

TRENDS AND DEVELOPMENTS

Air Freight

FRESH PACIFIC SALMON SHIPPED TO NEW YORK CITY BY AIR FREIGHT:

Air-freight speed, a newly-developed container, and a gelatin refrigerant are now putting fresh Pacific salmon on the New York City market up to eight days faster than other methods of transportation. It also shows that an eastern market exists for "ocean-fresh" shipments--even at 10- to 15-percent higher prices. The cost of air freight was reported as about \$17 a hundredweight as compared to \$13-15 a hundredweight for rail express in less than carload lots, depending on the weight of the shipment.

The "flying fish" plan was developed by an executive of a Burbank, Calif., airline. He first solved the problem of a fish container by using a laminate with a rigid core of foamed polystyrene. Waterproof, light in weight, and self-insulated, the container is sized for palletization and also serves as a convenient sales unit. Although inexpensive enough to throw away, it is durable enough to survive a number of trips if desired.

To overcome the bulk and the melting problems of ice, the airline simply eliminated ice entirely. In its place, a gelatin material frozen in polyethylene bags to a temperature lower than ice, but not low enough to freeze the fish was used.

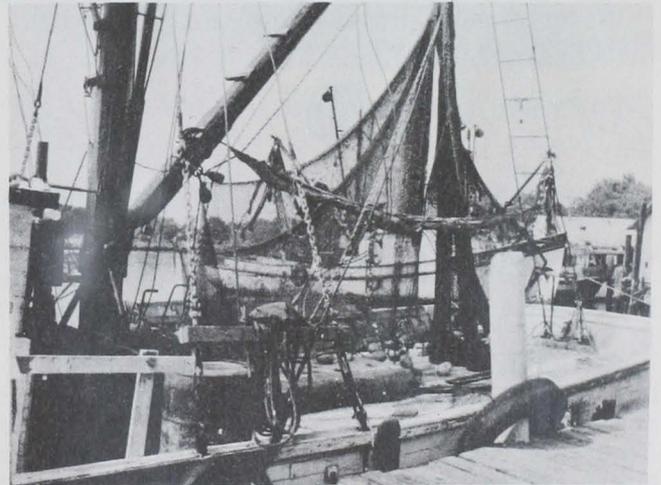
On Monday, May 14, 1962, the daily "Fishery Products Report" of the New York Market News Service of the U. S. Bureau of Commercial Fisheries showed the following wholesale prices for fresh red king salmon from California: for fish shipped by air express, large some \$1.10, medium some 95 cents, and small some 85 cents a pound; for fish shipped by rail express, large some \$1.05 and medium some 90 cents a pound.



Alabama

FISHERY LANDINGS, 1961:

The Alabama commercial catch of fish and shellfish in 1961 amounted to 8.5 million pounds valued at \$2 million ex-vessel. Compared with the previous year, this was a drop of 30 percent in quantity and 34 percent in value. The 1961 shrimp catch was the lowest since 1949. Shrimp (heads-on), red snapper, mullet, blue crabs, oysters, and groupers comprised 92 percent of the year's total catch.



Shrimp trawler docked at Bayou La Batre. Trawl net is hung up to dry to prevent deterioration.

A marked decrease in shrimp landings (down 3.6 million pounds) was primarily responsible for the 1961 over-all drop. Failure of the shrimp crop and heavy oyster mortality placed the fishing communities in a serious economic condition. Due to a shortage of landings of principal species, shore facilities operated at a minimum, drastically reducing the earnings of plant employees. By the end of the year Federal aid was sought to alleviate the situation.

Blue crab landings totaled 838,000 pounds -- up 68 percent compared with 1960. Increased effort was expended in that fishery due to the scarcity of shrimp and oysters. The crab meat market was weak during most of the year with processing plants operating on a small margin of profit.

Oyster production (508,000 pounds of meats, valued at \$162,000) dropped 661,000 pounds and \$155,000 below 1960. This sharp decline was primarily attributed to heavy mortality due to an influx of fresh water from flooded upstate areas in February.

The catch of fresh-water and salt-water finfish amounted to nearly 3.6 million pounds valued at \$628,000 ex-vessel. This was a gain of nearly 10 percent in quantity compared with the previous year. Red snapper (1.8 million pounds) accounted for 50 percent of the total finfish landings and 75 percent of the finfish value. Mullet was next in volume, accounting for 25 percent of the catch. Incidental catches of croaker, king whiting, white sea trout, and spot by shrimp trawlers registered substantial gains compared with the previous year.



Alaska Fisheries Exploration and Gear Research

PROGRAM FOR EXPLORATORY BOTTOM FISHING, 1962:

Proposed plans for exploratory fishing for bottomfish and other marine fish and shellfish were announced in April 1962. Four different cruises will be made with a chartered vessel by the staff of the Juneau Exploratory Fishing and Gear Research Base of the U. S. Bureau of Commercial Fisheries. Explorations are expected to begin July 1 and continue until late November. The Bureau's Auke Bay Biological Research Laboratory will participate in the cruises. Scientists from the Alaska Department of Fish and Game are also expected to be aboard.

Two separate six-week cruises are proposed in waters between Prince William Sound and Kodiak Island during July, August, and September. Work anticipated during the fall season includes two cruises in South-eastern Alaska.

Although general catch information primarily of interest to the commercial fishing industry is the major goal of the summer explorations, king crab data will be the main objective of the first survey, and shrimp data of the second survey.

The fall cruises suggested are preliminary to surveys that may later determine available quantities of commercial species. The third cruise of the year is planned as a trawl inventory of fish, the fourth as a survey to find where and how to catch commercial quantities of octopus, a halibut bait imported from Japan and now in diminishing supply.

This will be the third year of operation for the Bureau's Alaska Exploratory Fishing and Gear Research Base. In 1960, a single 35-day cruise with the Astoria, Oreg., trawler *New Hope* was made west of Craig, Alaska. In 1961 two cruises with the chartered trawler *Tordenskjold*, lasting four months, resulted in surveys of waters from Cape Spencer to Cape St. Elias and in Lower Cook Inlet.



