets had confined their king-crab operations to the Bristol Bay area.

Translations of various Soviet fishery journals reported the arrival in Vladivostok of additional new units to the Soviet Far Eastern crab fleet, including the ultra-modern vessels Aleksander Obukhov, Eugenii Nukishin, and Pavel Chebotniagin. Those vessels are sisterships to the earlier Andrei Zakharov, and are in addition to the ten older fleet units extant. In addition, the Japanese press reported



Russian king crab factoryship Andrei Zakharov.

the factoryship Kyokusei Maru (5,504 gross tons) and eight catcher vessels have been licensed to fish for king crab in the Gulf of Alaska for six months beginning in May.

Should those developments take place, it was anticipated there would be protests from members of the developing Alaskan king crab industry and from various public officials. It was also expected that the gear conflict and interference problem might be accentuated.

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JAPANESE FIRM SHOWS INTEREST IN PURCHASING ALASKA SALMON:

News that a Japanese firm may buy chum salmon in Southeastern Alaska was widely circulated in Ketchikan fishing circles during March. First reports were that a cold-storage plant in Alaska had arranged for the Japanese "mothership" to purchase salmon directly from the fishermen, and processing and freezing them aboard the vessel for the Japanese market. However, problems developed with that proposal. A newer plan was for the Alaskan cold-storage plant to do the processing and freezing with the Japanese firm taking delivery at the cold-storage dock. But some questions were raised as to how successful such an operation would be. An official of the cold-storage plant stressed that the proposed deal includes provision that the chum salmon would not be reexported to the United States.

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WINTER CATCH OF HERRING FOR BAIT LOWER:

The annual winter harvest of herring for bait in the Ketchikan area was completed in March. For the second consecutive year herring did not appear in abundance in Revilla Channel but were caught in more distant waters. The total catch was considerably below the approximate 2.5 million pounds caught in 1962 because of cold-storage holdovers, more bait fishing conducted westward, and increasing use of alternate baits for halibut.

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VESSELS PREPARE FOR EARLY HALIBUT FISHING SEASON:

Approximately 30 halibut vessels loaded ice, bait and supplies at Ketchikan in mid-March prior to departing for the Bering Sea

for the opening of fishing on March 25. Several of the boats carried cargoes of octopus bait from Ketchikan to cold-storages in westward Alaska. The first trip of Bering Sea halibut was expected to arrive in Ketchikan during the week of April 8.

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CHIGNIK RIVER RED SALMON FORECAST FOR 1963:

Chignik (Alaska Peninsula) runs of red salmon during the past 10 years ranged in size from 410,000 to 1,425,000 fish and averaged slightly over 800,000 fish annually. The forecast for 1963 is 1,348,000 fish. It was reported that possible errors in the forecast method used at Chignik, including variations in ocean survival, sampling error, and escape-ment enumeration error, could cause sizeable deviation from the 1963 prediction.



Alaska Fisheries Investigations

The following is a report of the March 1963 activities and studies by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Auke Bay, Alaska.

PINK SALMON SPAWNING CHANNEL AT OLSEN BAY TO BE IMPROVED:

Representatives of the U. S. Bureau of Commercial Fisheries, the U. S. Forest Service, and the Alaska Department of Fish and Game agreed on a proposed plan for the general design and operation of an improved pink salmon spawning channel at the Olsen Bay research station at Prince William Sound. The channel will be in two sections--one in the intertidal area and the other above high tide. It will be the first salmon spawning channel on the Pacific coast to be located in an intertidal area. In the Prince William Sound area, most pink salmon spawn naturally in intertidal reaches of streams.

Olsen Creek produces large but fluctuating runs of pink salmon. The Channel will offer an excellent opportunity to develop methods of obtaining more consistent production through control of the spawning environment. Techniques for controlling the wide natural fluctuations in pink salmon production may be of importance to future salmon management.

The Forest Service will assume a major role in the venture by doing topographical

surveys and installing the channels. The Auke Bay Laboratory staff will operate the spawning facilities and evaluate the results.

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WINTER PINK AND CHUM SALMON EGG SURVIVALS ENCOURAGING:

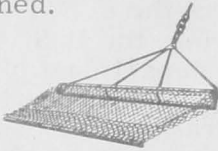
Crews sampled salmon eggs from study areas in a pink salmon stream near Cordova and a chum salmon stream near Ketchikan. Preliminary results indicated that the egg survival of both species will probably prove to be better than average.



Alaska Fisheries Exploration and Gear Research

SHRIMP AND SCALLOP STUDIES PLANNED:

Shrimp explorations planned by the U. S. Bureau of Commercial Fisheries Exploratory Fishing and Gear Research Base at Juneau will include about 11 weeks of trawling in southern Cook Inlet near Kodiak Island. The primary emphasis of the scheduled 1963 shrimp explorations will be to supplement and extend the work previously done in Cook Inlet. Preliminary scallop dredging to determine the feasibility of more intensive work is also planned.



California

NEW DIRECTOR APPOINTED FOR INSTITUTE OF MARINE RESOURCES:

Dr. Milner B. Schaefer was recently appointed Director of the University of California's Institute of Marine Resources. He was formerly the Director of Investigations for the Inter-American Tropical Tuna Association, La Jolla, Calif. Announcing the appointment, the President of the University of California said, "With the appointment of Dr. Schaefer, one of the country's leading fisheries biologists, we hope to strengthen the Institute's Program. Among critical programs that need to be explored in a broadened program are the socio-economic ones that handicap effective use of fisheries and marine resources."

Some of the studies now being carried out by the Institute are: (1) consideration of the potential resources of the sea in relation to needs of an increased population; (2) research on the productivity, ecology and population dynamics of living resources; (3) the composition of fishes, especially the nature of proteins and unsaturated fatty acids; and (4) studies of the topography of the deep-sea floor and research on beach erosion formation and other inshore geological processes. (Undersea Technology, January 1963; U. S. National Oceanographic Data Center, Newsletter, March 31, 1963.)

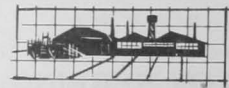


Cans--Shipments for Fishery Products, January-February 1963

A total of 354,448 base boxes of steel and aluminum was consumed to make cans shipped to fish and shellfish canning plants in January-February 1963, a decline of 2.2 per cent from the 362,242 base boxes used during the same period in 1962.



Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" size. Tonnage figures for steel (tinplate) cans are derived by use of the factor 21.8 base boxes per short ton of steel. The use of aluminum cans for packing fishery products is small.



Central Pacific Fisheries Investigations

PREDICTIONS ON ABUNDANCE OF SUMMER SKIPJACK TUNA IN HAWAIIAN WATERS:

Studies by the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries on skipjack tuna and its environment have demonstrated there is empirical relationship between the relative abundance of skipjack in Hawaiian waters and oceanographic conditions. This relationship has enabled the scientists to predict to Hawaiian fishermen the availability of skipjack several months in advance of the season. These predictions have been made with a high degree of success since 1959. The forecast

of availability is based on monthly sea surface temperatures which are recorded from the Koko Head monitoring station on the Island of Oahu. In January, the sea surface temperature in the vicinity of Oahu is about 74° F. Near the end of the summer the temperature may approach 79° F. and then drops to 74° F. again by the end of the year. From this cyclical change in temperature, a curve of the rate of sea-surface temperature change at Koko Head is derived. This rate-of-change curve shows that the sea surface temperature changes from a cooling phase to a warming phase in February or March. The relative abundance of skipjack in Hawaiian waters during the summer fishing season is related to the time of temperature-rate change from the warming phase to the cooling phase. Highest yields of skipjack are obtained when the onset of sea-surface warming occurs in early February. Yields decline as the time of warming progresses toward March, and the lowest yields are expected when the time of warming occurs in the middle of March. Warming in 1963 occurred in early February. This resulted in a prediction to the industry that the skipjack fishery will be above average this coming summer.

Although it is now a simple matter to predict the relative abundance of skipjack for each summer several months in advance of the season, the biologists still do not have a complete understanding of the mechanisms involved. It appears that skipjack schools move into the Hawaiian area with a seasonal northward movement of the California Current Extension water. The skipjack which appear in the Hawaiian summer are of unusually large size (about 22 pounds). Skipjack of that size are not common in the other major Pacific fisheries. The scientists claim that these large skipjack belong to a different subpopulation than the smaller skipjack which are found throughout the year in the Hawaiian area. At present the Laboratory is endeavoring to discover why the prediction works. In order to do this, a more detailed understanding of the subpopulation structure of the skipjack is needed, plus the various environmental variables which influence the skipjack's movements, availability, and abundance. As a more complete knowledge of skipjack biology is attained it will become possible to relate the Laboratory's observations in the Hawaiian area to the skipjack exploited in other parts of the Pacific. It is possible that the skipjack which support the Hawaiian fishery are also being exploited in

some other fishery or could be exploited in some potential fishery. Investigations of the phenomena related to the predictions have led to several interesting hypotheses. One of these hypotheses concerns the fact the immunogenetic studies have demonstrated that there are at least two subpopulations that enter the Hawaiian fishery. It is hypothesized that the large "season fish" which enter the Hawaiian fishery in the summer belong to one of those subpopulations. The biologists speculate that the increase in catch that occurs during the summer may be due to an increase in availability of the skipjack. It is hypothesized that this increase in availability is associated with the angle of inflection of oceanic currents that pass by the Islands--angles of high inflection produce a turbulent condition which increases the density of skipjack forage at the surface. Increased surface forage results in higher densities of skipjack near the surface and this establishes the possibility of higher yields to the fishermen in years when this combination of conditions prevails. As a fuller understanding of these phenomena is obtained, a store of knowledge is being acquired which will enable the biologists to understand the fluctuations and vagaries of skipjack populations on a Pacific-wide basis.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY 1963:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products were purchased in January 1963 by the Defense Subsistence Supply Centers than in December 1961. The increase was 51.4 percent in quantity and 84.7 percent in value.

Compared with the same month a year earlier, purchases in January 1963 were up 19.3 percent in quantity and 55.2 percent in value. The greater increase in value was due mainly to heavy buying of higher-priced fishery products such as shrimp and oysters in January 1963. Prices paid for fresh and frozen fishery products by the Department of Defense in January 1963 averaged 74.0 cents

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, January 1963 with Comparisons

QUANTITY		VALUE	
January		January	
1963	1962	1963	1962
(1,000 Lbs.)		(\$1,000)	
2,089	1,751	1,546	996

a pound, about 17.1 cents a pound more than was paid in January 1962.



Canned: Canned sardines was the principal canned fishery product purchased for the use of the Armed Forces in January 1963.

Product	QUANTITY		VALUE	
	January		January	
	1963	1962	1963	1962
	.. (1,000 Lbs.) (\$1,000) ..	
Tuna	-	3, 113	-	1, 739
Salmon	3	-	2	-
Sardine	37	3	15	2

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

(2) See Commercial Fisheries Review, May 1963 p. 26.



Fish Meal

CORN-COTTONSEED RATIOS FOR PIGS IMPROVED:

Recent research has demonstrated that corn-cottonseed rations for pigs can be improved by the addition of fish meal to the mixture. When menhaden meal was substituted for a part of the protein of cottonseed meal in a corn-cottonseed ration for pigs, rate of gain, efficiency of feed utilization, and area of the loin eye were improved significantly. Fish meal was substituted for cottonseed meal so as to replace 4 percent of the protein of the latter with fish meal protein. When only 2 percent of the cottonseed protein was replaced by fish meal, the ration was improved, but results were less significant than when 4 percent of the cottonseed protein was replaced by the fish product.

The improvement of corn-cottonseed meal rations at relatively little added expense is a matter of great practical importance in some southern States where cottonseed meal is frequently the least expensive source of protein for livestock.

Cottonseed meal in its original form contains the toxic agent, gossypol, a chemical compound that can injure pigs and some other animals if present in appreciable amounts. Chemical treatment of the meal reduces free gossypol to levels that can be tolerated by pigs. However, whether or not growth is retarded by the small amount of free gossypol remaining is still open to question. In the experiments referred to, although free gossypol in the rations never exceeded 0.0075 percent—a level that would not ordinarily be expected to inhibit growth—the fact that performance was improved by the presence of fish meal possibly may be attributed to an alleviation of a growth-inhibiting effect of gossypol. Another possible explanation of the beneficial effect of fish meal is that the lysine (an indispensable amino acid) in the fish meal may have improved the amino acid balance of the ration.

From a practical point of view, the experiments demonstrate that some corn-cottonseed meal rations can be improved significantly by the addition to the ration of small amounts of fish meal. The experiments were reported at

the Maryland Nutrition Conference, Washington, D.C., March 14-15, 1963, by Professor E. P. Young, University of Maryland and R. R. Kifer, U.S. Bureau of Commercial Fisheries, College Park, Maryland.



Fish Oils

MONO- AND DI-NITRATES DERIVATIVES MAY HAVE INDUSTRIAL USES:

The chemistry of organic nitrates, historically associated with the preparation of explosives, is becoming increasingly important. In contrast to the explosive character of polynitrate esters, such as nitroglycerin and nitrocellulose, mono- and di-nitrates prepared at the Seattle Technological Laboratory of the U. S. Bureau of Commercial Fisheries have been found to be highly stable at elevated temperatures. These nitrates have been prepared from various fish oil fatty acid methyl esters and their derivatives.

These mono- and di-nitrates may show promise as oil and grease additives, as intermediates in the preparation of surfactants and germicides, and for controlling the flash-point of fuels, because of their stability and reactivity under certain conditions.



Fur Seals

PRICES FOR ALASKA SKINS AT SPRING 1963 AUCTION SET ANOTHER RECORD:

The spring auction in 1963 (April 25-26) United States Government-owned fur seal skins yielded close to \$2.95 million. The average price per skin received for male fur seal skins (Black, Kitovi, and Matara) was \$122.52 a new record price. This average price compared with an average of \$107.53 paid at the fall 1962 auction, and was also much higher than the \$106.42 average for skins sold in the spring 1962 auction. However, the average price received for Lakoda or female sheared seal skins was \$43.09 or much lower than the average of \$48.40 received at the fall 1962 auction and slightly lower than the average of \$44.33 received at the spring 1962 auction.

Average prices per skin received for processed male fur seal skins at the spring 1963 auction were (average for fall auction in parentheses): Black, \$125.87 (\$115.99); Kitovi

\$116.81 (\$105.81); Matara, \$121.01 (\$99.04). Prices received at the spring 1963 auction for Japanese-owned fur seal skins as compared with the fall 1962 auction were: Black, \$130.29 (\$121.41); Kitovi, \$116.62 (\$98.10); Matara, \$123.44 (\$100.75). Prices for South African fur seal skins at the spring 1963 auction were: Black, \$73.97; Deep Blue, \$62.28; and Neutral, \$72.20.

Fur seal skins sold in the April 1963 auction amounted to 21,694 conventionally processed male skins and 6,676 Lakoda or sheared female skins.

Note: See Commercial Fisheries Review, January 1963 p. 28 and July 1962 p. 19.



Great Lakes

PUBLIC HEARING ON RESULTS OF STUDIES IN LAKE SUPERIOR:

The results of studies in Lake Superior since its waters were closed to commercial lake trout fishing in June 1962 were discussed at a public hearing in Houghton, Mich., on May 21, 1963, which was scheduled by the Michigan State Conservation Department.

The latest findings on lamprey predation, lake trout stocks and their natural reproduction, and other developments in Lake Superior were outlined by representatives of the Michigan Conservation Department, the U. S. Bureau of Commercial Fisheries, and the Great Lakes Fishery Commission.



Groundfish

FORECAST OF ABUNDANCE ON NEW ENGLAND FISHING BANKS IN 1963:

There will not be too much change in the abundance of groundfish on New England fishing banks during 1963, according to a forecast issued by the Atlantic States Marine Fisheries Commission. The Commission predicts that the cod supply will be at least as good as in each of the previous two years. Haddock abundance on Georges Bank may decline toward the end of 1963. There are indications that both the 1960 and 1961 haddock year-classes are not as strong as the 1958 age group.

The Commission states that no significant change was expected in ocean perch abun-

dance from the previous two years. In the whiting fishery, a large supply of 1961 yearling fish should enter the fishery in 1963. This should provide a supply equal to or greater than that in 1961.