Alaska Fisheries Investigations

SALMON FRY MIGRATIONS:

In Auke Creek near the Biological Research Laboratory of the U. S. Bureau of Commercial Fisheries, the pink salmon fry migration was nearing its peak in April 1962, and red and coho salmon fry migration had begun by the end of April. Fry migrations of all species were later this year than in 1961.

At Little Port Walter, sampling was completed of pre-emergent fry from the spawning areas. Over 6 million pink salmon fry survived the adult run of 30,000 fish last fall, representing an excellent winter survival. The largest fry migration in the 22-year history of the station was expected. Ten percent of the predicted migration had been counted by April 24, with about 160,000 fry migrating that night. Herring moved into the estuary and were feeding on pink salmon fry. It appears that predation by herring may be a major factor in the survival of Little Port Walter pink salmon.

In early April, Karluk Lake had an ice covering of only 13 inches and all tributaries entering the lake were free of ice. The fry



Enumerating pink salmon fry on their outmigration at Sashin Creek, Little Port Walter, in Southeastern Alaska.

counting stations at Grassy Point and Meadow Creek were set up on April 5 and April 7, respectively. Average nightly catches for the first five nights of fry trapping were 137 fry at Grassy Point and 153 at Meadow Creek. Results of staining and recovery tests indicated that the traps were taking from 14 to 23 percent of the migration. The fry migration at Grassy Point was earlier and of a greater magnitude this year than in 1961, probably due to warmer weather.

A pink salmon, tagged June 19, 1961, near Unimak Island of the Aleutian Chain by biologists of the Auke Bay Laboratory, was recaptured near Pakacha River in East Kamchatka, U.S.S.R., on August 8, 1961.

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WESTERN ALASKA KING CRAB CATCH, FIRST QUARTER 1962:

The Alaska Department of Fish and Game reported that the king crab catch for Western Alaska (Peninsula, Chignik, and Aleutians) totaled 5,562,000 pounds for the first three months of 1962, compared with 3,697,000 pounds for the same period in 1961. This



Fig. 1 - Kodiak king crab haul, showing large average size of king crab.

was an increase of nearly 2 million pounds for the 1962 period. All of this increase was in the Aleutian area where 4,885,000 pounds were taken. Last year the catch for that area for January-March was 1,993,000 pounds.

Fishing effort in the vicinity of Adak has increased threefold over the 1961 season as vessels from the Peninsula-Chignik area moved out to take advantage of the excellent fishing. This change in fishing effort has been reflected in the decline in landings for the Peninsula-Chignik area. Last year the total for that area through March was 1,704,000 pounds; this year it was 677,000 pounds.

King crab were still available in the Peninsula-Chignik area in commercial quantities, but severe weather conditions and lack of effort are believed responsible for the lower catches. As of early April 1962, the Aleutian Islands fishery was not operating due to the soft-shell condition of the crabs. Fishing was expected to pick up again in July at Kachemak Bay. The fishery picked up due to improving weather conditions, but the molting season of the crabs began in April

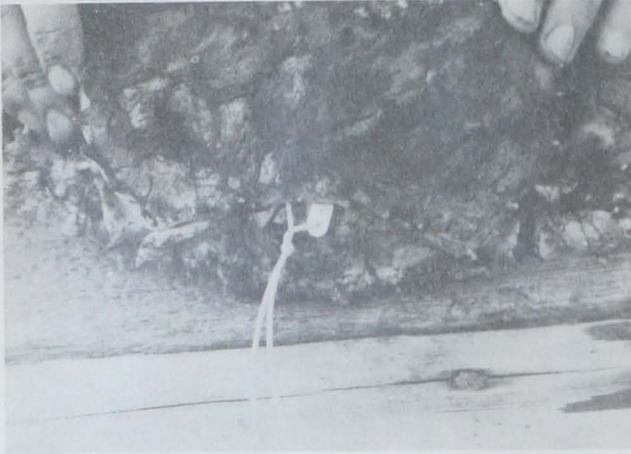


Fig. 2 - Method of tagging king crab for research purposes.

and this was expected to cause a temporary slump in the fishery there also.

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HERRING FISHERY:

The herring arrived at Indian Point, near Juneau, Alaska, assuring a good supply for halibut bait and for local sport fishing. In addition, herring caught near the Sitka area were landed in Juneau. By State law, only one herring reduction plant (at Washington Bay) will be permitted to operate this year.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 62-A-1-Pelagic Fish: The Gulf of California from Mazatlan north to George's Bay on the mainland side; San Felipe south to Cape San Lucas on the Baja California side; and the Pacific coast of Baja California from Cresciente Island to Cedros Island were surveyed (February 19-March 29, 1962) by the California Department of Fish and Game research vessel Alaska. The objectives were (1) to obtain sardine samples from the Gulf of California for blood genetics and morphometric studies in order to distinguish the relationships of Gulf sardines to those on the Pacific Coast; (2) to sample Pacific mackerel and jack mackerel for age studies; and (3) to collect miscellaneous species and data requested by other investigations.

GULF OF CALIFORNIA: Sardines were collected throughout most of the Gulf. They ranged from newly-hatched larvae to large adults exceeding 200 mm. Nine samples of adults and juveniles and 10 samples of post-larval fish were netted. Sardine larvae were unusually abundant: of 29 samples containing clupeoid larvae most were tentatively identified as sardines. Sardines were attracted to the ship at night with a 1,500-watt light and then captured with the blanket net. Larvae were collected with a dip net.

U. S. Bureau of Commercial Fisheries personnel conducted serological tests on six samples of fish ranging from 85 to 200 mm. standard length. Those tests established that Gulf sardines constitute the third known, distinct, non-interbreeding, subpopulation. The other two subpopulations, designated as "northern" and "southern," occur off California and Baja California, Mexico.

The "Gulf" subpopulation was distinguished by the frequency with which a particular blood type (C+) showed up in standard tube agglutination tests. The C+ phenotype mean frequency was 18.0 percent for Gulf fish compared to 5.9 percent for the adjacent "southern" stock and 13.9 percent for "northern" sardines.