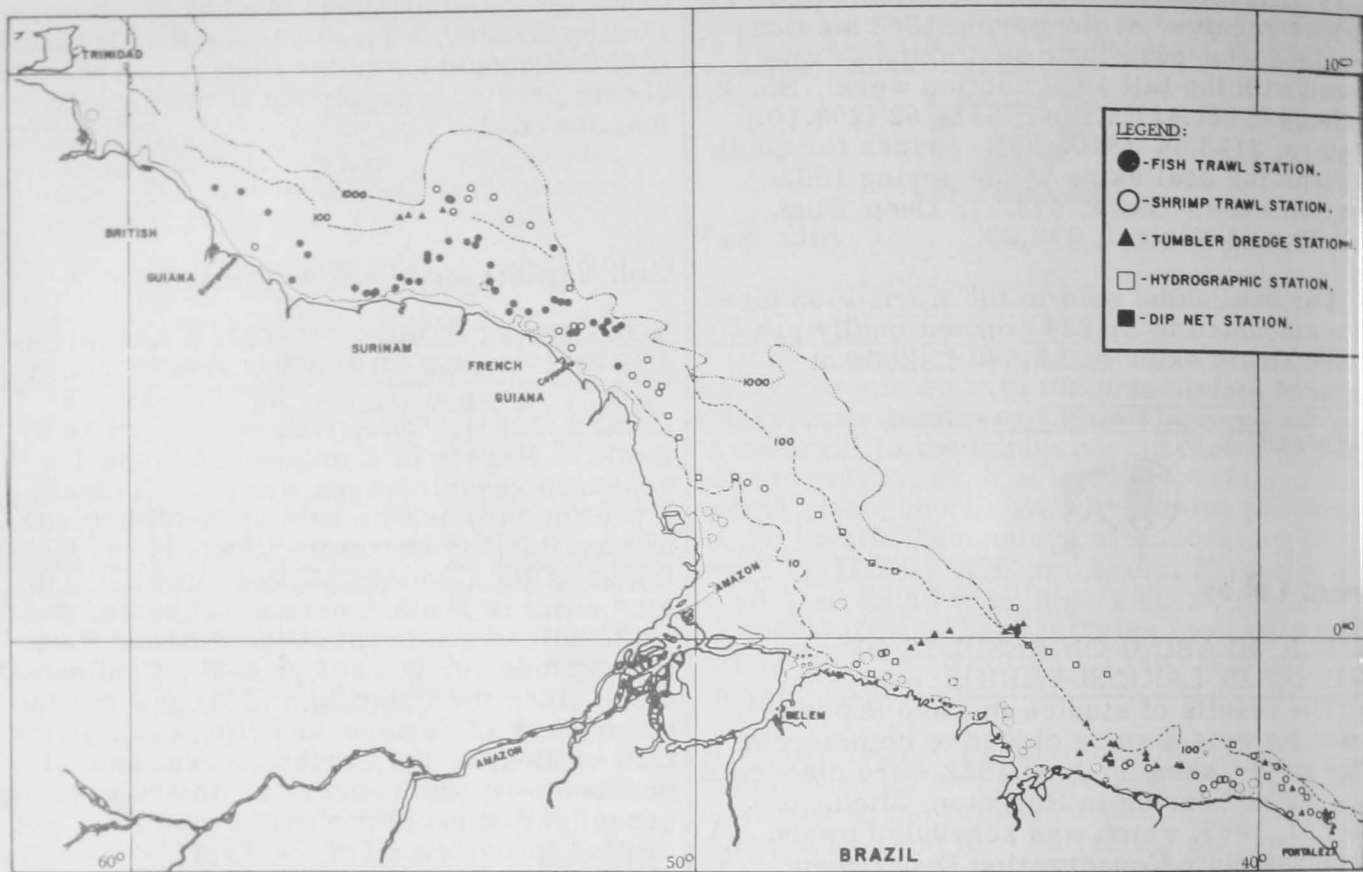
Gulf Exploratory Fishery Program

NORTHEAST COAST OF SOUTH AMERICA SURVEYED FOR SHRIMP AND BOTTOMFISH:

M/V "Oregon" Cruise 84 (February 5-April 6, 1963): Objectives of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Oregon were to: (1) make a preliminary assessment of the distribution and availability to bottom trawls of the food fishes of the Continental Shelf off the northeast coast of South America; (2) extend shrimp explorations southeast of the Amazon River to longitude 40° W., and on to the Continental Slope along the Guianas; and (3) observe the occurrence of surface schooling tunas in the Gulf of Mexico, the Caribbean Sea, and off northeastern South America. In addition, the vessel participated in the International Cooperative Investigation of the Tropical Atlantic (ICITA).

During the first half of the cruise (February 5-March 2), spring season exploratory coverage was obtained of the shrimp resource on the shelf off the Guianas using 2-inch stretched-mesh trawls. Previous explorations in the area (Cruise Nos. 47 and 53) had been made in the fall of 1962. Two areas of commercial pink and brown shrimp potential were located--one off Devils Island, French Guiana, and one off Cabo Orange on the French Guiana-Brazil border. Neither area had been fished by the growing fleet of United States shrimp vessels operating out of Guiana ports. Reports of catches, which ranged from 30 to 70 pounds of 15-count per pound headless shrimp per hour drag, were relayed to the fishing fleet by radio.

Groundfish operations with roller trawls on rough and broken bottom were precluded by the heavy seas created by the spring trade winds and the exposed nature of the area. Smoother bottom, well suited to trawling, appears to prevail generally inside 60 fathoms, and 49 fish-trawl drags completed on this bottom took small lane snapper (Lutjanus synagris) in amounts ranging from 5 to 20 pounds per hour. Between 40 and 60 fathoms, small red and vermilion snapper (Lutjanus

R/V Oregon Cruise 84, February 5 to April 6, 1963.

aya and Rhomboplites aureorubens) were also taken in small numbers. The broken bottom areas immediately adjacent to the 40-60 fathom interval on the shelf edge appears to be promising for roller-rigged trawl fishing in summer and fall when sea conditions are better. Those areas have supported snapper handline fisheries in the past.

Largest fish catches between Georgetown, British Guiana, and Cayenne, French Guiana, were confined to waters shallower than 20 fathoms, where drags with a 65-foot high-opening roller-rigged fish trawl, yielded from 800 to 1,500 pounds of fish per hour. Predominant in the catches were large sea trouts (Cynoscion sp.) and croakers (Micropogon sp.), groupers (Haemulon sp.), and several species of catfishes. Seabobs (Xiphopenus kroyeri), occurred in those catches in amounts ranging from 150 to 300 pounds per hour, and were concentrated out to depths of 35 fathoms between Cayenne and Cabo Orange.

The high resolution white-line fish finder was monitored constantly but only one large midwater fish school was observed, north-

east of Cayenne. Sampling showed that school to be composed of juvenile anchovies and thread herring.

Emphasis during the second half of the cruise was on exploring the shelf south of the Amazon River mouth. Between the Amazon and Fortaleza, Brazil, 35 shrimp trawl and 33 dredge hauls were made, generally in depths of 10-40 fathoms. Beyond the 40-fathom curve a steep escarpment falls directly to 1,000 or more fathoms. Catches of shrimp were small and both brown and white shrimp were present in half of the drags made inside 25 fathoms. East of Parnaiba, drags made on shell bottom caught from 1 to 4 spiny lobsters, and one drag yielded 49 lobsters. Since part of the exploratory fishing activity was conducted adjacent to the recently controversial Brazilian lobster grounds, a Brazilian Naval Officer was assigned to the Oregon for liaison and as official observer.

Nine drags were made in 300-500 fathoms off French Guiana and Surinam where previous Oregon surveys had resulted in small catches of the scarlet shrimp Plesiopenaeus

edwardsianus. Heavy seas prevented adequate fishing trials. Catches ranged from 15 to 20 pounds of the shrimp per hour. The largest haul produced 80 pounds of 3-10 count (per pound heads-on) scarlet shrimp in a 4-hour drag with a 40-foot flat trawl. These results indicate that a combination of the use of high-opening trawls and intensive exploratory fishing in that area may prove the existence of commercially valuable concentrations. This species is being fished commercially off Spain and marketed in the eastern United States. Of particular interest in trawling at these depths was the capture of from one to nine Atlantic king crabs (*Lithodes* sp.) ranging in size from juveniles to 8-10 pounds each.

Forty plankton tows, 69 bathythermograph casts, 104 sea surface radiation temperature observations, and 13 water samples (sediment transport) from the Amazon drainage were obtained throughout the cruise as participants from the University of Miami Laboratory conducted selective faunal sampling during both sections of the cruise for the LCITA project.

Port calls were made at Port of Spain, Trinidad; Cayenne, French Guiana; Belem, Brazil; Fortaleza, Brazil; and Georgetown, British Guiana. Talks with United States shrimp producers and fishermen at many of these ports reveal that there are from 40 to 50 United States shrimp trawlers working out of Georgetown and indicate that the fleet now working the Guiana shrimp grounds ranges from 100 to 150 vessels.



Gulf Fishery Investigations

Some of the highlights of studies conducted by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries during January-March 1963:

SHRIMP FISHERY PROGRAM: Shrimp Spawning Populations: Ovary studies were made on brown shrimp taken from an area between Freeport, Tex., and Cameron, La., during July-December 1962. The shrimp were taken at 15 and 25 fathoms. Females in a spawning or recently-spent condition averaged 20-25 percent of the total sample from both depth zones. In general, the ovary conditions noted in brown shrimp in the same area during 1961 agree with the observations of ovary conditions made in 1962.

Shrimp Larval Studies: A total of 150 plankton samples collected in August, September, and October 1962

were examined for penaeid larvae. The relative abundance of larvae in all statistical areas was greater than at any previous period in 1962. This was thought to be a general indication of increased spawning activity. Larval abundance was consistently greater in statistical areas 17-21 than in areas 13-16, with the exception of area 13 in August. Most larvae were taken at the 25-fathom stations, although the increase in abundance was noted at all depth zones.

The larvae caught during the period primarily represented non-commercial species (*Trachypeneus*, *Sicyonia*, *Solenocera*, and *Parapenaeus*). *Penaeus* larvae, although comparatively fewer in number, also exhibited greater abundance than in the preceding seasons.

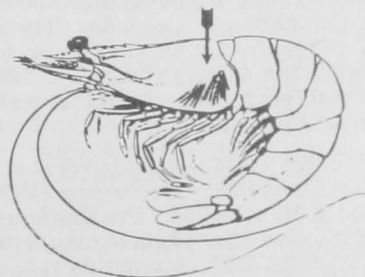
Shrimp Postlarval Studies: Additional monitoring stations for the collection of postlarval shrimp were established during the quarter. Samples are now obtained routinely with standard collecting gear at Port Isabel, Aransas Pass, and Sabine Pass (Tex.); Caminada Pass (La.); Bay St. Louis (Miss.); and Mullet Key, Tampa Bay, (Fla.). The postlarval monitoring stations will provide data that will be used to assess the reliability of derived measures of postlarval abundance which show promise in forecasting shrimp-fishing conditions along the northern Gulf coast.

Bait Shrimp Fishery: The estimated commercial bait shrimp catch in Galveston Bay in 1962 amounted to a record 1,062,900 pounds, up 45 percent from the amount taken in 1961 for bait purposes. In the first 2 months of 1963, bait shrimp production was 76 percent greater than in the same period of the previous

STAINED SHRIMP 50¢ REWARD

Shrimp have been marked with blue, green and red biological stains — in order to obtain information on migrations and growth. The color appears only on both sides of the head (in the gills) as shown in the illustration.

Look for color here



A reward of 50¢ will be paid for stained shrimp when returned with the following information:

1. Exact place the shrimp was caught.
2. Date the shrimp was caught.

NOTIFY BY MAIL THE U.S. FISH AND WILDLIFE SERVICE, BIOLOGICAL LABORATORY, P.O. BOX 3098, GALVESTON, TEXAS, OR CONTACT ANY FISH AND WILDLIFE SERVICE AGENT OR REPRESENTATIVE.

Stained shrimp must be verified by Fish and Wildlife Service biologist before payment. The stains used are approved for this use by the Food and Drug Administration.

Fig. 1 - Reward poster for return of stained shrimp.

year. Bait shrimp fishing slowed considerably in February 1963 due to unusually cold weather. Incomplete reports indicated that juvenile white shrimp were taken in considerable quantities in March 1963.

Migrations, Growth, and Mortality of Brown and White Shrimp: Of the 2,431 stained and 1,690 tagged brown shrimp released off the Texas coast in April 1962, 153 (6.3 percent) stained and 87 (5.2 percent) tagged individuals had been recovered by the end of the first quarter of 1963. Three stained shrimp were recaptured that had been at liberty more than $8\frac{1}{2}$ months. The returns indicated that the adult brown shrimp under study did not move great distances. Their movement was random, and they comprised a single population.

Two mark-recapture experiments with white shrimp started during September 1962 involve 1,905 stained shrimp released west of Vermilion Bay, La., and 2,291 stained shrimp released off Cameron, La.

As of mid-March 1963, 200 (9 percent) of the marked shrimp from the Cameron study had been recovered, and 75 (4 percent) had been returned from the Vermilion Bay experiment. For the period indicated, it appears that movement of the species was restricted, and only one population was involved. Weight-at-age data suggest that white shrimp during the fall increase in size from 120 millimeters (50-count) to about 135 millimeters (35-count) in 2 weeks, and to 160 millimeters (20-count) in 8 weeks.

Several groups of shrimp were stained first with a fast green dye to provide a primary mark, and then treated with various fluorescent pigments to determine the longevity of the materials as secondary marks. After 100 days, the fluorescent marks were as vivid as when they were first injected into the shrimp. Initial mortality occurred within 24 hours after marking and was attributed to handling and not to any effects of the fluorescent material. Omitting the initial mortality, it appears that the fluorescent pigments have no long-term adverse effect on survival.

Migrations, Growth, and Mortality of Pink Shrimp: In August and September 1962, a total of 19,860 small pink shrimp were stained and released at Indian Key, Fla., which lies about midway between the Sanibel and Tortugas fishing grounds. By the end of the first quarter of 1963, a total of 36 representatives of that group had been returned--26 were recovered on the Sanibel grounds and 10 on the Tortugas grounds. The distribution of recoveries suggests that the shrimp on both fishing grounds represent the same population. Shrimp which occupy the interlying area are not accessible because of untrawlable bottom.

About 33 percent of the 2,350 marked pink shrimp released on the Tortugas grounds in December 1962 had been recovered by the end of March 1963. Preliminary analysis of recovery and associated effort data for the first 7 weeks of the experiment indicates that the monthly rate of fishing mortality was about 29 percent and the monthly loss from all other causes was roughly 48 percent. In an effort to determine the proportion of marked shrimp that might have been overlooked during processing ashore, stained shrimp were planted in selected landings at various packing houses. The shrimp were given an inconspicuous secondary mark for identification purposes. On the average, 25 percent of the planted shrimp were not detected.

Growth per month from an initial length of 133 millimeters was estimated at $4\frac{1}{2}$ millimeters for males



Fig. 2 - Shrimp being stained as part of the investigations on shrimp migration.

and females combined. The movement of the marked shrimp was generally eastward into deeper water.

Population Dynamics: Commercial fishery statistics were analyzed in order to extend previous statistical studies carried out in 1956-1959 on shrimp densities in the Gulf. It is anticipated that continuous records of this type, summarized at frequent intervals, will provide further insight into relationships between shrimp abundance and major oceanographic events and fishing practices.

Preparations were made for mesh-selection studies designed to provide comparative information on the fishing characteristics of variously constructed (commercial-type) trawling gear, when such gear is viewed from the standpoint of the efficiency with which it samples shrimp populations.

Commercial Catch Sampling: During the first quarter of 1963, agents stationed at Brownsville, Aransas Pass and Galveston (Tex.); Morgan City and Houma (La.); Pascagoula (Miss.); and St. Petersburg (Fla.), examined 36,600 shrimp samples from the catches of 266 vessels to determine the species, sex, and size composition of commercial shrimp landings.

On the basis of those samples and without regard to differences between areas and species, 70 percent of the total fishing effort was expended, and 72 percent of the vessel catch was made during the hours of darkness. The catch of shrimp per hour's fishing averaged 21 pounds during the day and 23 pounds at night. About 31 percent of the night fishing was for brown and pink shrimp, usually in waters deeper than 10 fathoms. Thirty-five percent of the catch was taken from depths of 10 fathoms or less, 18 percent from 10-20 fathoms, and 46 percent from waters deeper than 20 fathoms.

ESTUARINE PROGRAM: Ecology of Western Gulf Estuaries: At the beginning of the quarter, a revised scheme of sampling the Galveston Bay estuarine system was initiated. The system is now divided into 9 sub-areas, each characterized by 2 to 5 habitat types. Sixty-five separate locations are sampled semimonthly for hydrological data and biological material (table 1). Su

plementary data are provided from an additional 36 stations established by the U. S. Corps of Engineers

Subarea	No. of Stations	Habitat Type				
		Channel	Open Water	Shore-line	Bayou	Special
Gulf of Mexico	2	1/1	1	-	-	-
Tidal Pass	4	1/2	2	-	-	-
Lower Galveston Bay	14	1/2	4	4	2	2/2
Upper Galveston Bay	10	1/2	4	2	2	-
Mouth of San Jacinto River	5	1/1	2	2	-	-
Trinity Bay	14	1	5	6	2	-
East Bay	14	1	4	6	2	2/1
Intra-coastal Waterway	2	2	-	-	-	-
System Total	65	12	22	20	8	3

1/Houston Ship Channel.
2/Stations at which only hydrological measurements are being taken.

Biological populations being sampled for density (or abundance) measurements include those of various fishes, crustaceans (particularly shrimp and crabs), and certain molluscs. All life history stages, larvae through adult, are receiving attention. Observations or measurements of hydrological factors include those of water temperature, salinity, turbidity, water circulation and elevation, tidal stage, and bottom composition. In addition, detailed analyses of water quality at sampling locations will be conducted by the Texas Water Pollution Control Board.

Both hydrological and biological data are being tabulated for each station and then combined for analysis of conditions within specific subareas and habitat types, or any combination of subareas and habitat types, on the basis of 2-week, 2-month, 3-month, seasonal, and annual increments of time.

Preliminary analysis of hydrological data for the first quarter of 1963 has been completed. Table 2 illustrates the temperature and salinity gradients between

Subarea	No. of Stations	Salinity (‰)			Temperature (°C.)		
		Avg.	Min.	Max.	Avg.	Min.	Max.
Gulf of Mexico	2	31.6	29.1	34.2	12.6	8.7	18.5
Tidal Pass	4	26.5	18.4	31.9	13.0	9.6	20.5
Lower Galveston Bay	14	21.1	13.3	28.0	12.5	0.4	23.9
Upper Galveston Bay	10	15.8	9.8	20.1	12.1	3.2	21.1
Mouth of San Jacinto River	5	14.8	8.8	19.3	13.3	5.7	21.3
Trinity Bay	14	9.9	0.4	16.6	11.7	3.6	19.2

¹Preliminary.

the Gulf of Mexico and Trinity Bay. The salinity gradient held for both minimum and maximum salinity conditions. As expected, the greatest variation occurred in Trinity Bay, nearest the source of fresh water, and Lower Galveston Bay, nearest the source of salt water.

Considerable temperature variation occurred throughout the system. Extremely low water temperatures were recorded in both January and February when values as low as 0.4° C. were obtained in the open, shallow waters of lower Galveston Bay. During the same period, the bottom temperature in the deeper water of the Houston Ship Channel reached a low of 6.6° C. Due to their short duration, the low temperature levels did not cause any extensive fish kills in the Galveston Bay system. Most species of fish and crustaceans were temporarily stunned, however, and readily captured by sampling gear.

Preliminary analysis of the first quarter's hydrological data indicates that the Houston Ship Channel

effectively separates the east and west portions of lower and upper Galveston Bay, as well as the area at the mouth of the San Jacinto River. Salinity differences of as much as 7‰ occurred in open bay water adjacent to either side of the channel. Treatment and analysis of both hydrological and biological data will necessarily take into account this artificial division.

Effects of Engineering Projects: During the quarter, 57 appraisals were made of engineering and mineral development projects potentially affecting fishery resources in Texas coastal waters. The majority resulted from the 104 Corps of Engineers public notices and letters received during the quarter. As directed by the present system of coordination, the results of the appraisals were sent to the Branch of River Basin Studies, U. S. Fish and Wildlife Service, and the Texas Game and Fish Commission. Sections pertaining to coastal fishery resources in 21 U. S. Bureau of Sport Fisheries and Wildlife draft reports on water development projects were received for review.

Most of the Corps of Engineers public notices dealt with Department of the Army private permits for mineral development, channel dredging or bulkheading, and filling. Such projects frequently require modification to minimize possible damage to the estuarine environment and its dependent fishery resources. When this is the case, recommendations for corrective action are sent to the Branch of River Basin Studies, which in turn requests the Corps of Engineers to require the applicant to modify the original plans. When oyster leases or extremely valuable estuarine habitat may be involved, the Corps is requested to have the applicant obtain approval from the Texas Game and Fish Commission before initiating the proposed project.

Considerable attention was given to two projects which may have extremely adverse effects upon the estuarine environment. They are the Matagorda Bay Ship Channel and Texas Basins Projects.

The Matagorda Ship Channel Project, now under way, provides for the enlargement and partial relocation of the channel itself. Model tests indicate a possible increase in bay salinity due to the greater size of the channel and the planned distribution of spoil in the lower bay. Should the salinity increase be unacceptable, remedial action would be required. Possible solutions are being studied.

The Texas Basins Project includes a proposal for numerous upland reservoirs and a water transport canal to divert the flow from major streams in east Texas to west Texas. Such a project would reduce the tributary inflow into most Texas estuarine systems. During drought years, this reduction could be critical, particularly in view of other water demands which are expected in the future. Thus, the Texas Basins Project would compound an already critical problem. The review of the project disclosed the need to establish preliminary average and minimum flow requirements for all major estuarine systems in the State, except Laguna Madre which the project would not affect.

INDUSTRIAL FISHERY PROGRAM: Commercial Catch Sampling: Excluding menhaden, the industrial fish catch in 1962 rose 27 percent to a record of nearly 50,000 tons. Approximately 875 more fishing trips in 1962 than in the previous year accounted for the larger

catch. The catch per fishing hour in 1962 approached 0.6 tons which was almost the same as in 1961. The Atlantic croaker continued to constitute roughly 58 percent of the total catch. Spot accounted for 9 percent of the catch in 1962; the sand seatrout, 6 percent, and the Atlantic cutlassfish, 5 percent.

A gross analysis of four years of industrial fishery catch and effort statistics was completed. The data revealed that the relative abundance of each of the major species (using the catch per hour as an index) remained about the same, whereas fishing effort increased measurably. Continued surveillance of the fishery will reveal whether or not the increasing fishing intensity has begun to adversely affect the resource potential.

Commercial landings continued to be sampled for biological material which is needed to complete life history studies on the major species, particularly the Atlantic croaker, supporting the industrial bottomfish fishery.

Distribution and Abundance of Western Gulf Bottomfishes: Quantitative and qualitative processing of fish samples collected on survey cruises conducted under the Shrimp Fishery Program during 1962 was resumed.

Table 3 - Finfish Catch per Unit of Effort During Survey Cruises - 1962

Area and Depth (fms.)	Catch in Pounds per Hour of Fishing ^{1/}				
	Jan.-Mar.	Apr.-June	July-Sept.	Oct.-Dec.	Year 1962
<u>Off Texas (San Luis Pass to Brazos Santiago):</u>					
7 $\frac{1}{2}$	20	60	100	95	70
15 $\frac{1}{2}$	50	25	40	135	65
25	105	70	85	165	110
35	75	95	70	150	100
45	110	90	80	145	110
60	105	75	65	105	90
<u>Off Louisiana (Calcasieu Pass to Southwest Pass):</u>					
7 $\frac{1}{2}$	190	270	585	2/670	385
15 $\frac{1}{2}$	275	190	380	415	305
25	250	135	175	320	220
35	155	120	170	250	170
45	160	80	120	135	130
60	105	95	70	50	80

^{1/}Trawling with 45-foot (flat), 2-inch mesh trawl with rollers.
^{2/}Less than 10 hours' effort.

A preliminary analysis of the total catch (all species combined) shows that in waters of less than 40 fathoms, there was a much higher average catch of bottomfish off Louisiana than off Texas (table 3). The catch per unit of effort in the shallowest waters sampled (7 $\frac{1}{2}$ fathoms) was more than five times greater off Louisiana.

At the start of 1963, the sample collecting methods were revised to improve the preservation of sample material and to increase the size of each sample. Many fish specimens are being retained for a reference collection and display.

BEHAVIOR PROGRAM: Tolerances: Completion of 4 constant-temperature rooms and acquisition of additional laboratory space permitted the first large-scale study of the combined influence of salinity and temperature on the survival of postlarval shrimp. Seven levels of temperature (30°, 50°, 130°, 210°, 300°, 350°, and 430° C.) and eight levels of salinity (2‰, 5‰, 10‰, 18‰, 25‰, 35‰, 40‰, and 45‰) were tested in the 56 possible combinations. Each 2-factor combination was evaluated in terms of the survival of 30 postlarvae (probably *Penaeus aztecus*) exposed to the experimental condition for 24 hours. Each of the 1,680

experimental shrimp was enclosed in a small cage which prevented the specimen from jumping out of the water or becoming a victim of cannibalism. The shrimp were introduced directly into the experimental salinity-temperature conditions without prior acclimation.

The results of the study, which demonstrated no survival at 30° or 430° C. regardless of salinity, support and extend the evidence from previous work. The over-all range of salinity-temperature conditions in which 100 percent survival was obtained proved somewhat narrower than that observed in past studies. Since the earlier work involved acclimation periods of about eight hours during which the experimental subjects were gradually brought from holding-tank conditions to the levels to be tested, the difference between the previous and present results may be due to the influence of acclimation.

Preliminary observations indicate that the Atlantic croaker (*Micropogon undulatus*) can be studied successfully in a vertical salinity gradient. After a few minutes of active efforts to escape the equipment, the fish become much quieter and exhibits a very definite zone of preference. This work will be continued.

Growth and Metabolism: An experiment testing the effects of both temperature and salinity on the growth of postlarval shrimp was begun. Five levels of salinity (2‰, 5‰, 15‰, 25‰, and 35‰) are being tested at each of four levels of temperature (11°, 18°, 25°, and 32° C.). Each experiment starts with 100 post-larvae.

During the quarter, results with postlarvae tentatively identified as *Penaeus aztecus* showed that at the highest temperature level (32° C. or 89.6° F.), mortality during adjustment of the test medium began when the salinity level reached 15‰ and continued as the level was further reduced to 5‰ and 2‰. Mortality after 5 days was 15 percent at 15‰, 25 percent at 5‰, and 45 percent at 2‰.

At the lowest test temperature level (11° C. or 51.8° F.), no mortality occurred until the salinity reached 2‰. But at that point, 75 percent of the specimens died within the first 24-hour period, while an additional 20 percent died with the second 24-hour period. In a 5‰ medium at the same temperature, a mortality of only 5 percent was observed during the same 48-hour period. The effect of low salinity was evident even at 18° C. (64.4° F.), at which 15 percent of the specimens died during the 48 hours following adjustment to 2‰.

The data indicate that high salinity levels (within the range of those tested) are better tolerated by postlarval shrimp at all temperatures than are very low salinity levels.

Marked differences in growth and food intake were noticeable even after 5 days. Specimens at intermediate salinity levels (5‰-25‰) and 32° C. had doubled the weight, whereas those at the extreme salinity levels (2‰ and 35‰), and all animals at 25° C. (77.0° F.), had increased their weight by 60-70 percent. Specimens tested at 18° C., however, had weight gains averaging only 30 percent, and those at 11° C., only 10 percent. The rate of growth is a direct reflection of the amount of food consumed. Specimens at 32° C. ingested 10

times the quantity of food taken by those at 11° C., and 4 times that consumed by specimens tested at 18° C.

SPECIAL REPORTS: Chemistry and Sea-Water Laboratory Services: Considerable time was spent testing the two N-ethyl carbazole methods for determining carbohydrate levels. The results of preliminary tests indicated that the older of the two methods gives considerably higher results. The difference between the methods, which is on the order of several magnitudes, might be the factor responsible for the conflicting conclusions of investigators who have attempted to correlate carbohydrate concentrations with various biological activities.

Additional work was done on the ammonia stabilization experiments which were started in 1962. Thus far, indications are that the ammonia content in samples of marine and estuarine water can be stabilized for many months by refrigeration.

Preliminary investigation of two methods of determining nitrite concentration indicated a serious lack of agreement. This disagreement, together with the divergent carbohydrate techniques mentioned above, suggests the possibility that some methods of sea-water analysis are not necessarily applicable when assaying samples from coastal or estuarine environments.

Control of Harmful Organisms: This project involves the development of chemical methods for the control of the red-tide organism, *Gymnodinium breve*. The study was expanded by adding a phase which entails evaluating the effects of the seven most selectively toxic chemicals on test cultures in Florida coastal water. Samples of Florida water from areas frequented by the red tide organism were received, and testing was scheduled to begin as soon as suitable cultures could be established.

CONTRACT RESEARCH: Life History of Late Postlarval and Juvenile Shrimp in the Everglades National Park Nursery Grounds: The special sampling net used in the Buttonwood Canal at Flamingo, Fla., was modified, and a second net has been built to correct difficulties in the fishing operation.

Ten sampling periods were completed in January-March 1963, during which 104 samples were taken. Several relationships between shrimp abundance and variation in the environment began to appear. The mean numbers of juvenile shrimp caught on flooding currents were low compared to the numbers caught on ebbing currents. No shrimp were caught during full daylight. Temperature data, although sparse, indicated a relationship between low temperatures and large migrations out of the nursery area. The modal size of the sampled shrimp did not change greatly during the sampling period under consideration.

Abundance and Distribution of Larvae of the Pink Shrimp on the Tortugas Shelf of Florida: Three plankton collecting trips to the Tortugas shelf and eight to Buttonwood Canal near Flamingo, Fla., were made during the quarter. Pink shrimp larvae were scarce, which was to be expected during the winter season. A new device for positioning plankton nets at specified depths, the acoustical depth indicator, was successfully tested.

A report on the distribution of pink shrimp larvae in the waters of the Tortugas shelf between 1959 and 1962 was completed.

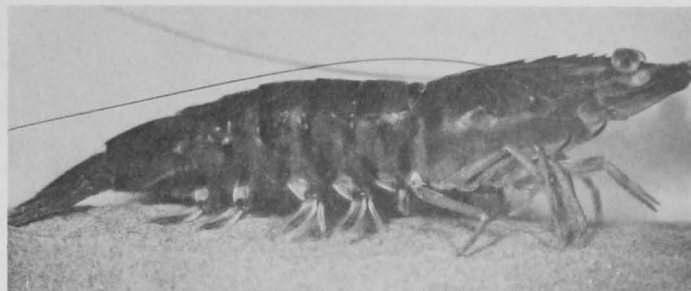


Fig. 3 - Pink shrimp, *Penaeus duorarum*.

Abundance of Postlarval Shrimp in Mississippi Sound and Adjacent Waters: Additional sampling stations were selected during the quarter, bring the total to 16 as of the end of February. The average sample catch of brown shrimp postlarvae gradually increased from less than 1 in January and February to nearly 6 in March. Considerable variability in numbers of postlarvae was noted between stations. Net hauls at most barrier island stations, for instance, produced no postlarvae.

Postlarval Populations of White Shrimp and Brown Shrimp with Respect to Season and Area in Vermilion Bay, La: This research was not activated until mid-February 1963. Progress was made on ordering and modifying equipment. A total of 6 of the proposed 8 sampling stations in Vermilion Bay were established. At three of those stations, samples were taken regularly. Thus far, large numbers of mysid shrimp larvae, grass shrimp, and some postlarval penaeid shrimp have been collected. The penaeids have all been identified as brown shrimp.

Seasonal Distribution Patterns of Adult and Larval Shrimp in Aransas Pass (Tex.) Inlet: This contract was awarded in early March 1963. The research will be conducted by the University of Texas Institute of Marine Science at Port Aransas, Tex.

Note: See *Commercial Fisheries Review*, February 1963 p. 32.

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SHRIMP DISTRIBUTION STUDIES:
M/V "Gus III" Cruise GUS-3 (March 26-April 7, 1963): Catches were moderate during

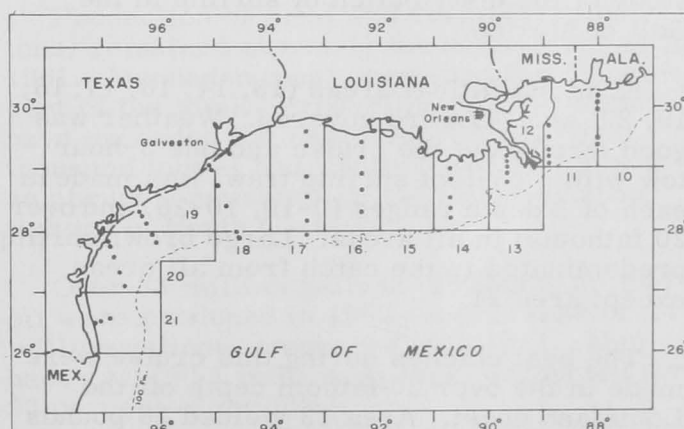


Fig. 1 - Shows the station pattern for the shrimp distribution studies in the Gulf of Mexico during 1963.

this cruise off the coast of Louisiana and Texas by the chartered vessel Gus III. The

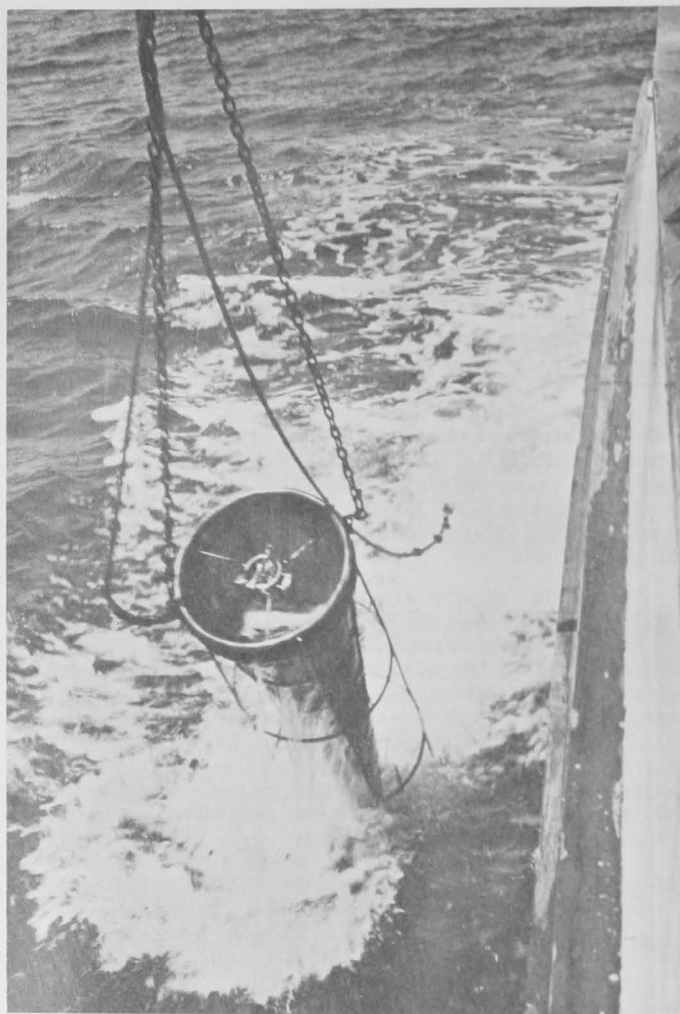


Fig. 2 - A Gulf V plankton sampler being hauled aboard after a shrimp larvae sampling tow has been completed.

vessel (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries) was engaged in a continuing study of the distribution of shrimp in the Gulf of Mexico.

Eight statistical areas (13, 14, 16, 17, 18, 19, 20, and 21) were covered. Weather was good throughout the cruise and one 3-hour tow with a 45-foot shrimp trawl was made in each of 3 depth ranges (0-10, 10-20, and over 20 fathoms) in all areas. Large brown shrimp predominated in the catch from all areas, except area 21.

The best catches during this cruise were made in the over 20-fathom depth off the Louisiana coast. Area 13 yielded 16 pounds of 15-20 count brown shrimp from over 20 fathoms, 9 pounds of 15-20 count white shrimp from the 10-20 fathom depth, and 3 pounds of 21-25 count white shrimp from less than 10 fathoms.