Information was obtained on sardine sizes and distribution in the Gulf. The relatively numerous samples collected over such a widespread area indicates a larger and more widely-distributed population than inferred from previous data.

Pacific mackerel, collected on seven stations, were all preserved for study ashore. No jack mackerel were captured or observed. Small samples of several anchovy species were collected in the southern Gulf.

An 8-ft. beam trawl was fished when time and bottom topography permitted. Depths of 10 to 50 fathoms yielded a variety of fish and invertebrates which were preserved for study ashore. A 25-fathom long beach seine was used for selected shoreline collections.

Three sets with deep-water traps were unsuccessful. One trap failed to return to the surface; one, an apparent delayed return, was subsequently recovered by Mexican citizens; and no catch was made with the third.

Annotated fathograms were made over sparsely sounded areas of the Gulf using a 0 to 6,000 fathom range EDO depthfinder. All data were delivered to the U. S. Navy Hydrographic Office, Wilmington, Calif.

Approximately 1,300 feet of 16 mm. color movies and numerous still photographs were taken of cruise activities.

Sea surface temperatures ranged from 70° F. (21.1° C.) at Palmas Bay to 57.2° F. (14.0° C.) at Point San Fermin with most below 64° F. (18.05° C.). Good weather prevailed in the Gulf during most of the cruise.

PACIFIC COAST OF BAJA CALIFORNIA: Special effort was made to delineate the geographical boundary between the "Gulf" and the "southern" subpopulations of sardines. Adverse weather prevented work in the area between Cape San Lucas and Cresciente Island. Sardines were collected on 3 of the 17 night-light stations north of there, however. One sample netted off Cresciente Island was blood-typed and found typical of the "southern" subpopulation.

A special albacore trolling track was made near Guadalupe Island. Although sea-surface temperatures were favorable ranging between 60.8° F. (16° C.) and 66.2° F. (19° C.), no fish were caught.

Two exploratory beam trawl tows for hake were made off northern Baja California without results.

Airplane Spotting Flight 62-2-Pelagic Fish: The area from the United States-Mexican Border to Point Piedras Blancas, Calif., was surveyed from the air (February 21-22, 1962) by the Department's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools. Good weather prevailed throughout the area.

Between Long Beach and Point Piedras, Calif., 319 anchovy schools were counted: 253 off Cambria Pines, 56 in Estero Bay, and 10 south of Pt. Mugu.

Between Long Beach and the United States-Mexican Border, 5 sardine schools were observed between Newport and Oceanside. A few deep, small, unidentified spots were seen between Del Mar and Oceanside and some dim spots off La Jolla Pt. were probably jack mackerel or Pacific mackerel.

About 50 basking sharks, average length estimated at about 20 feet, were observed one mile off La Jolla Pt. There were four skin divers among them. Two of the divers were swimming up to the sharks or intercepting them and grabbing their dorsal fins. A grabbed shark would give the diver a brief ride before shaking him off. The other two divers seemed to be photographing the sharks.

Airplane Spotting Flight 62-3-Pelagic Fish: The survey to determine the distribution and abundance of inshore pelagic fish schools was continued (March 19-22, 1962) by the Department's Cessna "182" 9042T from Santa Cruz, Calif., to the United States-Mexican Border. Scouting conditions were only fair because of partial cloudiness.

Seven schools of what were probably Pacific mackerel were seen off Santa Monica and 15 anchovy schools were off Port Hueme. Thirty-one gray whales were counted heading north.

Between Santa Monica and the United States-Mexican border, 35 anchovy schools were seen, all off Santa Monica. Thirteen gray whales were observed going north.

No fish schools were sighted from Pt. Sal to Santa Cruz, but an 8-ft. shark was just outside the surf at Oceano. The return trip was over Santa Monica at 7,000 feet. From that height, the anchovy schools in the bay were plainly visible. Some 50 anchovy schools, 7 Pacific mackerel schools, 56 gray whales and 1 shark were sighted.

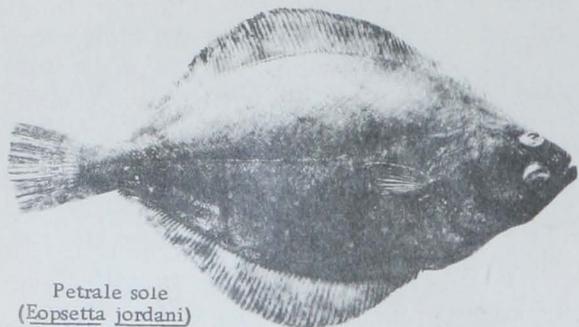
Note: See Commercial Fisheries Review, May 1962 p. 14.

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DOVER AND PETRALE SOLE TAGGING STUDIES:

M/V "N. B. Scofield" Cruise 62-S-3-Trawl: The coastal waters between Eureka, Calif., and Mack Arch, Oreg., were surveyed (April 4-May 3, 1962) by the California Department of Fish and Game research vessel N. B. Scofield to tag Dover and petrale soles (Microstomus pacificus and Eopsetta jordani), and to collect and preserve incidental specimens for other investigations. A 400-mesh Eastern-type otter trawl of 4½-inch mesh was used throughout the trip.

A total of 2,396 Dover sole were tagged and released in 45 to 136 fathoms. Over 90 percent were trawled in 70-125 fathoms.



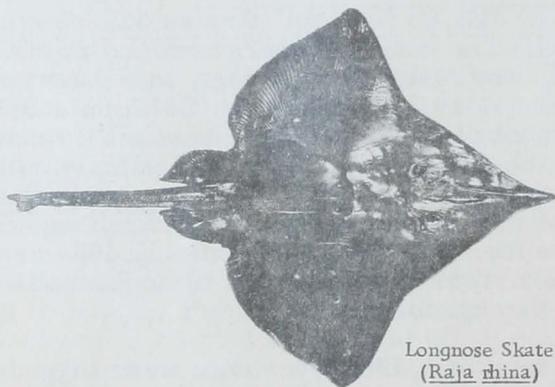
Petrale sole
(*Eopsetta jordani*)

Some 441 petrale sole were tagged and released in 41 to 124 fathoms. Over 75 percent had been taken in 50-74 fathoms. Tags used were the vinyl spaghetti-type. The tagging was a joint operation with the Oregon Fish Commission.