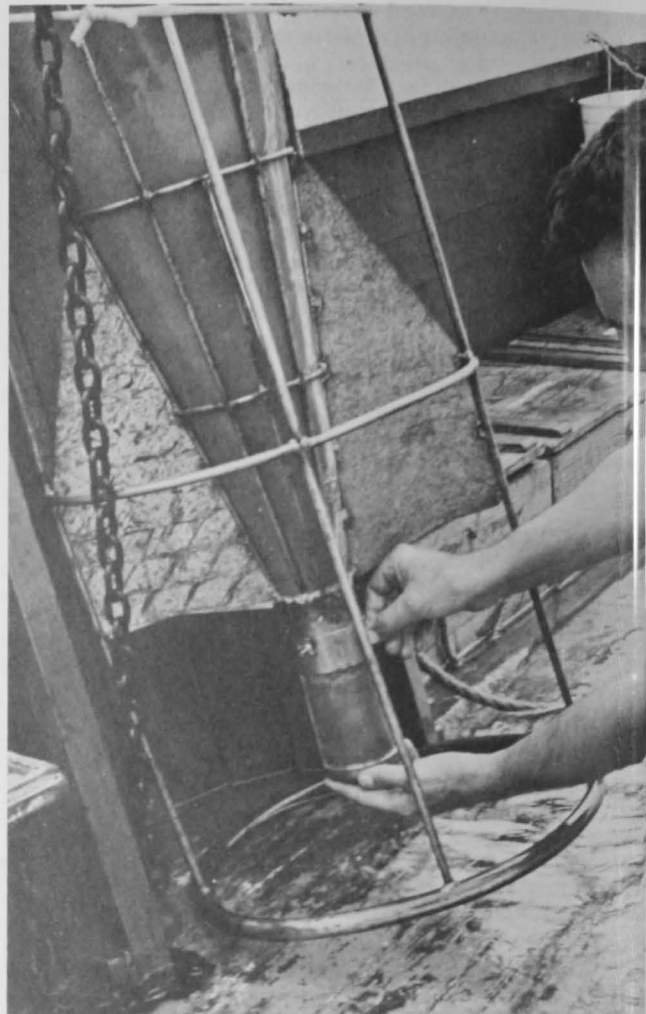


Fig. 3 - Removing the sample cup from a Gulf V plankton sampler.

In area 14, a catch of 16 pounds of 12-15 count brown shrimp was made in over 20 fathoms, and 2 pounds of 21-25 count white shrimp were taken in the under 10-fathom depth.

The tows in area 16 yielded 9 pounds of 12-15 count brown shrimp from the over 20 fathom depth, 3 pounds of 15-20 count brown shrimp from the 10-20 fathom range, and 1 pound of 21-25 count white shrimp from the less than 10-fathom depth.

Area 17 yielded 24 pounds of 12-15 count brown shrimp from over 20 fathoms, and 1 pound of 21-25 count white shrimp from under 10 fathoms.

Off the Texas coast, the best catch consisted of 24 pounds of 15-20 count brown shrimp from the 10-20 fathom range in area 19. The area also yielded 1 pound of 31-40 count brown shrimp and 4 pounds of 21-25

count white shrimp from the under 10-fathom depth.

In area 21 (off Brownsville, Tex.), the catch from under 10 fathoms consisted of 10 pounds of 26-30 count white shrimp and 3 pounds of 26-30 count pink shrimp. In the same area, 3 pounds of 15-20 count brown shrimp were taken in the 10-20 fathom range.

The catch was light in other areas off the Texas coast.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the numbers of heads-off shrimp per pound.

(2) See Commercial Fisheries Review, May 1963 p. 29.



Hawaii

FISH AND SHELLFISH LANDINGS, 1961-1962:

Commercial landings of fish and shellfish in the State of Hawaii were down 9.0 percent in quantity and 2.7 percent in value from those in 1961. The decline was due mainly to a drop in the catch of skipjack tuna which makes up the bulk of the Hawaiian landings.

The Island of Oahu was the State's leading fishery center in 1962 with a total catch of 10,144,580 pounds. The Island of Hawaii was in second place with a catch of 1,567,198 pounds, followed by the Island of Maui with a catch of 1,210,191 pounds. The remainder of the catch was landed at ports on the Islands of Lanai, Kauai, and Molokai. (Hawaiian Department of Land and Natural Resources, Honolulu, April 9, 1963.)

Species	1962		1961	
	Quantity 1,000 Lbs.	Value \$1,000	Quantity 1,000 Lbs.	Value \$1,000
Tuna and Tunalike Fish:				
Albacore	16.7	4.0	13.6	4.1
Big-Eyed	1,220.8	598.1	1,037.4	507.6
Yellowfin	396.8	143.0	459.0	168.4
Skipjack	9,415.4	1,174.0	10,951.3	1,306.7
Bonito or little tuna	13.3	2.4	2.0	0.4
Total tuna and tunalike fish	11,063.0	1,921.5	12,463.3	1,987.2
Other fish and shellfish	2,106.7	897.8	2,008.5	909.8
Grand Total	13,169.7	2,819.3	14,471.8	2,897.0

Note: See Commercial Fisheries Review, May 1963 p. 30 and January 1963 p. 33.

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SKIPJACK TUNA LANDINGS, JANUARY-MARCH 1963:

Skipjack tuna landings in Hawaii during March 1963 were about 170,000 pounds or 110,000 pounds below the 1948-1962 average landings for the month. Individual vessel catches per trip ranged from 77 pounds to 6,681 pounds. Most of the fish taken were caught during the first 2 weeks of March.

Cannery records of weight composition showed that 11 percent of the skipjack landed during March 1963 were small, 43 percent were small-medium, 27 percent were medium, and 19 percent were large. A night-sampling program has been undertaken by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu to collect length frequencies from tuna which are sold on the fresh fish market and are therefore not available for cannery measurements.

Total estimated landings of skipjack tuna in January-March 1963 amounted to 800,000 pounds, which was 40,000 pounds above the average first quarter landings during 1948-1962.



Industrial Fishery Products

U. S. PRODUCTION, 1962:

The production of industrial fishery products by 158 plants in the United States, American Samoa, and Puerto Rico in 1962 was valued at \$75.4 million--an increase of \$869,000 compared with 1961.

Production of meal and scrap (311,000 tons) remained at nearly the same level as in 1961. Menhaden meal accounted for 77 percent of the total. Production of meal would have exceeded the 1961 record by several thousand tons if bad weather had not caused an abrupt termination of the fall menhaden fishery in North Carolina.

Over 33 million gallons of marine animal oil were produced in 1962--a decrease of 1.4 million gallons, compared with 1961. Menhaden oil (30.7 million gallons) accounted for 93 percent of the total.

Although production of solubles and homogenized condensed fish increased from 112,000 tons in 1961, to 124,000 tons in 1962, produc-

was well below the 165,000 tons in 1959. Some solubles were incorporated into fish meal rather than being sold separately.



United States supply of fish meal, 1952-62.

Products from oyster shells and buttons from fresh-water and marine mollusk shells were valued at \$ 8.6 million in 1962--a decrease of \$805,000, compared with the previous year. Other industrial products manufactured included agar-agar, fish-feed pellets and animal feeds, glue, Irish moss extract, kelp products, liquid fertilizer, mollusk-shell lime, pearl essence, and crab shells valued at \$13.4 million.

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January-February 1963: Based on domestic production and imports, the United States available supply of fish meal for January-February 1963 amounted to 63,713 short tons--14,669 tons (or 29.9 percent) more than during the same period in 1962. Domestic production was 334 tons (or 7.0 percent) more, and imports were 14,335 tons (or 32.4 percent) higher than in the same period in 1962. Peru continued to lead other countries with shipments of 46,631 tons.

The United States supply of fish solubles (including homogenized fish) during January-February 1963 amounted to

U. S. Supply of Fish Meal and Solubles, January-February 1963 with Comparisons

Item	Jan.-Feb.		Total 1962
	1/1963	1962	
..... (Short Tons)			
Fish Meal and Scrap:			
Domestic production:			
Menhaden	-	2/	243,839
Tuna and mackerel	3,930	2,928	20,874
Herring	-	2/	3,543
Other	1,202	1,870	41,744
Total production	5,132	4,798	310,000

(Table continued on opposite column)

Item	Jan.-Feb.		Total 1962
	1/1963	1962	
..... (Short Tons)			
Imports:			
Canada	5,794	5,757	42,800
Peru	46,631	35,231	186,240
Chile	3,800	1,157	9,240
Angola	575	-	-
So. Africa Republic	1,450	2,000	10,000
Other countries	331	101	3,900
Total imports	58,581	44,246	252,300
Available fish meal supply	63,713	49,044	562,300
Fish Solubles:			
Domestic production 3/	2,664	3,203	123,400
Imports:			
Canada	212	208	1,300
So. Africa Republic	-	-	1,700
Other countries	105	2,314	3,200
Total imports	317	2,522	6,300
Available fish solubles supply ..	2,981	5,725	129,700

1/Preliminary.

2/Included with "other."

3/50-percent solids. Includes production of homogenized condensed fish.

2,981 tons--a decrease of 2,744 tons as compared with the same period in 1962. Domestic production and imports dropped 16.8 percent and 87.4 percent, respectively.

U. S. FISH MEAL, OIL, AND SOLUBLES:

Production, February 1963: During February 1963 a total of 2,847 tons of fish meal and scrap and 324,000 pounds of marine-

Table 1 - U. S. Production of Fish Meal, Oil, and Solubles, February 1963 1/with Comparisons

Product	February		Jan.-Feb.		Total 1963
	1/1963	1962	1/1963	1962	
..... (Short Tons)					
Fish Meal and Scrap:					
Herring	-	-	2/	2/	243,839
Menhaden 3/	-	-	-	-	243,839
Sardine, Pacific	3	234	9	689	243,839
Tuna and mackerel	2,222	1,287	3,930	2,928	20,874
Unclassified	622	545	1,193	1,181	41,744
Total	2,847	2,066	5,132	4,798	310,000
Shellfish, marine-animal meal and scrap ..	4/	4/	4/	4/	310,000
Grand total meal and scrap	4/	4/	4/	4/	310,000
Fish solubles	1,223	1,476	2,614	3,073	123,400
Homogenized condensed fish	-	90	50	130	123,400
..... (1,000 Pounds)					
Oil, body:					
Herring	-	-	2/	2/	243,839
Menhaden 3/	-	-	-	-	243,839
Sardine, Pacific	-	38	-	148	243,839
Tuna and mackerel	254	269	544	562	20,874
Other (including whale)	70	74	204	401	41,744
Total oil	324	381	748	1,111	255,000

1/Preliminary data.

2/Included in "other" or "unclassified."

3/Includes a small quantity of thread herring.

4/Not available on a monthly basis.

Note: Beginning with February 1963, fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.

animal oils was produced in the United States. Compared with February 1962, this was an increase of 781 tons or 37.8 percent in meal and scrap production, but a decrease of 57,000 pounds or 15 percent in oil.

Tuna and mackerel meal amounted to 2,222 tons--accounting for 78 percent of the February 1963 meal total. Oil from tuna and

mackerel (254,000 pounds) comprised 78 percent of the February 1963 oil production.

A total of 1,223 tons of fish solubles was produced in February 1963--a decrease of 1.7 percent as compared with February 1962.

* * * * *

Major Indicators for U. S. Supply, March 1963: United States production of fish oil

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, March 1963					
Item and Period	1963	1962	1961	1960	1959
..... (Short Tons)					
Fish Meal:					
Production 1/:					
May	-	42,374	32,922	17,194	25,312
April	-	6,311	6,179	5,076	6,810
March	2,731	2,495	2,751	2,955	2,122
Jan.-Feb.	5,132	4,798	4,794	4,366	5,223
Jan.-Dec. prelim. totals 2/	-	288,336	289,039	257,969	275,396
Jan.-Dec. final tots.	-	310,000	311,265	290,137	306,551
Imports:					
May	-	25,269	25,116	9,496	16,329
April	-	26,390	19,060	10,397	17,654
March	-	18,528	20,458	18,652	16,719
Jan.-Feb.	58,581	44,246	23,875	16,652	39,163
Jan.-Dec. totals ..	-	252,307	217,845	131,561	132,955
Fish Solubles:					
Production 3/:					
May	-	16,014	13,624	7,191	18,639
April	-	3,766	2,539	2,870	6,987
March	1,958	1,903	2,564	2,462	2,382
Jan.-Feb.	2,664	3,203	3,450	3,509	4,124
Jan.-Dec. totals ..	-	124,334	112,241	98,929	165,359
Imports:					
May	-	265	283	59	4,874
April	-	323	220	134	1,622
March	-	308	135	87	410
Jan.-Feb.	317	2,522	374	2,089	1,965
Jan.-Dec. totals ..	-	6,308	6,739	3,174	26,630
..... (1,000 Pounds) 5/					
Fish Body Oils:					
Production:					
May	-	32,186	33,844	13,705	20,180
April	-	5,054	3,406	1,925	3,379
March	411	328	488	512	326
Jan.-Feb.	748	1,111	761	752	791
Jan.-Dec. prelim. totals 4/	-	257,131	259,400	206,848	189,240
Jan.-Dec. final tots.	-	255,804	266,670	215,861	193,324
Exports:					
May	-	6,491	3,192	2,427	10,910
April	-	10,270	7,351	5,711	8,373
March	-	19,167	5,644	3,157	4,498
Jan.-Feb.	2,537	22,156	30,905	25,896	14,218
Jan.-Dec. totals ..	-	123,050	122,486	143,659	144,481

1/ Does not include crab meat, shrimp, and misc. meals.
 2/ Preliminary data computed from monthly data. Fish meal production reported currently comprised 90 percent for 1959, 89 percent for 1960, 93 percent for 1961, and 93 percent for 1962.
 3/ Includes homogenized fish.
 4/ Preliminary data computed from monthly data. Represents over 95 percent of the total production.
 5/ Beginning with March 1963 fish oil is shown in pounds instead of gallons. Conversion factor, 7.75 pounds equal 1 gallon.
 Note: Data for 1962 and 1963 are preliminary.

and fish solubles in March 1963 was higher by 25.3 percent and 2.9 percent, respectively, as compared with March 1962. Fish meal production increased by 9.5 percent.



Irradiation Preservation

RADIATION PASTEURIZATION OF KING CRAB MEAT REDUCES BACTERIAL POPULATION:

Basic research on the radiation pasteurization of king crab meat by the U. S. Bureau of Commercial Fisheries Technology Laboratory at Seattle, Wash., is concerned with the effect of package atmospheres upon microbiological growth and shelf-life of irradiated king crab meat. Recent experiments have shown a reduction in bacterial population from 100,000 to 100 per gram by irradiation levels of 200,000-400,000 rads.

With storage at 33° F. the microbiological population remains fairly constant for two weeks and then shows an increase with the most rapid growth in air-packed samples. The yeast population reaches 300,000 per gram in air-packed samples during the first 21 days of 33° F. storage after which yeasts decrease, probably due to the competitive effect of increasing bacteria population. In vacuum-packed samples the increase in yeast was not observed. On unirradiated samples bacteria growth occurred after a few days, and yeasts did not develop beyond 400 per gram, indicating bacteria competition from the start. Over 200 yeast cultures were selected from king crab meat and are being identified.

Note: See Commercial Fisheries Review, February 1963 p. 42.



Maine Sardines

CANNED STOCKS, APRIL 1, 1963:

Canners' stocks of Maine sardines on April 1, 1963, were 654,000 cases greater than those of April 1, 1962, but only 193,000 cases above stocks on hand two years ago on April 1, 1961. Distributors' stocks of canned Maine sardines in 1963 are not entirely comparable to those in pre-



vious years due to a change in statistical estimating procedures.

Type	Unit	4/1/63	4/1/62	4/1/61
Distributors	Actual cases	264,000	148,000	267,000
Canners	Std. cases ^{1/}	699,000	45,000	506,000

^{1/}100 $3\frac{3}{4}$ -oz. cans equal one standard case.

On April 15, 1962, carryover stocks at the cannery level amounted to about 33,000 cases. Adding the 1962 season pack of 2,116,000 cases results in a total supply of 2,149,000 cases as of April 1, 1963--up 89.8 percent from the total supply reported April 1, 1962, but down 7.9 percent from the total supply on April 1, 1961. Shipments between April 15, 1962, and April 1, 1963, amounted to 1,450,000 cases, up 33 percent from shipments of 1,087,000 cases during the comparable period in the previous marketing season.

Note: See Commercial Fisheries Review, April 1963 p. 21.



Michigan

GREAT LAKES LANDINGS DROP SHARPLY IN 1962:

Fish caught commercially from Michigan's Great Lakes waters dropped sharply in 1962. Landings amounted to about 22 million pounds and were valued at about \$2,495,000 according to Michigan Conservation Department estimates. Compared with 1961, the commercial catch was down about 2,437,000 pounds and the value dropped about \$463,000.

Chubs, lake herring, carp, and yellow perch were the leading varieties in 1962. These species accounted for 76 percent of the poundage and were valued at \$1,660,000. Approximate landings for the four leading species were: chubs, 6,354,000 pounds; lake herring, 5,943,200; carp, 2,914,600; and yellow perch, 1,506,300. Landings of low value alewife totaled 1,398,800 pounds. Commercial landings of smelt amounting to 1,181,750 pounds were the lowest since 1950.

The 1962 lake trout catch reached an all-time low of 135,467 pounds. All but 325 pounds came from Lake Superior where commercial lake trout fishing was cancelled June 1, 1962, in a continuing effort to boost the comeback of that species in the upper Great Lakes.

Only 819,600 pounds of whitefish were taken by commercial fishermen in 1962--sharply lower than their annual catch which averaged about 3 million pounds before lamprey predation started making inroads on populations of that species.

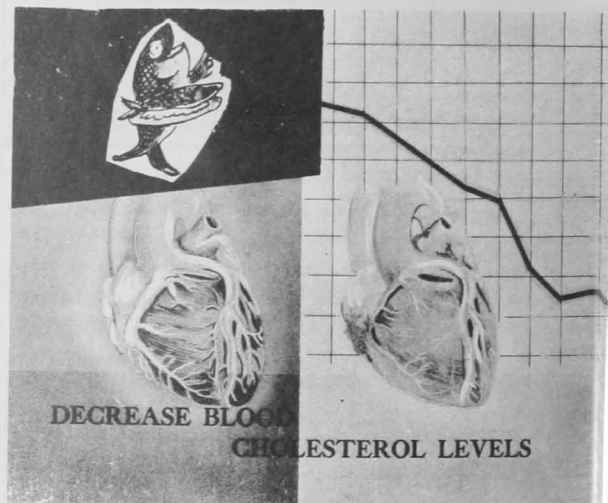
Commercial landings of all species totaled about 6,819,000 pounds from Lake Superior; 2,687,550 from Green Bay; 4,865,620 from Lake Michigan; 3,184,400 from Saginaw Bay; 2,692,200 from Lake Huron; and 1,837,960 from Lake Erie. (Michigan Department of Conservation, April 1963.)



National Fisheries Institute

EXPERIMENTS INDICATE FISH DIET IMPROVES HEALTH:

Experiments in Halifax, N. S., whereby the general health of groups of policemen, fire-



men, and businessmen vastly improved when they included fish in their diet 3 to 5 times a week was the subject of a talk at the 18th annual convention program of the National Fisheries Institute at Philadelphia, April 26-30, 1963.

The Halifax doctor, who prescribed the diets, told his audience that after a period of 2 years, the men on the diet found that their cholesterol had dropped, they had lost excess weight, and they felt better than they had for years.

The doctor explained that he had selected groups of policemen and firemen because they were most likely to stay in one location

where they could be observed. However, the men were not on a controlled diet, but ate their meals in a family situation.

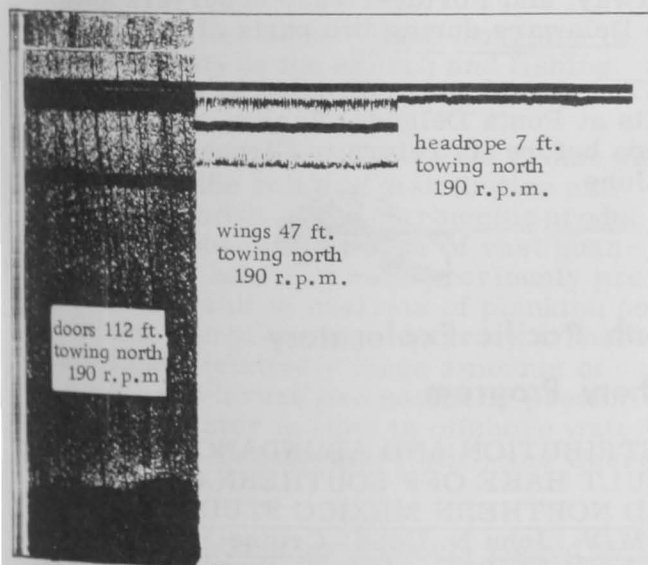
In explaining the effects of high cholesterol, thought by some nutritionists to be the result of including too much saturated fat in the diet, the doctor illustrated his talk with a model of plastic tubing. He showed how cholesterol builds up in the arteries, causing heart disease and strokes.



North Atlantic Fisheries Exploration and Gear Research

ELECTRONIC TRAWL-NET MEASURING AND TELEMETERING SYSTEM TESTED AND EVALUATED:

M/V "Delaware" Cruises 63-2 and 63-3 (March 7-28, 1963): The main objectives of Cruise 63-2 by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware were: (1) to test and evaluate the performance of a "sonic" trawl-net measurement and telemetering system, and (2) to measure "electronically" various in-use dimensions of a No. 41 otter-trawl net.



An echo-sounder recording of the linear dimensions measured during Cruise 63-2. The length of trawl warp used during this recording was 75 fathoms; depth of water was 26 fathoms.

A suitable trawling area on Stellwagen Bank was chosen for the initial performance tests. The remainder of the tests and the collection of instrumentation and measurement data was conducted on good trawlable bottom (about 26 fathoms) in an area 15 miles

SSE of "No Mans Land Buoy" (buoy located approximately 24 miles south of New Bedford, Mass.).

The cruise was temporarily interrupted due to early trawling difficulties not related to the sonic-system and the vessel was forced to return to port. After net repairs had been effected and damaged instrumentation cables had been replaced, the vessel returned to the fishing grounds to complete the tests. Further minor adjustments were required to certain components of the system; the remainder of the cruise was devoted to measuring the various linear dimensions of the trawl net.

Cruise 63-3 was a continuation of measurement data collection begun during the preceding cruise. A total of 35 complete drags was made during the two cruises. Each drag lasted approximately 2 hours and consisted of 4 runs around the perimeter of a $1\frac{1}{2}$ -mile square. This pattern of towing was used to determine what influence (if any), tide direction exerted upon the trawl net configuration. All components of the system worked very well and data collection proceeded without interruption.

A standard No. 41, roller rigged, manila trawl net was used throughout the two cruises with (a) thirty-six 8-inch floats secured to the headrope, (b) ten-fathom ground cables and five-fathom legs, and (c) trawl doors measuring 10 feet 6 inches x 54 inches weighing approximately 1,440 pounds.

The method used, for determining the net dimensions taken, was as follows:

(A) A "sonic" transducer was mounted on each trawl door and the two were electrically operated in parallel to measure the distance between the doors.

(B) Two transducers, operated in parallel, were also used to determine the wing-end spread. These were mounted on fiberglass-covered plywood vehicles which were constructed in such a manner that the transducer beams would always be aligned with one another. Flotation was added so that the vehicles would have neutral buoyancy.

(C) The headrope height was measured by a single transducer which was mounted on the headrope and beamed at the ocean bottom.

(D) A stepping switch, mounted on the headrope, was used to selectively telemeter

measurement information to a shipboard recording unit via an electric cable used as a "third" wire.

(E) The stepping switch was controlled automatically (or manually) from the wheelhouse aboard the vessel for the relay of information from specific instruments.

(F) A bottom contact switch was mounted on the footrope to constantly indicate when the net was on the ocean bottom.

Tentative Conclusions: (1) the tidal effect alone upon door spread caused a variation of from 7 to 19 feet; (2) the tidal effect alone upon wing-end spread caused a variation of from 3 to 7 feet; (3) the length of trawl cable and towing speed had little effect on the headrope height although this dimension was slightly less at faster towing speeds; (4) the headrope height varied from 7 to 7.5 feet; (5) the tide had a slight effect on the headrope height; (6) maximum trawl-door spread (162 feet) was attained when using 125 fathoms of trawl wire and towing at 190 r. p. m. (average speed 2.92 knots); (7) minimum trawl-door spread (110 feet) was attained when using 75 fathoms of trawl wire and towing at 190 r. p. m.; (8) maximum wing-end spread was 60 feet (125 fathoms of trawl wire at 190 r. p. m.); and (9) minimum wing-end spread was 45 feet (75 fathoms of trawl wire at 190 r. p. m.).

This cruise report summarizes the methods used to obtain the measurement data and lists the maximum and minimum dimensions attained. A detailed analysis of the measurement system and the measurements taken on these exploratory cruises will appear in a later publication.

* * * * *

TUNA STOCKS OFF

U. S. ATLANTIC COAST SURVEYED:

M/V "Delaware" Cruise 63-4 (April 22-June 10, 1963): The U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware (Cruise 63-4) began a 53-day cruise on April 22 to survey the tuna resources in the western, central, and eastern North Atlantic. The 53-day cruise was jointly sponsored by the Bureau, the Woods Hole Oceanographic Institution, and the National Geographic Society.

Cruise objectives included an investigation of the distribution, abundance, migration, and evaluation of the commercial fishing potential of tunas in those areas. Long-line gear was used to sample subsurface fishes at selected stations, lures were trolled to sample fish in the surface layer between stations, and mid-water trawl gear was used at long-line stations to aid in studying the abundance and distribution of smaller fishes. Considerable emphasis was placed on tagging of live adult tunas.

The Bureau's research vessel Geronimo from the Biological Laboratory at Washington, D. C., was scheduled to join the Delaware for the last part of the cruise to make hydrographic transects in the Gulf Stream area of the Middle Atlantic states. Scientific data collected by the research vessel was to be correlated with fishing results from Delaware stations.

Cooperating agencies were the Bureau's Ichthyological Laboratory at the U. S. National Museum, the Museum of Comparative Zoology at Harvard University, and the University of Miami Marine Laboratory at Miami, Fla.

Foreign scientists, working in similar fields of endeavor, from Canada, Germany, Norway, and Portugal were observers aboard the Delaware during two parts of the cruise.

The vessel was scheduled to make port calls at Ponta Delgada, Azores, and at Bermuda before its return to Gloucester, Massachusetts in June.

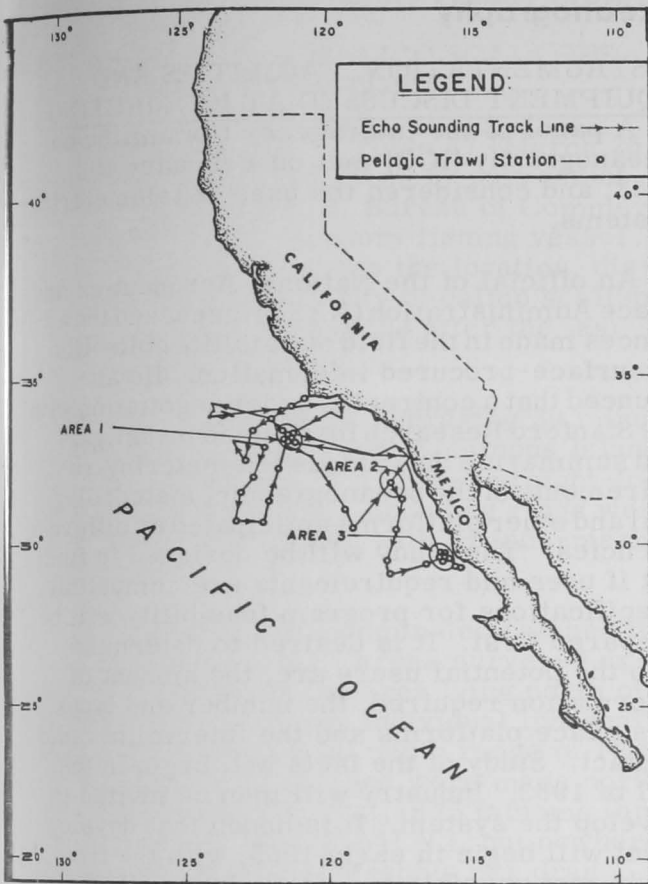


North Pacific Exploratory

Fishery Program

DISTRIBUTION AND ABUNDANCE OF ADULT HAKE OFF SOUTHERN CALIFORNIA AND NORTHERN MEXICO STUDIED:

M/V "John N. Cobb" Cruise 58 (February 20-April 5, 1963): Pelagic trawling for adult hake by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb off Southern California and Baja California was part of a joint survey with the Bureau's research vessel Black Douglass. The cruise was planned to use the biological and oceanographic



John N. Cobb Cruise 58, February 20-April 5, 1963.

graphic facilities of the Black Douglass in close proximity to the search and fishing gear facilities of the John N. Cobb.

Principal objective of the joint cruise was to determine the relative distribution and abundance of adult hake (Merluccius productus). The probable existence of vast quantities of adult hake had been previously predicted as a result of analysis of plankton net catch data, compiled in prior years. These data indicate relatively large amounts of hake eggs and larvae are normally present during late winter months in offshore waters between Point Conception, Calif., and Cedros Island, Mexico.

Standard Cobb pelagic trawls rigged to spread in a conventional manner with two aluminum Cobb pelagic hydrofoils and 60-fathom bridles were used during most of the cruise. During the first four drags an experimental Cobb pelagic trawl constructed of all monofilament webbing was tested and found unsatisfactory due to slippage of knots in the wing sections. No appreciable increase in speed was noted while the monofilament net was in use.

A full length (40 feet) cod-end liner constructed of $\frac{1}{2}$ inch (stretch measure) webbing was used during most of the drags to sample small fishes and invertebrates.

Fishing depth of the net during most of the cruise was determined by utilizing a scope ratio experience table compiled during the cruise by using a trolley-mounted bathythermograph to record various depths of the otter boards. The trolley-suspended bathythermograph was lowered and retrieved along the towing cable (after equilibrium of the net had been established) in increments of 25 and 50 fathoms of towing cable out. The resulting series of depths were then plotted to establish a curve which was used thereafter to position the net.

The survey was conducted along a trackline predetermined to cross those areas which had most consistently produced relatively large catches of hake eggs and larvae during the preceding 10 years. Station patterns along the trackline were made to coincide with certain California Cooperative Fisheries Investigations standard stations.

Continual echo soundings were by the John N. Cobb between all stations and during midwater sampling drags.

Routine drags were made on arrival at standard stations whenever weather permitted. Depth of drags varied from surface to 350 fathoms, depending on vertical position of scattering layers, lack of scattering layer, or indication of fish as determined by the echo sounder. Deep drags using all cable available were usually made at stations having no indication of fish or scattering layer. The length of drags varied between one hour and three hours. Most drags lasted two hours.

A total of 36 drags was made and approximately 2,000 miles of trackline were surveyed by echo sounding. Most of the tracklines and stations surveyed gave no indication of availability of fish either by analysis of echo soundings or catches of fish in the trawl. However, three areas were located which indicated the presence of fish by echo soundings and catch rates ranging from a single adult hake to 675 pounds. Centers of those three areas were located: (1) about 25 miles northwest of the San Juan Seamount; (2) about 18 miles southeast of Sixty-Mile Bank; and (3) about 15 miles southwest of Punta Baja, Mexico. Echo soundings made in those areas indicated relatively wide dispersion of fish extending over several square miles. Area 3 off Punta Baja was circumnavigated by echo

sounding and was found to cover approximately 23 square miles. Although areas 1 and 2 were not accurately circumnavigated, they appeared to be much larger, based on the length of time required to go across the area at a speed of ten knots. With an assumption that each echo sounding track through areas 1 and 2 passed through the main body of fish, it would then appear that area 1 covered approximately 1,600 square miles and area 2 covered over 100 square miles.

Persistent bad weather and the need to carry out preprogrammed phases of the cruise, involving explorations in other areas, limited the number of drags in each area to 7 in area 1, 1 in area 2, and 5 in area 3.

Five hake were also taken in a routine drag 50 miles west of the San Juan Seamount.

Preliminary examination of captured hake showed the catch composition to be mostly

Catches per Drag in Areas 1, 2, and 3.							
Area	Hake Catch per Drag (No. of Fish)						
1	1	9	2	0	0	4	41
2	29						
3	129	3	65	300	495	1/0	41
1/Surface drag.							

males in spent or partially spent condition. Most of the females were completely spent. On one

occasion, eggs from a ripe female were fertilized. The culture obtained was then sampled and preserved at one-hour intervals to a maximum of 12 hours. Lengths of hake taken during the cruise ranged from 30 to 70 centimeters (11.8-27.6 inches).

In every drag (14) which produced hake the following conditions existed: (1) proximity to seamounts, islands, continental shelf, and banks less than 60 miles; (2) indication of fish on echo-sounding machine; (3) good catches of recently spawned hake eggs made by the Black Douglass; and (4) fishing depth of the pelagic trawl exceeded 60 fathoms.

Several rare and semi-rare specimens of deep-sea fishes and invertebrates were also captured and preserved for future study by scientists at the Bureau's Biological Laboratory, La Jolla, Calif.

Fillets of hake were cooked and eaten on both the John N. Cobb and Black Douglass. All persons participating in the experiment were favorably impressed with flavor, texture, and palatability. Most common remarks were: "delicious," "excellent," and "good."

Oceanography

INSTRUMENTATION, FACILITIES AND EQUIPMENT DISCUSSED AT ICO MEETING

A panel of the Interagency Committee on Oceanography (ICO) met on February 19, 1963, and considered the uses of telemetry systems.

An official of the National Aeronautics and Space Administration (NASA) discussed the advances made in the field of satellite collection of surface-procured information. He announced that a contract is under negotiation with the Stanford Research Institute to investigate and summarize the various telemetry requirements of the oceanographic, meteorological and other platforms anticipated by different agencies. The study will be designed to find out if uses and requirements are compatible. Specifications for program feasibility will be prepared first. It is desired to determine who the potential users are, the amount of information required, the number and types of surface platforms and the interval of radio contact. Study of the facts will begin in the fall of 1963. Industry will then be invited to develop the system. It is hoped that development will begin in early 1965, with the first flight test possible two years later. (U.S. National Oceanographic Data Center, Newsletter, March 31, 1963.)



Oysters

FLORIDA DRILL STOPPED BY TREATED SAND:

The Florida oyster drill (Thais haemostoma) is being studied at the U. S. Bureau of Commercial Fisheries Biological Laboratory at Milford, Conn. It has been shown that the Florida drill cannot cross a 6-inch barrier of sand treated with Polystream. Individual specimens did, however, penetrate the barrier as far as three inches thereby indicating considerably more resistance to the compound than local oyster drills such as Urosalpinx cinerea and Eupleura caudata.



South Atlantic Exploratory Fishery Program

AVAILABILITY OF CALICO SCALLOPS OFF GEORGIA AND FLORIDA COASTS RESURVEYED:

M/V "Silver Bay" Cruise 47 (March 25-April 11, 1963): The primary purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay was to assess the location, distribution, and availability of calico scallops (Pecten gibbus) six months after the last survey (map p. 42).

A total of 202 drags, averaging 30 minutes each, were made between St. Simons Island, Ga., and Ft. Pierce, Fla. Six- and eight-foot tumbler dredges with 2-inch bag rings were used. Some were fitted with 2½-inch-mesh nylon liners.

Dead scallop shell dominated catches in 12 to 30 fathoms in all areas surveyed except in a portion of the area lying north of Jacksonville, Fla., and individual live scallops were taken over a total depth range of 10 to 28 fathoms. Best catches were made north off Cape Canaveral, Fla., in 25 fathoms (approximate latitude 28° 54' N.), but nowhere did catches exceed 3½ bushels per drag. Scallops taken averaged 55 millimeters (2¼ inches) in shell width, and all specimens examined were in spawning condition. Meats from these were fair to poor in quality and averaged about 155 to the pint. Data from previous explorations have indicated that such low yields are to be expected in the spring.

Scallop samples were collected for further study by Bureau technologists and biologists. Live calico scallops were landed to assist two industry organizations in their respective development of processing equipment.

Note: See Commercial Fisheries Review, January 1963 p. 53 and November 1962 p. 43.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JANUARY-MARCH 1963:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for January-March 1963:

Shrimp Studies: Unusually cold weather in January-March 1963 resulted in below normal water temperatures throughout inshore areas. Experimental trawl fishing under the shrimp survey program indicated that marine life in inside waters was affected by the low temperatures. In the first quarter of 1963, the survey yielded a catch of white shrimp that was down about 90 percent from that in the same period of the previous year. The catch of blue crab, spot, and croaker was also down, although the decline was less drastic.