Primary objective of the program, which was coordinated by the Pacific Marine Fisheries Commission, is to obtain information on movements of the fish. This is part of a coastwide plan to determine if separate stocks of Dover and petrale sole exist along the Pacific coast, as a background to management programs for those fish which account for more than \$1 million annually to the commercial fishing industry.

Since it is essential that the fish tags find their way back to the biologists for this program to be successful, a one dollar reward will be paid for each of the tags returned to the Department of Fish and Game.

Several tags from both species were recovered by commercial vessels before the cruise was completed. Information obtained from these and other returns will add to the knowledge of population structure and seasonal distribution.



Longnose Skate
(*Raja rhina*)

Deep-water skates (*Raja* sp.) were collected for Scripps Institution of Oceanography

and invertebrates were saved for the Allan Hancock Foundation.

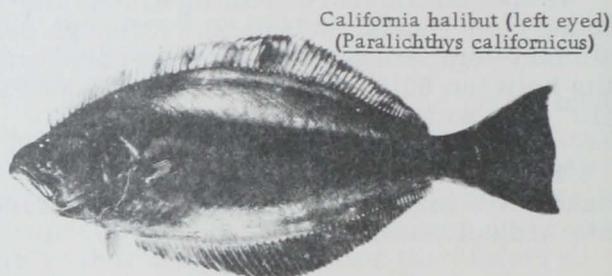
Live invertebrates and fish were delivered to Marineland of the Pacific, San Pedro, and the Shipwreck Aquarium, Eureka.

Note: See Commercial Fisheries Review, March 1961 p. 21.

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HALIBUT AGE-WEIGHT-LENGTH RELATIONSHIPS STUDIED:

M/V "N. B. Scofield" Cruise 62-S-2-California Halibut: The California Department of Fish and Game research vessel N. B. Scofield cruised (February 26-March 22, 1962) off the mainland coast of California from Seal Beach (Los Angeles County) to Naples (Santa Barbara County)--principally off Ventura in 11 to 15 fathoms. Objectives of the cruise were (1) to secure a sample of California halibut stratified by sex and length for determining age-weight-length relationships; (2) to determine the temperature profile on the trawling grounds; and (3) to secure a collection and/or a record of the fish, molluscs, and crustaceans found in association with halibut.



California halibut (left eyed)
(*Paralichthys californicus*)

A very satisfactory sample of California halibut was secured by trawling. The nets were an Eastern-type not specifically adapted for halibut. An estimated 1,000 halibut were caught. The otoliths and one of the pre-opercular bones were removed from about 500 of the fish.

Male halibut predominated in the catch of fish up to 20 inches. Males and females were in equal numbers between 20 and 22½ inches, but females outnumbered males in the larger sizes: as much as 21 to 1 for fish longer than 35 inches.

Temperature profiles taken with a bathythermograph at the beginning of each trawl showed that readings were about the same from top to bottom. Evidence of a thermocline was almost nonexistent.

Day-to-day temperatures varied about 2°, ranging between 51° and 53° F.

Trawls varied from 1 to 3 hours duration. Fish found in association with halibut were saved for Laboratory examination.

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62N1g and 62N1h
Salmon: The midwater trawl operations of the California Department of Fish and Game research vessel Nautilus were continued (April 1-5, 15-19, 1962) in the Carquinez Strait to capture marked salmon fingerlings on their seaward migration. A nylon midwater trawl with 25-foot square opening was used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were alternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 114 tows was completed in the Strait during the cruise yielding a total catch of 257 king salmon (*Oncorhynchus tshawytscha*). Forty-nine of the salmon were marked recoveries previously released in San Pablo Bay and at Rio Vista, Coleman Hatchery into Battle Creek, and Nimbus Hatchery into the American River.

Other species appearing in the catch consisted mostly of Pacific herring (*Clupea pallasii*)--54,980 fish, northern anchovy (*Engraulis mordax*)--7,849 fish, Sacramento smelt (*Spirinchus thaleichthys*)--2,167 fish, striped bass (*Roccus saxatilis*)--1,492 fish, American shad (*Alosa sapidissima*)--934 fish, king salmon (*Oncorhynchus tshawytscha*)--257 fish, mudsucker (*Gillichthys mirabilis*)--189 fish, staghorn sculpin (*Lepidocottus armatus*)--137 fish, jacksmelt (*Atherinopsis californiensis*)--100 fish, split-tail (*Pogonichthys macrolepedotus*)--79 fish, pipefish (*Syngnathus griseo-lineatus*)--61 fish, and surfsmelt (*Hypomesus pretiosus*)--45 fish.

Note: See Commercial Fisheries Review, June 1962 p. 7.



Central Pacific Fisheries Investigations

STUDY OF OCEAN CURRENTS IN CENTRAL PACIFIC:

A study of ocean currents in the central Pacific Ocean by means of drift bottles was started in January 1961 by the U. S. Bureau of Commercial Fisheries Biological Laboratory in Honolulu. This long-term study was designed to provide information on the changes which take place in the currents with season, and from year to year. Such information is vital to an understanding of conditions in the ocean itself, and of the effects of ocean currents on the abundance and distribution of important commercial fish species and the organisms which provide their supply of food.



During 1961 the Laboratory's research vessel, the Charles H. Gilbert, released about 8,000 drift bottles in five cruises. As of April 1962 about 5 percent of those bottles have been found, most of them on islands of the Hawaiian chain. This rate of returns is similar to that obtained in drift bottle studies in coastal areas of the United States and is surprisingly high considering the size of the inhabited coastline of the Islands in relation to that of the three million square mile area in which most of the bottles were released. The pattern of drift bottle returns shows interesting changes in the current patterns near the Hawaiian Islands at different times of the year. During the winter months, most of the bottles which came ashore were those released to the south and west of the Islands. Very few of the bottles dropped to the east and north of the Islands were recovered. In spring the bottles were carried somewhat to the west, but the major movement was still toward the north. Later in the year, the pattern of recoveries showed a pronounced westerly movement, with few recoveries from the south.

Although most of the recovered bottles traveled relatively short distances, in a large number of cases the bottles had been carried for distances of over a hundred miles, at speeds of about 10 miles per day or more. The record for distance, in the returns from the Hawaiian Islands, was 540 miles traveled between a release point south of French Frigate Shoals and the recovery at Lisianski Islands, in the leeward group of the Hawaiian chain; the bottle was recovered 58 days after release, and was carried at a minimum speed of 9 miles per day. The longest distance traveled by any of the drift bottles released by the Honolulu Laboratory was about 1,800 miles, from the release point near the Equator at the international date line, to New Ireland in the Bismarck Archipelago; this bottle traveled at a speed in excess of 27 miles per day over this distance.

An interesting and significant observation is the fact that, in many cases, several bottles from a single release have traveled considerable distances to wash ashore close together at about the same time. For example, 11 out of 40 bottles from one release in the western Pacific late in 1961 were found on Maiana Island, in the Gilberts, after traveling almost 300 miles. This implies that there is surprisingly little dispersion in the open ocean due to turbulent mixing, or that there is a mechanism, such as convergence of the surface waters, which tends to keep the drift bottles together as they move with the currents. In either case these findings are of interest to the physical oceanographer, but features such as large-scale surface convergences are of interest to the biologist and the fisherman as well, since they provide a possible mechanism for the concentration of plankton and forage organisms which tend to attract commercially-important fish species.

In the near future, the results obtained from drift bottles will be augmented by the use of drift cards released near the Hawaiian Islands from aircraft. Test releases of drift bottles from an airplane showed that more than 20 percent of the bottles break when hitting the water. As a result, releases from aircraft will consist of cards, similar to those now used inside bottles, but enclosed in plastic envelopes weighted along one edge, so that the cards will float in a vertical position and not be unduly influenced by the winds. Results for aircraft releases of drift cards near the Hawaiian Islands at intervals of about one month and the Charles H. Gilbert releases

of drift bottles at greater distances should add greatly to the meager knowledge of the surface currents in the central North Pacific.



Conservation

OCEAN FOOD RESOURCES MENTIONED BY PRESIDENT KENNEDY IN ADDRESS TO WHITE HOUSE CONFERENCE ON CONSERVATION:

The value of ocean food resources was mentioned in the address of President Kennedy to the White House Conference on Conservation on May 25, 1962, at Washington, D. C.

In part, the President said: ". . . In addition, we can make the most extraordinary gains in getting food from the ocean depths in the next 10 or 20 years. This question of oceanography has also occupied the attention of the Congress and this Administration, how we can double the amount of protein which is available to people around the world. This is a whole new area of conservation, unknown to those who preceded us but which is now coming into public understanding, as a result of your efforts and the efforts of others, and which can make the most profound difference to the lives of people who live rather listlessly because of inadequate proteins.

"So harnessing science to conservation is going to be the great contribution of our day. . . ."

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FISHERY FIRM RECEIVES ONE OF SEVEN INTERIOR DEPARTMENT 1962 CONSERVATION SERVICE AWARDS:

Among the seven recipients of the 1962 Conservation Service Awards of the U. S. Department of the Interior was the Smith Research and Development Corporation Lewes Del., a subsidiary of a large menhaden fishery firm on the East Coast. In addition to that firm, a former United States Senator, a former governor, a citizen member of the Outdoor Recreation Resources Review Commission (ORRRC), two other leading conservationists, and one other private corporation were presented awards on May 25, 1962, in the Department's auditorium in Washington, D. C., by Interior Department Secretary Stewart L. Udall. The awards are made annually to private citizens and organizations for outstanding achievement in furthering the objectives of natural resource conservation programs.

Secretary Udall told Otis Smith, President of the Smith Research and Development Corporation, that his company "has rendered distinguished service in the cause of conservation. For a number of years, the Corporation has

striven to preserve the inshore environment which is essential to preserve some of the most valuable of our Atlantic fish and wildlife species. In 1961, you made available to the Department your scientific research vessel, the Cape May, and assumed all maintenance and operating cost, making possible the first systematic hydrographic survey of the continental shelf along the coast of New Jersey."

Also honored for impressive contributions in the field of conservation were: Honorable Joseph C. O'Mahoney of Wyoming, who served in the Senate for 25 years; Honorable Percival P. Baxter, former governor of Maine; Joseph W. Penfold, ORRRC member and conservation director of the Izaak Walton League; Don G. Fredericksen, Gooding, Idaho; M. D. Bryant, San Angelo, Texas; and the Phillips Petroleum Company, Bartlesville, Oklahoma.

Secretary Udall also presented a special plaque to Laurance S. Rockefeller, chairman of the Outdoor Recreation Resources Review Commission, for his continuing outstanding contributions to conservation. Rockefeller received the Department's Conservation Service Award in 1956.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-APRIL 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, more fresh and frozen fishery products was purchased in April 1962 by the Military Subsistence Supply Agency than in the previous month--the quantity purchased was up by 18.1 percent but the value of the purchases was up only 3.4 percent. This shows that lower-priced products were bought in April than in March because the value did not increase in the same proportion as the quantity. Compared with the same month a year earlier, April 1962 purchases were up 20.9 percent in quantity and 13.5 percent in value.

QUANTITY				VALUE			
April		Jan. -Apr.		April		Jan. -Apr.	
1962	1961	1962	1961	1962	1961	1962	1961
. . . . (1,000 Lbs.) (\$1,000)			
2,300	1,902	7,088	7,069	1,121	988	3,995	3,535

During the first 4 months of 1962, purchases were up only 0.3 percent in quantity but 13.0 percent in value as compared with the same period in 1961. Evidently the greater increase in value is due to higher prices and the purchase of more higher-priced products.