The effects of the subnormal water temperatures may have been only temporary. The decrease in the shrimp survey catch could be merely an indication that most of the shrimp, fish, and crab populations moved to deeper offshore waters. When water temperatures began to rise in March, many species of fish and shellfish showed a rapid increase in abundance throughout inside waters. The effects of the cold on the white shrimp population will not be known until June 1963, when the spawning crop of white shrimp postlarvae begin to enter coastal waters.

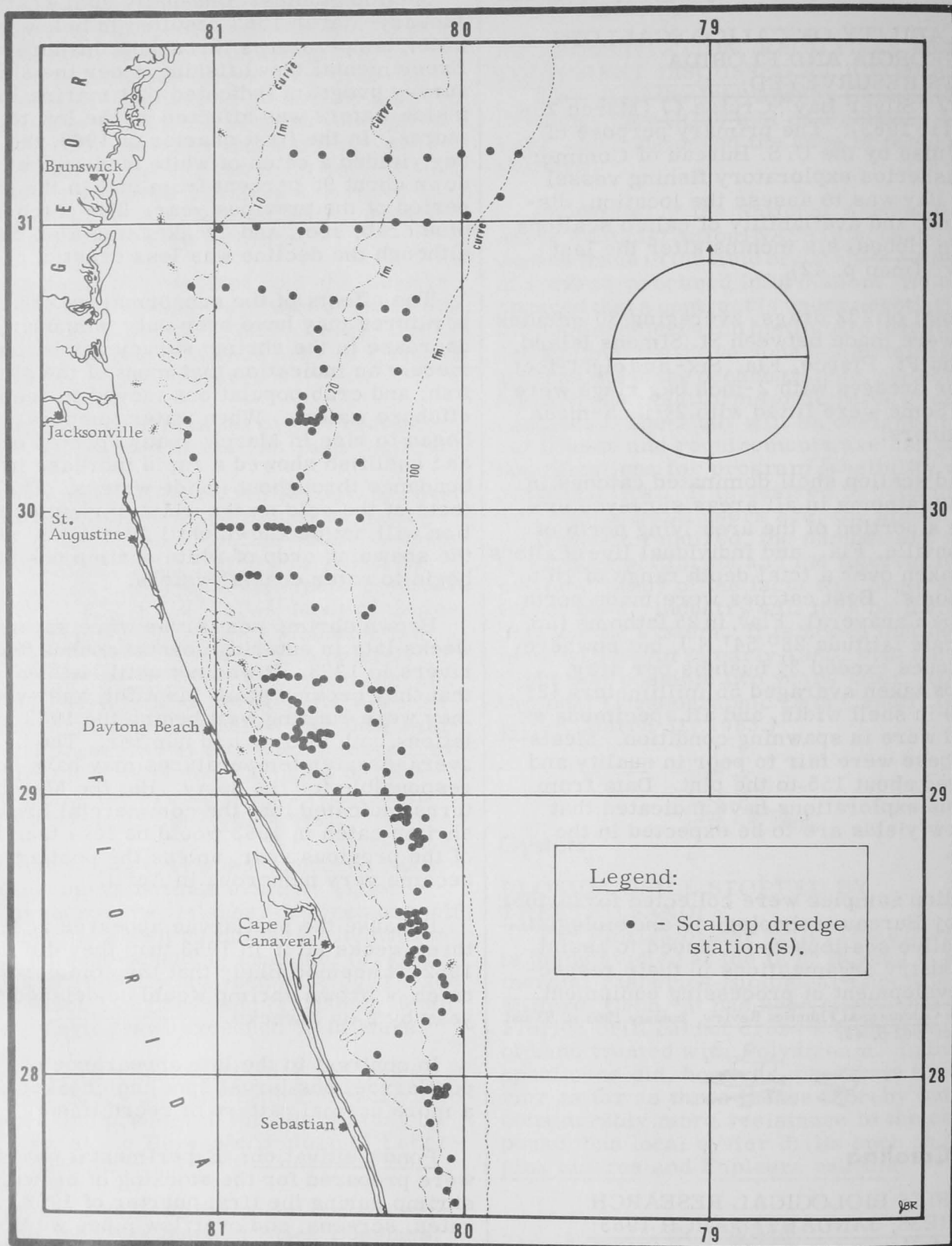
Brown shrimp postlarvae were several weeks late in entering coastal sounds and rivers in 1963. It was not until late March that they became at all plentiful, and even then they were running well behind the 1962 tabulations both in time and number. The below average water temperatures may have been responsible for the delay. But the March returns indicated that the commercial brown shrimp catch in 1963 would be less than that of the previous year, unless the postlarvae became very numerous in April.

Because the postlarvae appeared at least three weeks later in 1963 than they did in 1962, it seemed likely that the commercial catch of brown shrimp would be delayed this year by 2 or 3 weeks.

In contrast to the late appearance of shrimp postlarvae, postlarval spot and croaker showed a more normal pattern of recruitment.

Pond Cultivation: Experimental ponds were prepared for the stocking of brown shrimp during the first quarter of 1963. Flood gates, screens, and overflow pipes were repaired and the ponds were flushed out with tidal water for several days.

One of the 1-acre experimental ponds was opened on March 15, at which time postlarval



Shows the station pattern for cruise 47 of the M/V Silver Bay, March 25-April 11, 1963.

brown shrimp began to appear in a nearby creek. The pond was allowed to stock naturally through the intake of water on each flood tide. Another 1-acre pond was also allowed to stock naturally, and it was hoped that this could be supplemented by the addition of postlarval and juvenile shrimp caught by nets in nearby waters. Both ponds were to be treated with rotenone to remove predaceous fishes as soon as stocking was completed.

Other experiments conducted in conjunction with pond cultivation included attempts at raising postlarval shrimp in large concrete tanks, and in large and small aquaria. The work will be carried on and intensified with white shrimp postlarvae in June and July.



Tuna

NEW ENGLAND PURSE-SEINE FISHERY TAKES LEAP FORWARD IN 1962:

The development of a large-scale commercial tuna fishery in New England made considerable progress in 1962. West Coast tuna interests were active in this fishery for the first time, and sent large purse seiners to fish for tuna out of New England ports. Seven tuna purse seiners operated off New England between July and October 1962. During that period they landed about 3,300 short tons of tuna, mostly bluefin with some skipjack. An estimated additional 250 tons were caught by traps and sportsmen. There were indications that the New England purse-seine fishery will continue to expand in the future. Some West Coast interests were considering the feasibility of building canneries in the New England area.

The new trend in purse seining for tuna in New England had its beginning in 1958 when a Provincetown, Mass., vessel commenced purse seining for tuna with gear loaned by the U. S. Bureau of Commercial Fisheries, and as a result of the Bureau's exploratory fishing in 1951-53. Table 1 illustrates how the New England tuna landings by all types of gear have increased since 1958.

Purse-seine tuna was landed at 4 New England ports in 1962 (table 2). The larger seiners landed at New Bedford, Mass., and Providence, R. I. Four of the smaller ves-

Year	Mass.	Me.	R. I.	Conn.	Total
1962 ^{2/}	2,900.0	50.0	600.0	-	3,550.0
1961	1,105.0	52.5	19.0	-	1,176.5
1960	593.0	83.0	19.0	-	695.0
1959	1,329.0	31.0	30.5	-	1,390.5
1958	1,189.5	22.5	20.0	0.5	1,232.5
1957	441.0	13.5	24.0	2.0	480.5
1956	193.0	9.5	10.0	2.0	214.5
1955	402.0	13.0	29.5	2.0	446.5
1954	672.5	1.5	78.5	1.0	753.5
1953	929.0	25.0	16.0	2.5	972.5
1952	537.6	18.5	16.9	3.9	576.9

^{1/}Includes landings by all types of gear.
^{2/}Preliminary.

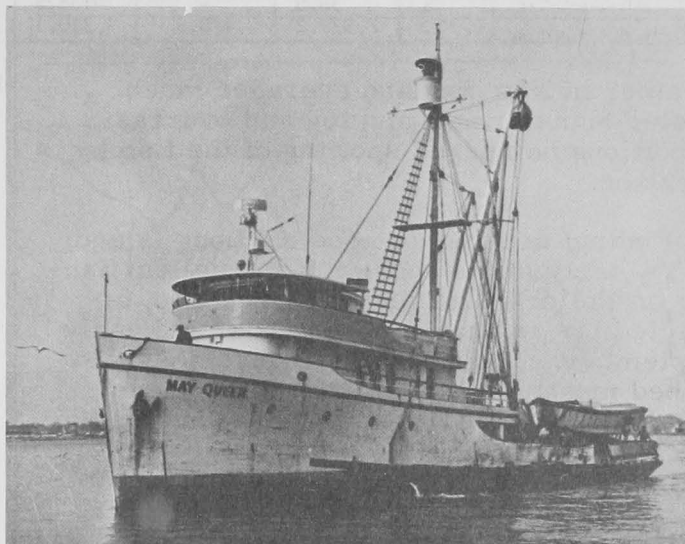


Fig. 1 - One of the large West Coast-type tuna purse seiners that fished for tuna in New England waters in the summer and fall of 1962.

sels landed catches at New Bedford earlier but changed to Sagamore, on the Cape Cod Canal, in August when they started fishing in Massachusetts Bay. Landings at Provincetown were by one local vessel.

Port	Trips No.	Bluefin	Skipjack	Total
New Bedford, Mass.	34	1,430.9	380.5	1,811.4
Provincetown, Mass.	13	229.4	0.4	229.8
Sagamore, Mass.	50	684.2	-	684.2
Providence, R. I.	3	494.7	90.0	584.7
Total	100	2,839.2	470.9	3,310.1

^{1/}Preliminary.

The 1962 purse-seine tuna season commenced when the first trip was landed July 12; the last trip was landed on October 17. Tuna landings were heaviest in August and September (table 3). Fishing was reported generally better south of Cape Cod in 1962, and tuna were not as plentiful in the Massachusetts Bay as in some previous years. The summer

Table 3 - New England Purse-Seine Tuna Landings by Week, 1962

Week Ending		Trips	Bluefin	Skipjack	Total
		No.	(Short Tons)		
July	14.	3	14.7	-	14.7
	21.	7	121.3	-	121.3
	28.	4	66.4	-	66.4
Aug.	4.	11	439.1	110.5	549.6
	11.	9	393.8	185.5	579.3
	18.	6	187.3	138.4	325.7
	25.	6	82.7	-	82.7
Sept.	1.	11	378.0	36.5	414.5
	8.	8	407.9	-	407.9
	15.	6	106.1	-	106.1
	22.	11	366.5	-	366.5
	29.	4	36.2	-	36.2
Oct.	6.	9	62.9	-	62.9
	13.	2	137.8	-	137.8
	20.	3	38.5	-	38.5
Total.		100	2,839.2	470.9	3,310.1

weather in New England averaged much cooler than normal, and fog and overcast conditions hampered spotting of the fish by airplane.

Fishing was fair to good off Long Island, N. Y., early in the season, but excellent fishing on Pollock Rip, south of Cape Cod, attracted the vessels in late August and early September. The 3 larger purse seiners fished mostly in both areas, while the 4 smaller vessels fished in Massachusetts Bay.

Skipjack tuna were caught in large quantities off Block Island in August. They were the first known large catches of skipjack tuna in the western North Atlantic.

Most of the 1962 tuna landings were frozen on shore for canning in plants on both the East and West Coasts. Small amounts were sold on the fresh-fish markets in Boston and New York. One large shipment of over one million pounds of frozen bluefin tuna was exported to Italy in September.



Fig. 2 - Unloading tuna from the hold of one of the large purse seiners. The large galvanized buckets used for unloading have a capacity of about 1,000 pounds.

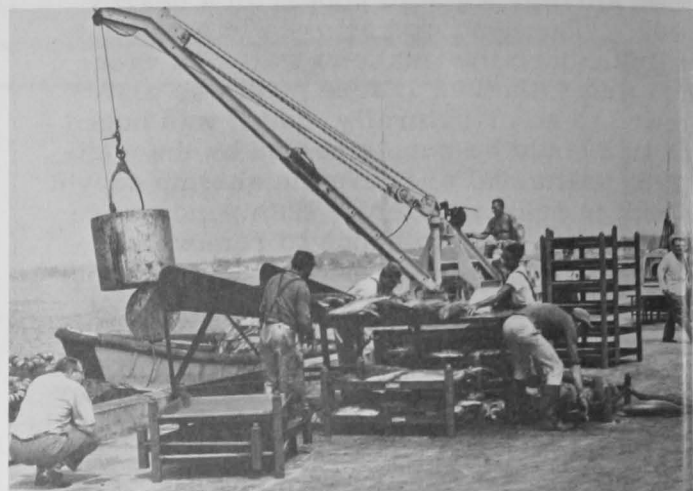


Fig. 3 - Another view of unloading operations showing large galvanized bucket used to bring the tuna from the hold to the wharf and the racks for transporting the fresh tuna to the freezer.

The purse-seine fleet fishing New England waters in 1962 was comprised of 4 vessels under 150 gross tons and 3 larger vessels (table 4). Two were local vessels that fished out of New England in 1961, 2 seiners were purchased by New England interests from a West Coast owner, and 3 large seiners were provided by West Coast firms.

Table 4 - New England Purse-Seine Tuna Landings by Size of Vessel, 1962

Vessels	Trips	Bluefin	Skipjack	Total	
Size	No.	(Short Tons)			
150 Gross Tons and over	3	24	1,676.9	431.0	2,107.9
Under 150 Gross Tons . .	4	76	1,162.3	39.9	1,202.2
Total.	7	100	2,839.2	470.9	3,310.1

During August 1962 one of the large West Coast purse seiners landed a trip of 250 tons of tuna at New Bedford, Mass. This was the largest single trip landed at a New England port. However, the largest seiner in the fleet made only one trip in September and caught 350 tons off New England. Only 10 tons of tuna from that trip was landed at New Bedford and the remainder was delivered to Puerto Rico. The vessel fished in the Pollock Rip area for 15 days and made only 7 sets.

Several large West Coast tuna-canning firms conducted surveys of New England ports with a cannery site in mind. Gloucester, New Bedford, and Providence were the chief ports of interest. One firm was given an option on a 7½-acre site at the Municipal Wharf in Providence.

Tuna unloading facilities were constructed on piers at New Bedford and Providence early



Fig. 4 - View of fresh bluefin tuna on sorting table preparatory to racking and freezing.



Fig. 5 - Forklift truck loading six-foot high pallets or racks into truck for transport to freezer.

in the 1962 season. A new union was chartered in Providence to handle the unloading of tuna. Some of the New England-caught tuna were shipped to a tuna cannery in Maryland which was built in early 1962.

Commercial tuna seining in some inshore areas met with opposition by sport fishermen in Massachusetts and New York during the year. Massachusetts authorities were requested to close some areas to commercial tuna fishing but no action was taken.

Although there may be some problems to overcome, the prospect of a large tuna fishery in New England appears to be promising.

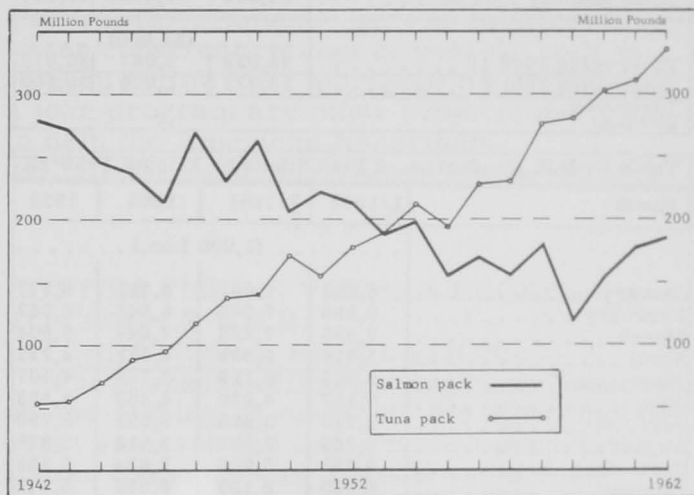
--John J. O'Brien
Supv. Market News Reporter
Fishery Market News Service
Boston, Mass.



United States Fisheries

CANNED FISHERY PRODUCTS, 1962:

The 1962 pack of canned fishery products by 373 plants in the United States, American Samoa, and Puerto Rico amounted to 36.9 million standard cases (1.1 billion pounds) valued at \$455.7 million to the packers. Compared with 1961, production was up 3.5 million cases (92 million pounds) and \$32.8 million. The increases resulted from a record pack of tuna and large packs of Maine sardines and animal food. Salmon also contributed to the increase in volume while the value of shrimp was much higher in 1962 than in 1961.



Pack of salmon and tuna, 1942-62.

The pack for human consumption (758.6 million pounds) was nearly 50 million pounds above that of 1961. The production of bait and animal food (376.4 million pounds) was about 42 million pounds larger. The pack of canned animal food amounted to 4,838,739 standard cases valued at \$17,056,610. The value of three items--salmon, tuna, and animal food--accounted for 79 percent of the total value of canned fishery products.

* * * * *

FISH STICKS AND PORTIONS PRODUCTION, 1962:

The United States production of fish sticks and portions during 1962 amounted to 150.9 million pounds with a value of \$58.2 million--a gain of 16 percent in quantity and 11 percent in value as compared with 1961. Fish sticks totaled 72.2 million pounds in 1962--2.4 million pounds or 3 percent above 1961, and fish portions amounted to 78.7 million pounds--up 18.8 million pounds or 31 percent.

Cooked fish sticks (66.8 million pounds) made up 93 percent of the 1962 fish stick total, while the remaining 5.4 million pounds or 7 percent consisted of raw fish sticks. A total of 76.3 million pounds of breaded fish portions (of which 62.3 million pounds were raw) and 2.4 million pounds of unbreaded portions was processed during 1962.