Prices paid for fresh and frozen fishery products by the Department of Defense in

April 1962 averaged 48.7 cents a pound, about 6.9 cents less than the 55.6 cents paid in March 1962 and 3.2 cents less than the 51.9 cents a pound paid in the same month of 1961.

Product	QUANTITY				VALUE			
	April		Jan. -Apr.		April		Jan. -Apr.	
	1962	1961	1962	1961	1962	1961	1962	1961
Tuna (1,000 Lbs.) (\$1,000)			
Salmon	563	1,297	3,676	2,662	301	572	2,040	1,175
Sardine	-	2	1,015	2	-	2	638	2
	1	21	11	81	1/	10	7	39

1/ Less than \$1,000.

Canned: Tuna was the principal canned fishery product purchased for the use of the Armed Forces during April this year. In the first 4 months of 1962, purchases of canned tuna and salmon were substantially greater than in the same period of 1961. But purchases of canned sardines were down because of the short packs of both Maine and California sardines during 1961. Purchases of the three principal canned fishery products (tuna, salmon, and sardines) in the first 4 months of 1962 were up 71.3 percent in quantity and 120.7 percent in value as compared to the same period in 1961. The higher value this year is accounted for by the purchase of more canned salmon.

Note: 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.



Florida

FISHERIES RESEARCH, JANUARY-MARCH 1962:

Research on fisheries with funds provided by various sources is being carried on by the Marine Laboratory of the University of Miami. The research of interest to commercial fisheries which was reported in the Laboratory's March 1962 Salt Water Fisheries Newsletter follows:

Larval Shrimp: The spawning habits of the Tortugas pink shrimp are being studied under a contract with the U. S. Bureau of Commercial Fisheries. Landings of Tortugas shrimp were over 10 million pounds in 1961 and were valued at nearly \$5 million ex-vessel. This fishery, thus, provides the basic natural resource for an important

segment of the economy in fishing towns from Key West to Fort Myers.

Few shrimp larvae were spawned during the first three months of 1962. However, this corresponds with the usual low in spawning during the winter months.

The numbers of larvae reached a seasonal low in November. In December and January numbers of larvae were also low, but were slightly increased over November as a result of the presence of larvae at certain in-shore stations. Bottom water temperatures declined to a low of 68°-72° F. in January. Numbers of larvae and also water temperatures increased in February and March. By April, large numbers of postlarvae had survived their first 3 weeks of life and were entering the nursery areas along the coasts of South Florida. Over 1,300 were collected there in a single 30-minute haul with a plankton net.

The growth rates of pink shrimp held in aquaria for 8 months have been slow during the recent winter period. These shrimp were captured when they were only $\frac{1}{4}$ inch in length; they grew to over 3 inches in length by April 1962. In recent months they molted about every 3 weeks. The body of a shrimp is covered by a hard outer skeleton which must be shed periodically so that growth can take place.

Ecology of Florida Bay: The prolonged drought in south Florida has had a marked effect on the salt content of the normally brackish-water bays, ponds, and creeks of southern Everglades Park. Marine conditions as of April extended far up the channels of the Shark, North, Watson, Roberts and East rivers. Salt kills of fresh-water bass and sunfish were reported in the upper reaches of the Shark River channel. The increase in salt content permitted re-entry of larvae of many species of marine fish and invertebrates into the Coot Bay-Whitewater Bay areas that had largely disappeared during the heavy rainfall period 1958-1960. Large numbers of juvenile shrimp, eels, anchovies, and spotted sea trout were collected in the plankton nets during the first three months of 1962.

Early in March, abnormally high tides brought about by a severe storm forced salt water far into the fresh-water zone, with appreciable salt recorded at Mahogany Hammock, Paurotis Pond, and Nine-mile Bend.

The salt intrusion due to the high tides crossed a belt of land approximately 15 miles in width all across the southern border of the Park. At Paurotis Pond large numbers of Carolina marsh clams, averaging about 1.5 inches in diameter, were killed by salt water approximately half the strength of sea water. Normally the water in Paurotis Pond is fresh. It may be expected that the drought will increase in severity through May, and with higher temperatures of spring increasing the evaporation rate, salt content of Florida Bay waters will increase. In past drought periods the salt content of Florida Bay off Flamingo has risen to double the strength of sea water. At that level, many animals are forced to move offshore to the normal salinity of the Gulf of Mexico.

Spotted Sea Trout: It is bad enough (from the point of view of the fish) that some fish are tagged once by biologists to study their behavior, but one sea trout was tagged twice. During 1960 a biologist from the Marine Laboratory tagged a sea trout near Fort Myers with an internal plastic tag. About a year later the same fish was caught again by a commercial fisherman hired to catch fish for tagging. Because the internal tag can not be found unless the fish are gutted, another cut was made in the body wall and the trout was tagged and released once more. A commercial fisherman caught the unfortunate fish for the third time about a year after the second tagging. He turned in the two tags and collected a double reward for the single fish. The trout had been recaptured only a few miles from where it had been tagged in the beginning.

Fish Behavior Studies: The National Science Foundation has awarded a grant of \$200,000 to the Institute of Marine Science for construction of a new fish behavior laboratory. This facility will enable scientists to study marine animals under conditions in which the various environmental factors can be controlled. It is expected that the facility will attract many visiting scientists from this and other countries since it will be the only laboratory of its kind in the country.

Precooked Frozen Shrimp Coated with Starch Gel: Work is continuing to determine quality changes of precooked frozen shrimp coated with a starch gel. Sensory tests and bacteriological analyses were performed after one month of frozen storage at -20° C. (-4° F.). Results of bacterial analyses revealed no bacterial growth since initial preparation.