Table 1 - U.S. Production of Fish Sticks by Months and Type, 1962 1/

Month	Cooked	Uncooked	Total
..... (1,000 Lbs.)			
January	5,689	393	6,082
February	6,511	375	6,886
March	7,223	435	7,658
April	5,241	478	5,719
May	5,151	492	5,643
June	4,698	419	5,117
July	3,319	421	3,740
August	5,350	410	5,760
September	6,056	526	6,582
October	6,138	560	6,698
November	5,808	497	6,305
December	5,617	410	6,027
Total quantity 1962 1/	66,801	5,416	72,217
Total quantity 1961 2/	65,006	4,818	69,824
..... (\$1,000)			
Total value 1962 1/	28,029	2,047	30,076
Total value 1961 2/	28,321	1,779	30,100

1/Preliminary.
2/Revised.

Table 2 - U.S. Production of Fish Sticks by Months, 1959-62

Month	1/1962	2/1961	1960	1959
..... (1,000 Lbs.)				
January	6,082	6,091	5,511	6,277
February	6,886	7,097	6,542	6,352
March	7,658	7,233	7,844	5,604
April	5,719	5,599	4,871	4,717
May	5,643	5,129	3,707	4,407
June	5,117	4,928	4,369	4,583
July	3,740	3,575	3,691	3,790
August	5,760	6,927	5,013	3,879
September	6,582	5,206	5,424	5,353
October	6,698	6,133	6,560	5,842
November	6,305	6,288	6,281	4,831
December	6,027	5,618	5,329	4,743
Total	72,217	69,824	65,142	60,378

1/Preliminary.
2/Revised.

Table 3 - U. S. Production of Fish Sticks by Areas, 1962 and 1961

Area	1/1962		2/1961	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	26	57,398	23	57,246
Inland & Gulf States	6	8,331	7	6,744
Pacific Coast States	10	6,488	10	5,834
Total	42	72,217	40	69,824

1/Preliminary.
2/Revised.

Table 4 - U. S. Production of Fish Portions by Areas, 1962 and 1961

Area	1/1962		2/1961	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	26	44,072	26	34,496
Inland & Gulf States	12	32,081	12	23,945
Pacific Coast States	8	2,525	6	1,406
Total	46	78,678	44	59,847

1/Preliminary.
2/Revised.

Table 5 - U. S. Production of Fish Portions by Months, 1962 1/

Month	Cooked	Breaded Uncooked	Total	Unbreaded	Total
..... (1,000 Lbs.)					
January	966	3,979	4,945	132	5,077
February	788	5,306	6,094	266	6,360
March	1,340	5,510	6,850	186	7,036
April	1,450	4,806	6,256	152	6,408
May	1,189	4,478	5,667	151	5,818
June	1,083	4,876	5,959	178	6,137
July	507	4,006	4,513	166	4,679
August	973	5,569	6,542	145	6,687
September	1,579	5,423	7,002	178	7,180
October	1,805	7,711	9,516	355	9,871
November	1,067	6,058	7,125	281	7,406
December	1,260	4,568	5,828	191	6,019
Tot. qty. 1962 1/	14,007	62,290	76,297	2,381	78,678
Tot. qty. 1961 2/	11,003	46,783	57,786	2,061	59,847
..... (\$1,000)					
Tot. value 1962 1/	5,999	21,257	27,256	833	28,089
Tot. value 1961 2/	4,544	16,843	21,387	805	22,192

1/Preliminary.
2/Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1959-1962

Month	1/1962	2/1961	1960	1959
..... (1,000 Lbs.)				
January	5,077	4,303	3,632	2,691
February	6,360	4,902	3,502	3,021
March	7,036	5,831	4,706	3,221
April	6,408	4,484	3,492	2,631
May	5,818	3,879	3,253	2,681
June	6,137	4,039	3,995	3,241
July	4,679	3,962	4,088	2,221
August	6,687	4,963	3,558	2,791
September	7,180	5,745	4,631	3,551
October	9,871	6,759	5,275	4,311
November	7,406	5,789	4,790	3,481
December	6,019	5,191	4,459	3,261
Total	78,678	59,847	49,381	37,141

1/Preliminary.
2/Revised.

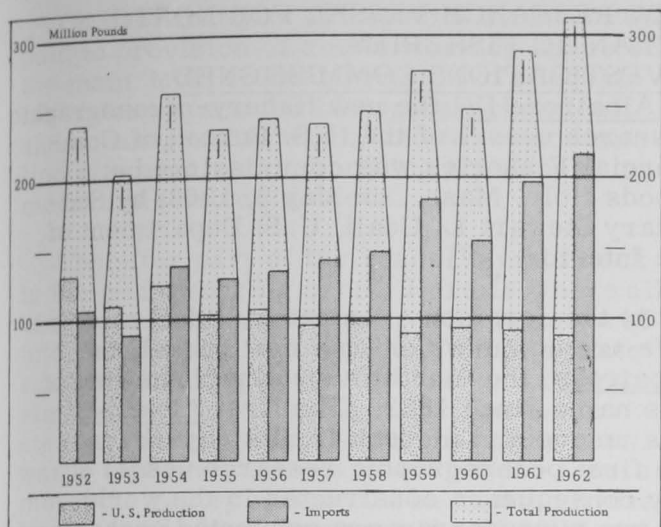
The Atlantic Coast was the principal area in the production of both fish sticks and fish portions with 57.4 and 44.1 million pounds, respectively. The inland and Gulf States were next with 8.3 million pounds of fish sticks and 32.1 million pounds of fish portions. The Pacific Coast States made up the remaining 9 million pounds of fish sticks and fish portions.

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PACKAGED FISHERY PRODUCTS PRODUCTION, 1962:

Production of fresh and frozen packaged fish fillets and steaks in the United States in 1962, totaled nearly 170 million pounds valued at \$58 million to the processors. Compared with 1961, this was an increase of nearly 12 million pounds and \$7 million. It was estimated that round fish weighing 486.1 million pounds were required for the 1962 production.

The domestic production of groundfish fillets, steaks, etc., amounted to 90.5 million



Supply of groundfish fillets, 1952-62.

pounds, 2.5 million pounds less than in 1961, and 58.2 million pounds below the 148.8 million-pound-peak production of 1951. In New England, the production of flounder fillets increased 43 percent (from 18.2 million pounds in 1961 to 26 million pounds in 1962) largely as a result of excellent yellowtail flounder fishing. New England production of whiting fillets was also up from 3.3 million pounds in 1961 to 6.2 million pounds in 1962--an increase of 87 percent.



U.S. Fishing Vessels

ANOTHER LARGE STEEL TRAWLER ADDED TO BOSTON FLEET:

The Boston, Mass., fishing fleet acquired a second new steel trawler when the Sturgeon Bay arrived at the Boston Fish Pier on May 1, 1963. The vessel is identical to the first new trawler, the Massachusetts, which started fishing out of Boston in December 1962.

The 124-foot Sturgeon Bay was built in a Sturgeon Bay, Wis., shipyard for a Wisconsin firm which operates fishing trawlers out of Boston. Construction of the vessel was aided by a Federal grant of \$153,000 under the vessel subsidy program of the U. S. Bureau of Commercial Fisheries. The total cost of the vessel was about \$461,000.

The Sturgeon Bay will be used in the New England groundfish fishery (cod, haddock, hake, pollock, cusk, and ocean perch). It has a fish hold capacity of 250,000 pounds and will carry a crew of about 17.

The addition of the Sturgeon Bay is another step forward in the revitalization of the New England groundfish fleet which has been hurt by competition from newer vessels operating out of foreign countries. Three other fishing vessels for use in the New England groundfish fishery are now under construction with the aid of Federal construction grants--2 wooden trawlers (95-foot and 80-foot) for New Bedford, Mass., owners, and a 100-foot wooden trawler for a Rockland, Maine, owner.

Under the fishing vessel construction grant program, up to one-third of the cost of building a fishing vessel can be financed by the Federal Government. This is to offset the lower construction cost of vessels built in foreign shipyards. Mortgage insurance and a loan program are other projects designed to help the American fishermen.

Note: See Commercial Fisheries Review, February 1963 p. 54

* * * * *

BOTTOM FISHING VESSELS URGED TO COMPLY WITH INTERNATIONAL REGULATIONS:

The presence of foreign flag fishing vessels on the fishing grounds off the New England coast stresses the importance for captains of United States fishing vessels to conform



strictly with provisions of the "International Regulations For Preventing Collisions at Sea" while operating their craft in international waters. Rule 9 (e) (III) prescribing signals to be displayed by fishing vessels operating nets or dredges along the sea bottom is of special importance to trawlers and scallop dredgers. This rule states that "All Vessels Towing Nets or Dredges Along the Sea Bottom During Daylight Hours Shall Display a Basket in a Prominent Position."

Rule 26 of the International Regulations states that all vessels not engaged in fishing shall when underway keep out of the way of any vessels fishing with nets, lines, or trawls. Thus, displaying a basket when towing a net or dredge complies with the regulations affecting vessels engaged in bottom fishing, and alerts vessels in the vicinity to keep clear and not interfere with operations. The basket

must be shown only when the vessel is fishing. The U. S. Bureau of Commercial Fisheries urges all vessel captains to conform strictly with the international rules as prescribed or affecting fishing vessel operations.

* * * * *

DOCUMENTATIONS ISSUED AND CANCELLED, MARCH 1963:

During March 1963, a total of 36 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 19 in March 1962. There were 39 documents cancelled for fishing vessels in March 1963 as compared with 43 in March 1962.

Area (Home Port)	Mar.		Jan.-Mar.		Total 1962
	1963	1962	1963	1962	
..... (Number)					
Issued first documents 2/:					
New England	1	1	4	3	28
Middle Atlantic	1	1	2	1	3
Chesapeake	3	1	6	7	43
South Atlantic	6	3	13	7	47
Gulf	17	10	40	25	110
Pacific	7	3	16	15	130
Great Lakes	1	-	1	-	5
Puerto Rico	-	-	-	-	2
Total	36	19	82	58	368
Removed from documentation 3/:					
New England	3	1	5	6	24
Middle Atlantic	5	6	15	15	39
Chesapeake	2	-	5	3	23
South Atlantic	4	7	14	14	38
Gulf	13	10	23	29	104
Pacific	11	15	26	42	111
Great Lakes	1	2	3	8	22
Hawaii	-	2	-	3	3
Puerto Rico	-	-	-	-	1
Total	39	43	91	120	365

1/For explanation of footnotes, see table 2.

Gross Tonnage	Issued 2/	Cancelled 3/
 (Number)	
5-9	11	12
10-19	9	7
20-29	2	-
30-39	-	3
40-49	3	8
50-59	-	2
60-69	1	3
70-79	9	-
110-119	-	1
140-149	-	1
180-189	-	1
240-249	1	-
270-279	-	1
Total	36	39

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

2/Includes 1 redocumented vessel in March 1963 previously removed from records. Vessels issued first documents as fishing craft were built: 18 in 1963; 2 in 1962; 1 in 1960; 1 in 1955; 1 in 1952; and 13 prior to 1951.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

* * * * *

NEW RESEARCH VESSEL FOR NORTH ATLANTIC FISHERIES INVESTIGATIONS COMMISSIONED:

Albatross IV, the new fishery-oceanographic research vessel of the U. S. Bureau of Commercial Fisheries was commissioned at Woods Hole, Mass., on May 9, 1963, by Secretary Stewart L. Udall, U. S. Department of the Interior.

At the ceremony, Secretary Udall said, "We are commissioning a new vessel, the Albatross, the fourth in an illustrious line of this name since 1882. The first Albatross was unique and modern for its day--being the first oceanographic research vessel of any consequence constructed in the world. Its two successors were converted vessels. The ship before us, however, is one of the best equipped for this specific purpose by the Federal Government since the first Albatross

"We have a new Albatross--but we need a fleet of them. For despite our pioneering efforts over 80 years ago, our Nation still thinks of the oceans principally as highways. Today, we approach the sea with a new concept:

"The ocean is the newest and last frontier of the world... ."

The Albatross IV is designed to conduct fisheries and oceanographic research in the Northwest Atlantic. She is especially equipped to collect information on the distribution and abundance of groundfish and sea scallops, and on the environmental factors which affect seasonal and long-term changes in the fish stocks. In addition, she is equipped to study the bottom organisms which form the food supply of groundfish, and to investigate plankton populations and oceanographic conditions generally.

The vessel is a 187-foot single-screw stern trawler powered by twin Diesel engines and is designed to travel at 12 knots with a range of 9,000 miles. One of the great problems of oceanographic research is holding station and maintaining vertical wire angle. On the Albatross IV, this will be accomplished through the use of a controllable pitch propeller provided with a Kort-type nozzle rubber and a bow thruster. The vessel is reinforced against ice and is air-conditioned to enable its use for general fishery and oceanographic research in any navigable waters in the world--in all seasons--in all reasonable conditions of weather and temperature.

On the Albatross IV, special attention was paid to provision of ample working space on the main deck; to the provision of adequate laboratory space for biological, chemical, and oceanographic work; and to the installation of special gear, handling equipment, and modern electronic devices.

The after part of the vessel's main deck is the main working area. Here is where all of the various kinds of gear will be lowered into the sea and recovered. There is a stern ramp for hauling nets and other gear aboard similar to that in use on many European stern trawlers. Sheaves for carrying trawl warps and other lines are suspended from a moveable gantry which can be rotated hydraulically 115° aft of the vertical and 90° forward and will lift 10,000 pounds. Its main function will be to handle the otter trawl, mid-water trawl, and heavy dredges.

There are 2 hydrographic winches on the after end of the boat deck each with a capacity of 20,000 feet of $\frac{1}{4}$ -inch wire. Collector rings are provided for 5 conductors. The control console is on the end of a 20-foot extension cable so that each winch can be operated either at the winch, at the rail, or on the main deck.

A major effort was made in the arrangement of the laboratory spaces to provide good communications between them as well as with the rest of the ship, but to keep them separate from the traffic of people engaged in other aspects of the ship's business. As little of the furniture and equipment as possible is permanently fastened to the ship's structure so as to permit easy rearrangement to meet the needs of the future.

Just forward of the fishing deck, open aft and on both sides, but sheltered by the house forward and the deck overhead, is a 32 by 10-foot area, designed for the preliminary processing of marine collections. There is a bathythermograph winch with 2,000 feet of $\frac{3}{16}$ -inch wire at each rail. Collector rings are provided for the use of conducting cable. A dumbwaiter communicates with the storage room on the lower deck and up to the boat deck.

Forward of the rough laboratory on the port side is the 13-foot by 33-foot wet laboratory which can be divided into two separate spaces by a moveable bulkhead. Facilities include a wet gear locker, dumbwaiter to

decks below and above, 3 sinks, 3 salt water tables, work benches, overhead cabinets, refrigerator and storage lockers. Every 3 feet along the permanent bulkheads are outlets for 110 volt alternating current, compressed air, cold salt water, hot fresh water, and cold fresh water.

There is an instrument well in the wet laboratory and another in the hydrographic laboratory. These are 3 $\frac{1}{2}$ feet square and can be opened or closed by a diver or can be used to put divers in the water. Provision was made for a 5-foot diameter fish well in the storage room. It is now part of the fuel oil tank system, but it can be made free-flooding by a minor alteration in the plating. It is anticipated that for the present, live fish will ordinarily be carried in portable tanks on deck or in the storage room supplied with sea water from the laboratory system.

Forward of the rough laboratory on the starboard side is the 10-foot square hydrographic laboratory for the immediate processing of water samples. It has Nansen bottle racks, storage cabinets, work bench, sink, and desk. Over the desk is an instrument panel giving time, ship's heading and speed, water depth, wind direction and velocity, air temperature, relative humidity, sea surface temperature, and barometric pressure. The indicating and recording unit for the telerecording bathythermograph is also visible from the desk.

Communicating with the hydrographic laboratory is a 7-foot by 13-foot space for chemical analysis. It has a sink, work bench, cabinets, freezer, salinometer, and spectrophotometer.

Forward of the chemistry laboratory, the dry laboratory, 15 by 11 feet, has a drafting table, two desks, a work table, cabinets, typewriter, and calculators. There is a fisherman's asdic and a 6,000-foot sounder either of whose signals can be displayed on a precision graphic recorder.

A 5-foot by 6-foot photographic darkroom with all necessary furniture and equipment is just forward of the wet laboratory.

There is a 10-foot by 12-foot laboratory on the after part of the boat deck which is intended primarily for the monitoring, maintenance, and repair of specialized electronic equipment. It has work benches, cabinets,

cable ports, 4 kinds of electric power, and a dumbwaiter communicating with the main and lower decks. Like all other laboratory spaces, it can be readily converted to other purposes.

The gyrocompass, radiotelephone, as well as power supplies and converters for the electronic equipment are housed in a room behind the pilot house on the starboard side. A walk-in refrigerator and a freezer are located on the lower deck at the forward bulkhead.

On May 13, the Albatross IV sailed for Georges Bank on her first assignment (Cruise 63-1), which was to collect quantitative samples of the sea scallop population.

Note: See Commercial Fisheries Review, January 1963 p. 56 and July 1962 p. 42.

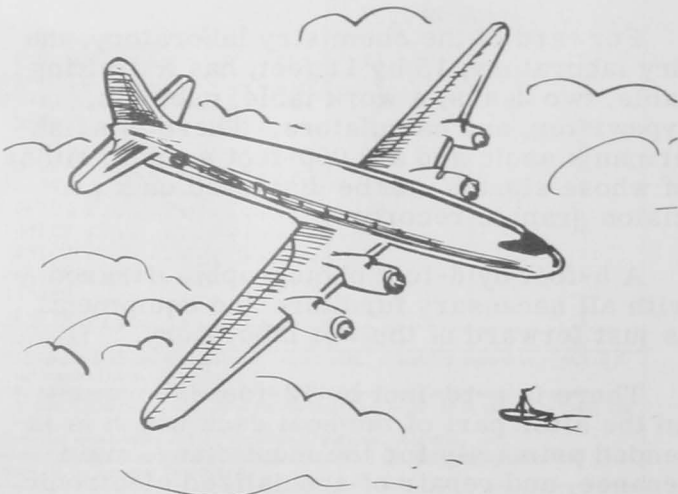


U. S. Foreign Trade

AIRBORNE IMPORTS OF FISHERY PRODUCTS, OCTOBER 1962:

Airborne fishery imports into the United States in October 1962 continued at about the same level as in the previous month, but the value of the October airborne shipments was up 11.9 percent due mainly to the arrival of 8,082 pounds of caviar from Iran. The Iranian caviar entered through the U. S. Customs District of New York.