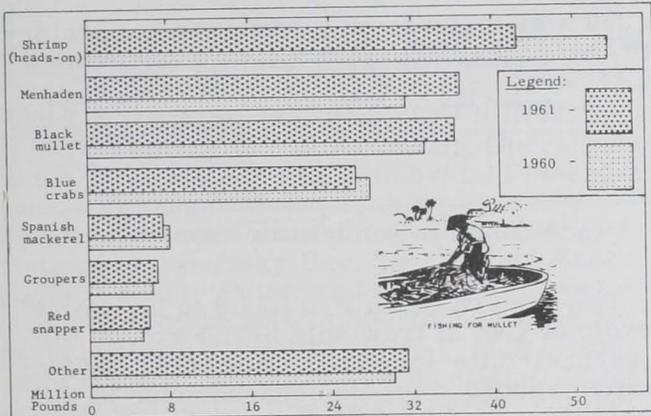
Effect of Freezing on Fish: Enzyme analyses for active amylase are being performed to determine the effect of freezing on fish. After one month of storage there appears to be no destruction of the amylase. Active hydrolysis was observed after incubating the samples at 37° C. (98.6° F.) for 24 hours, whereas at 25° C. (77° F.) for the same period of time negative hydrolysis was observed. Tests will be made following each month of storage.

Note: See *Commercial Fisheries Review*, May 1962 p. 17.

* * * * *

FISHERY LANDINGS, 1961:

Fish and shellfish landings at Florida ports during 1961 amounted to 190.2 million pounds with a value of \$25.7 million ex-vessel. Compared with 1960, this was a slight drop in both quantity and value.



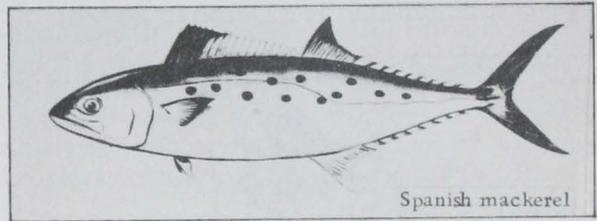
Florida's catch of certain fish and shellfish, 1961 and 1960.

The shrimp fishery experienced a poor season compared with 1960. A total of 42.1 million pounds of shrimp (heads-on) was landed at Florida ports during 1961--a decline of 9.2 million pounds from the previous year, and a drop in value of \$800,000. The average ex-vessel price in 1961 rose to slightly over 32 cents per pound (heads-on), or about 54 cents per pound (heads-off). Despite the reduced landings in 1961, shrimp was still caught in greater quantities and brought higher value ex-vessel than any other species of fish or shellfish.

Oysters were taken in record quantities (3.3 million pounds of meats) with a value of nearly \$1.5 million--a gain of 1.3 million pounds and \$557,000 above 1960. Demand and prices were good most of the year. Several new oyster firms began planting and cultivating oysters on both Florida's east and west coasts.

A good catch of menhaden occurred in 1961--36.3 million pounds. This was an increase of 5.1 million pounds above the previous year. There was a strong demand and good prices for fish meal and solubles.

Although blue crab production was down 1 million pounds compared with 1960, there were still 24.6 million pounds landed. This was the second highest blue crab production year in Florida's history--exceeded only by 1960. The reduced production was the result of more than usual cold or unfishable weather in the winter months.



Spanish mackerel

Black mullet ranked third in landings during 1961 with 35.6 million pounds--2.7 million pounds below last year. Spanish mackerel (7.1 million pounds) dropped over 571,000 pounds below 1960, while the catch of groupers (6.6 million pounds) was up 452,000 pounds.



Fur Seals

PRICES FOR ALASKA SEAL SKINS SET NEW RECORD AT SPRING AUCTION:

The spring 1962 auction sale of U. S. Government and other foreign-produced fur seal skins was held at St. Louis, Mo., on April 12-13, 1962. The attendance at the sale by fur dealers, brokers, and manufacturers was the best in many years; some 71 were present, including participants from Canada, Denmark, Great Britain, and Italy. The prices received for conventionally-processed Alaska seal skins established a new record--a grand average for all sizes and grades of \$106.80. A new high was also established for Lakoda processed seal skins (natural sheared)--an average price of \$44.33 was received for all sizes and grades.

Sales for the United States-owned seal skins totaled \$2,027,346. The average price for 16,996 conventionally-processed seal skins sold for the account of the United States

was \$106.42, an advance of 27.7 percent over the fall sale in 1961. Average prices received for the various types of skins were: Black, \$108.00 (up 21 percent); Kitovi, \$101.23 (up 26.3 percent); and Matara, \$107.42 (up 37.4 percent). The average price of \$44.33 received for 4,664 Lakoda or sheared female skins represents an advance of 11 percent over the price received in the fall of 1961. A small number of low-quality sheared female skins withheld from earlier auctions were disposed of at this sale for an average price of \$13.57 per skin.

The fall auction of seal skins has tentatively been scheduled for October 25-26, 1962.

Note: See *Commercial Fisheries Review*, December 1961 p. 29.



Great Lakes Fisheries

Exploration and Gear Research

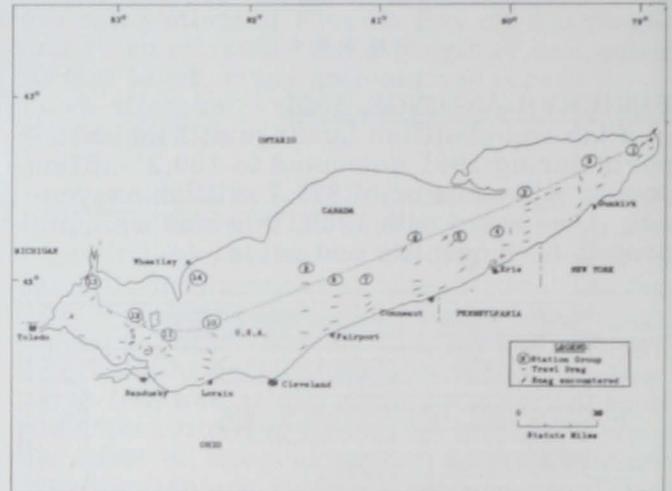
SEASONAL DISTRIBUTION STUDIES OF COMMERCIAL FISH STOCKS IN LAKE ERIE CONTINUED:

M/V "Kaho" Cruise 2: Four weeks of exploratory trawl fishing in Lake Erie were completed on May 20 by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Kaho. The objectives of the cruise were to continue studies of the bathymetric and seasonal distribution of various fish stocks and their availability to standard-type bottom trawls.