Airborne shrimp imports in October consisted of 832,844 pounds of fresh or frozen raw headless, 90,348 pounds of fresh or frozen peeled and deveined, and 36,134 pounds of unclassified shrimp. Over 92 percent of the airborne shrimp imports in October entered through the Customs District of Florida. The remainder entered through the Customs Districts of New Orleans (La.), Galveston (Tex.), Los Angeles (Calif.), and San Francisco (Calif.).



U. S. ^{1/} Airborne Imports of Fishery Products, January-October 1962				
Product and Origin ^{2/}	October		Jan.-October	
	Qty. ^{3/}	Value ^{4/}	Qty. ^{3/}	Value ^{4/}
	Pounds	US\$	Pounds	U.S.
Fish:				
Mexico	119,446	19,304	810,988	14,711
Azores	-	-	25,654	722
Rumania	-	-	1,251	187
Portugal	-	-	12,125	300
Canada	-	-	21,317	488
Panama	-	-	7,807	122
Costa Rica	-	-	5,576	611
British Honduras . .	4,675	1,134	19,400	355
Iran	8,082	84,200	8,082	800
Denmark	779	2,287	878	483
Other Countries . . .	420	140	922	522
Total fish	133,402	107,065	914,000	21,363
Shrimp:				
Guatemala	31,573	15,514	261,748	13,177
El Salvador	78,062	48,922	545,174	34,799
Nicaragua	9,984	5,703	989,856	33,611
Costa Rica	171,136	74,407	498,827	21,355
Panama	230,359	143,128	1,653,529	91,965
Venezuela	402,493	213,835	2,884,921	1,555,777
Ecuador	-	-	12,210	400
Mexico	-	-	24,748	522
Netherlands Antilles	-	-	3,075	221
Honduras	25,200	18,588	25,200	1,383
Argentina	10,519	4,864	10,519	541
Total shrimp	959,326	524,961	6,909,807	3,531,111
Shellfish other than shrimp:				
Canada	617	234	224,059	9,141
British Honduras . .	29,373	18,728	206,585	12,299
Honduras	26,709	22,724	139,712	10,900
Costa Rica	-	-	1,400	17
Panama	-	-	1,040	11
Jamaica	-	-	30,014	214
Netherlands Antilles	11,883	8,621	43,079	217
Venezuela	-	-	22,263	134
Mexico	14,421	11,522	68,340	435
Guatemala	3,000	1,125	11,470	35
Leeward and Windward Islands	1,107	436	24,018	16
Nicaragua	-	-	1,186	15
Colombia	-	-	1,763	10
Ecuador	-	-	1,640	12
El Salvador	5,418	4,128	6,249	7
Trinidad	-	-	2,338	1
Dominican Republic .	3,496	3,480	25,575	4
Bahamas	15,900	5,710	17,782	7
Other Countries . . .	672	645	1,151	7
Total shellfish (excluding shrimp) . .	112,596	77,353	829,664	48,515
Grand total	1,205,324	709,379	8,653,471	4,281,222
^{1/} Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.				
^{2/} When the country of origin is not known, the country of shipment is shown.				
^{3/} Gross weight of shipments, including the weight of containers, wrappings, crates and moisture content.				
^{4/} F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.				
Note: These data are included in the over-all import figures for total imports, i.e., these imports are not to be added to other import data published.				
Source: <u>United States Airborne General Imports of Merchandise</u> , FT 380, October 1962, U. S. Department of Commerce.				

Airborne imports of shellfish other than shrimp in October consisted of 104,493 pounds of spiny lobsters from Caribbean and Central American countries, 617 pounds of northern lobsters from Canada, and 7,486 pounds of crab meat from Mexico and the Dominican Republic. Almost 97 percent of the airborne imports of spiny lobsters entered through the Customs District of Florida; the remainder entered through the Customs District of Puerto Rico.

The leading finfish product imported by air in October was 115,726 pounds of fish fillets (mostly from Mexico) all of which entered through the Customs District of Florida.

The data as issued do not show the state of all products--fresh, frozen or canned--but it is believed that the bulk of the airborne imports consists of fresh and frozen products.

**EDIBLE FISHERY PRODUCTS,
FEBRUARY 1963:**

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in February 1963 were up 4.6 percent in quantity and 10.4 percent in value from those in the previous month. Imports were much heavier in February for frozen albacore tuna (increase mostly from Japan and Western Africa) and canned sardines not in oil (increase mostly from South Africa Republic). Imports were also up for sea catfish fillets, canned tuna in brine, canned sardines in oil, canned oysters, fresh and frozen lobster and spiny lobster, and frozen frog legs. But there was a noticeable decline in over-all imports of fish fillets, frozen tuna other than albacore, and frozen shrimp.

Compared with the same month in 1962, imports in February 1963 were up 7.9 percent in quantity and 6.9 percent in value. Imports were up this February for frozen tuna (increase mostly from Japan, Western Africa, and Peru), canned sardines not in oil, canned oysters, frozen shrimp, and sea scallops. The increase was partly offset by a decline in imports of fish blocks and slabs, canned sardines in oil, canned salmon, and canned tuna in brine.

In the first 2 months of 1963, imports were up 2.4 percent in quantity but down 3.8 percent in value as compared with the same period in 1962. Although the over-all totals were about the same in both years, there was a great deal of fluctuation in individual import items. There was a large increase in 1963 in imports of frozen tuna other than albacore and canned sardines not in oil. Imports were also up for cod fillets, frozen salmon, frozen shrimp, sea scallops, and frozen frog legs. On the other hand, imports were down sharply for frozen albacore tuna, canned tuna in brine, canned sardines in oil, canned salmon, and flounder fillets.

Item	Quantity				Value			
	Feb. 1963	1962	Jan.-Feb. 1963	Jan.-Feb. 1962	Feb. 1963	1962	Jan.-Feb. 1963	Jan.-Feb. 1962
Imports:	.. (Millions of Lbs.) (Millions of \$) ..			
Fish & Shellfish:								
Fresh, frozen & processed ^{1/}	90.6	84.0	177.2	173.0	30.8	28.8	58.7	61.0
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	4.2	2.9	7.9	6.4	1.3	1.3	2.9	2.7

Exports of processed fish and shellfish from the United States in February 1963 were up 13.5 percent in quantity but down 18.7 percent in value from those in the previous month. In February, there was a large increase in exports of the lower-priced canned squid and canned sardines not in oil, as well as a modest increase in exports of canned mackerel and canned shrimp. But there was a sharp decline in exports of the higher-priced canned salmon.

Compared with the same month in 1962, exports in February 1963 were up 44.8 percent in quantity, but the value

of exports was the same in both months. Again, the increase in quantity was due mainly to greater exports of canned squid, canned sardines not in oil, and canned mackerel. From a value standpoint, the increase was offset by a decline in exports of canned salmon.

Processed fish and shellfish exports in the first 2 months of 1963 were up 23.4 percent in quantity and 7.4 percent in value from those in the same period of 1962. Exports of the lower-priced canned squid (principally to Greece and the Philippines) showed the greatest increase. Exports were also up for canned salmon, canned sardines not in oil, and canned shrimp. But there was a modest decline in exports of canned mackerel. Although not covered in the table, exports of frozen shrimp were up sharply in the first 2 months of 1963 (increase mostly in exports to Japan).

**EXPORT CREDIT INSURANCE,
FIRST QUARTER 1963:**

Short-Term Export Credit Insurance: Credit insurance for United States exporters, covering both overseas commercial and political risks, became available on February 5, 1962, through the Foreign Credit Insurance Association (FCIA). In cooperation with the Export-Import Bank of Washington (Eximbank), the FCIA will insure in a single policy both commercial credit and political risks on short term transactions resulting from United States export sales to buyers in friendly foreign countries.



During the first quarter of 1963, FCIA issued 125 new short-term comprehensive policies covering both political and commercial risks on exports on credit terms of up to 180 days. Since the inception of the program, 1,168 such policies have been issued with an aggregate liability of \$499.2 million.

Eximbank's new services and modifications in its insurance and guarantee programs, announced on January 11, 1963, included insurance policies on export transactions to cover political risks alone. Under the short-term insurance program for political risks alone, 12 policies with an aggregate liability of \$12.7 million were issued during January-March 1963.

Medium-Term Guarantees, Insurance and Credits: Medium-term assistance for credits of from 6 months to 5 years is provided United States exporters on one or more of four bases: (1) guarantees by Eximbank to U. S. financial institutions financing exports without recourse on the exporter, (2) export credit insurance from the FCIA, and (3) guarantees to exporters, or (4) non-recourse financing

directly by Eximbank when the first two methods are unavailable.

(1) Medium-term guarantees to or participations with banks: During the quarter, 132 medium-term comprehensive guarantees were issued to, or participations were entered into by Eximbank with 31 commercial banks which provided non-recourse financing for 82 exporters of shipments valued at \$31.6 million to 35 markets abroad. The banks assumed for their own account the commercial risks on the early maturities of these medium-term credits.

(2) Medium-term export credit insurance: During the reporting period, FCIA in partnership with Eximbank issued 98 medium-term comprehensive export credit insurance policies to 66 exporters covering shipments valued at \$6.9 million to buyers in 22 markets overseas. A total of 195 such policies have been issued since inception of this program on July 16, 1962.

Under the new medium-term insurance program announced in January 1963 to cover political risk alone, 3 policies were issued to 3 U. S. exporters covering shipments valued at \$237,120 to buyers in 3 markets abroad.

(3) Guarantees to exporters: None issued during the quarter.

(4) Non-recourse financing directly by Eximbank: During the first quarter of 1963, 11 participations with commercial banks and exporters were authorized for a total of \$1.8 million on shipments with an export value of \$4.2 million. (Eximbank Reports, January-March 1963.)

* * * * *

IMPORTS OF FISH MEAL UP SHARPLY IN MARCH 1963:

The March 1963 imports of fish meal by the United States were more than double the average for the month established in 1960-1962. During the first quarter of 1963, U. S. imports of fish meal were 69.6 percent greater than in the same period of the previous year.

Peru supplied 41,120 short tons or 85.9 percent of the United States fish-meal imports in March 1963 and 87,751 short tons or 82.4 percent of the imports in January-March 1963.

Year	March	Jan.-Mar.
1963 ^{1/}	47,895	106,471
1962	18,528	62,771
1961	20,458	44,331
1960	18,652	35,301

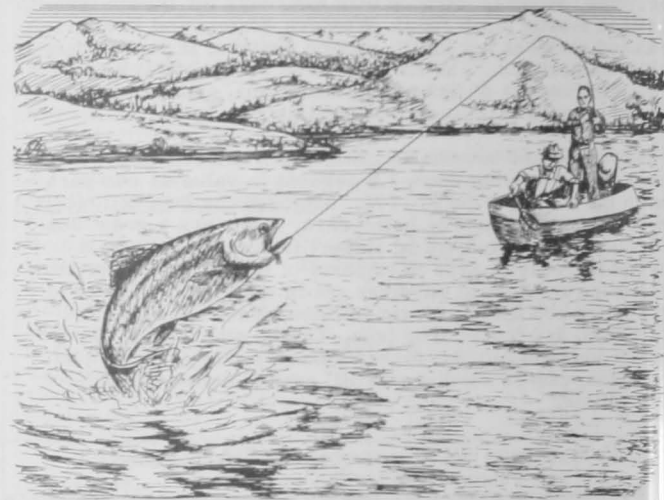
^{1/}Preliminary.
Source: U. S. Bureau of the Census.



Washington

SALMON CATCHES BY SPORTS FISHERMEN GOOD IN 1962:

Catches of salmon by sports fishermen in Washington State during 1962 were good, highlighted by record catches of silver salmon off Westport and the mouth of the Columbia River. Estimates of the State's Department



of Fisheries places the total statewide catch at 598,590 salmon, not including fresh water catches, where insufficient data is available to form catch estimates.

The estimated number of angler trips set a new record of 1,130,717, an increase of nearly 100,000 over 1961.

Silver salmon were available in good numbers from the early-season on--and treated anglers to consistently good fishing. The greatest disappointment of the year occurred in the Strait of Juan de Fuca where chinook salmon catches slumped even lower than in 1960. The silver catch in the Strait, depending chiefly upon the location of schools of feeding fish, was likewise poor. Only those anglers fishing west of Cape Flattery were able to take silvers regularly and this the Neah Bay charter boat anglers did with fine results.

The take of silver salmon at Westport totaled 143,000, more than twice as large as in 1961, with chinook catches of 50,000 the best in the past five years. The silver catch at the mouth of the Columbia totaled 115,900, and chinooks 29,600, for an over-all season average of 1.22 salmon per angler trip. The average at Westport was even better (1.47).

Puget Sound catches were rather ordinary in the light of catches for recent years, but chinook catches rose sharply in November and December 1962. Good survival of the 1960 brood year of chinook, along with favorable weather, appeared to be the primary causes for the late season surge. Total catch in Puget Sound was 193,160 salmon, not large when compared to the 778,755 angler trips for the year.

The oddity of the 1962 season was the unprecedented sport catch of even year pink salmon at Westport and Neah Bay--1,400 at

Westport, 430 at Neah Bay. These fish, usually taken in insignificant quantity during even years, may have been part of the tremendous Bella Coola 1962 run.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, APRIL 1963:

Seasonal increases in landings resulting in lower ex-vestel prices for fresh drawn haddock, and lower wholesale prices for fresh and frozen haddock fillets, halibut, and salmon, were largely responsible for the 3.2-percent decline between March and April this year in the wholesale price index for edible fishery products (fresh, frozen, and canned). Compared with the same month a year ago, the wholesale price index this April at 113.6 was 4.5 percent lower due to sharply lower prices in the subgroup indexes for drawn, dressed, or whole finfish, and canned fishery products.

Substantially heavier fish landings at New England ports, principally haddock, together with price declines for other

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1963 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1957-59=100)			
			Apr. 1963	Mar. 1963	Apr. 1963	Mar. 1963	Feb. 1963	Apr. 1962
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					113.6	117.3	118.4	118.9
Fresh & Frozen Fishery Products:					117.7	123.0	124.4	117.2
Drawn, Dressed, or Whole Finfish:					106.6	121.2	122.7	119.1
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.12	62.5	91.9	94.6	91.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.41	118.3	122.2	125.6	133.1
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.88	.95	122.3	132.7	133.8	120.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.70	.68	104.5	100.7	100.7	126.9
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.42	.69	68.8	113.0	113.0	139.2
Processed, Fresh (Fish & Shellfish):					127.7	125.5	128.5	120.4
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.32	.39	76.5	94.7	98.3	91.1
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.10	1.07	128.9	125.4	130.7	116.0
Oysters, shucked, standards	Norfolk	gal.	8.00	7.75	134.9	130.7	130.7	130.7
Processed, Frozen (Fish & Shellfish):					114.4	117.3	117.3	108.0
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	97.6	97.6	98.9	100.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.34	.37	99.7	108.5	108.5	96.7
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.34	.34	117.5	117.5	115.7	115.7
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.04	1.04	122.8	123.4	123.4	112.7
Canned Fishery Products:					106.8	107.7	108.0	122.1
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.25	24.75	105.7	107.9	107.9	124.2
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.75	11.75	104.4	104.4	104.4	107.9
Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	5.90	5.90	2/100.0	2/100.0	2/100.0	3/118.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.06	9.06	116.2	116.2	119.4	164.3

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/One commodity has been dropped in the fishery products index as of December 1962--"Sardines, Calif., tom. pack, No. 1 oval (15-oz.), 24 cans/cs."--and replaced in the fishery products index by--"Mackerel, jack, Calif., No. 1 tall (15-oz.), 48 cans/cs." Under revised procedures by the Bureau of Labor Statistics all new products enter wholesale price indexes at 100.

3/Based on Calif. sardines and not directly comparable with new subgroup item (jack mackerel) for January-March 1963.

products in the drawn, dressed, or whole finfish subgroup were responsible for a 12.0-percent drop in the index from March to April 1963. Compared with April 1962, the subgroup index this April dropped 10.5 percent because of lower prices for all items except fresh or frozen salmon at New York. From March to April this year, the ex-vessel price for fresh drawn haddock at Boston dropped 32.0 percent. Prices this April also were lower at New York for fresh or frozen dressed halibut (down 3.2 percent), salmon (down 7.8 percent), and yellow pike (down 39.1 percent).



Processing fillets at a New England plant.

Prices for processed fresh fish and shellfish decreased 1.8 percent from March to April this year. Seasonally heavier supplies resulted in a 19.2-percent drop in the price of fresh haddock fillets at Boston, but prices were higher at New York for fresh shrimp (up 2.8 percent), and prices for fresh shucked oysters this April increased 3.2 percent because of limited supplies. Compared with the same month a year earlier, the subgroup price index this April was up 6.1 percent. Lower prices for fresh haddock fillets this April as compared with the same month in 1962 were offset by higher prices for fresh shrimp and shucked oysters.

The April 1963 processed frozen fish and shellfish subgroup price index was down 2.5 percent from the previous month, but rose 5.9 percent from the same month of 1962. The lower subgroup index from March to April was principally due to lower prices for frozen haddock fillets (down 8.1 percent) although a slight price drop for frozen shrimp (down 0.5 percent) at Chicago also occurred. As compared with the same month a year ago, prices this April advanced for all products except frozen flounder fillets which were lower by 2.5 percent.

The canned fishery products subgroup index at 106.8 percent of the 1957-59 average dropped 0.8 percent from March to April 1963. Most of the canned fish products remained at the March price level but canned pink salmon prices (down 2.0 percent) dropped for the first time since the beginning of the year. Compared with the same month a year ago, the subgroup index this April was lower by 12.5 percent. Stocks from the 1962 canned pack of Maine sardines and Pacific salmon were liberal this April and prices for some items were sharply lower--canned Maine sardines (down 29.3 percent) and canned pink salmon (down 14.9 percent). In addition, canned tuna was lower by 3.2 percent due to unsettled market conditions.



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