Recent addition to the Bureau's Great Lakes research fleet is the exploratory fishing and gear research vessel Kaho.

A total of 63 drags was completed (20 in the eastern basin, 27 in the central basin, and 16 in the western basin) at depths ranging from 3 to 32 fathoms. No commercially-significant quantities of smelt were taken, nor were other species taken in commercial quantity except for several moderate catches of yellow perch in the western basin. The normal seasonal inshore movement for spawning probably accounted for the general lack of fish concentrations in trawlable areas.



M/V Kaho Cruise 2, Lake Erie explorations.

The eastern basin was found to be nearly devoid of fish in trawlable areas except for a several-mile-long heavy midwater concentration recorded on the echo-sounder in the deepest area of Lake Erie near the junction of the international and New York-Pennsylvania boundaries. Gill nets set over much of the 5- to 10-fathom depth range in the eastern basin precluded sampling in otherwise trawlable areas. Bottom conditions in waters shallower than 7 fathoms were generally unsuitable for trawl fishing.

In the central basin, smelt catches of 130 pounds per hour were taken off Fairport, Ohio, at a depth of 13 fathoms; and 150 pounds at 7½ fathoms off Lorain, Ohio. Shallow areas in the central basin were also generally not suited for trawling because of rough bottom conditions or the presence of gill nets and trap nets.

The western basin yielded significant catches of yellow perch: 220 pounds per hour at 7-fathom depths east of Kelleys Island; 410-480 pounds per hour at 5½ to 8 fathoms east of South Bass Island; 130-140

pounds per hour at 5 fathoms west of Middle Bass Island; and 160-380 pounds per hour at depths of $3\frac{1}{2}$ to 5 fathoms west of the Middle and West Sister Islands.

Stomachs of 363 smelt from 10 areas were examined for content and eggs were present in 2 specimens. Most of the yellow perch taken in the western basin had completed spawning while perch from the other basins had not. Nearly all perch caught ranged in size from 7.5 to 8.5 inches and averaged 8.0 inches.

Surface temperatures ranged from 37.8° F. in the eastern basin to 76.5° F. in the western basin. Bathythermograph profiles revealed the water temperature to be homothermous in all areas visited except in the island area where a double thermocline existed.

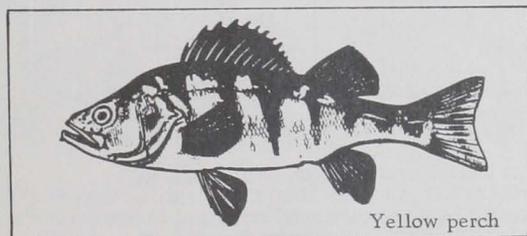
Note: See Commercial Fisheries Review, March 1961 p. 26.



Great Lakes Fishery Investigations

LAKE ERIE FISH POPULATION SURVEY:

M/V "Musky II" (April 1962): Operations of the U. S. Bureau of Commercial Fisheries research vessel Musky II began in early April with visits to limnological and fishery stations at Sandusky Bay, Sand Point, East Harbor, Cedar Point, and east of Kelleys Island. Overnight sets of 300-foot lengths of experimental gill nets ($3\frac{1}{2}$ - to 5-inch mesh) were made at the latter two locations. Many sheepshead, and a few yellow perch, yellow pike (walleyes), carp, and white suckers were taken. Catches in two drags of a bottom trawl made at each of those stations averaged about 632 fish per tow in the open lake and 357 in Sandusky Bay. Principal species were yellow perch, spot-tail shiners, emerald shiners, and sheepshead.



Yellow perch

Yellow perch of the 1959-year-class continue to be the dominant species and age group. Especially large concentrations were found at the 8- to 10-foot depth in the East Harbor area. Males predominated; females

were more scattered and restricted largely to deeper waters offshore. These 3-year-old perch now range from about 6.6 to 9.3 inches in length; males average about 7.4 inches and females about 8.0 inches.

Unusually warm weather during April increased water temperatures from 38° to a high of 55° F. at the end of the month (approximately 9° higher than on the same date in 1961). Yellow pike spawning was all but completed by the end of April and yellow perch were fast approaching peak spawning activity.

Spring sampling of the commercial catch was begun at the major ports along the south shore. Sufficient scale collections were taken from the majority of the species desired, with the exception of blue pike. Commercial operators caught large numbers of perch, but many were undersize. Landings of yellow pike were considerably less than in April 1961.

Note: See Commercial Fisheries Review, June 1962 p. 17.



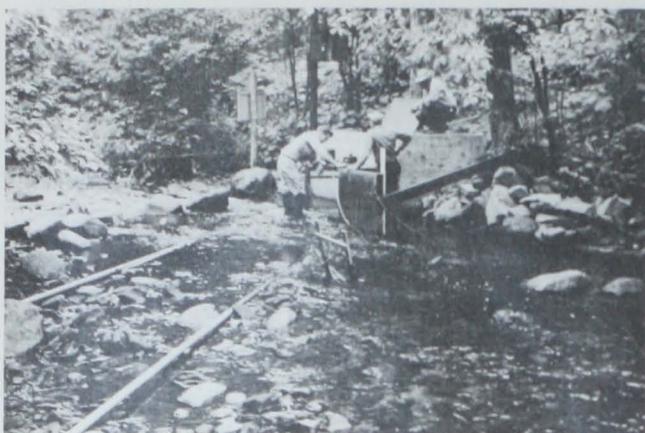
Great Lakes

YEARLING LAKE TROUT PLANTED IN LAKE SUPERIOR:

Nearly 1,760,000 yearling lake trout were released in Lake Superior during late May and early June in a continued effort to rejuvenate that Lake's sagging lake trout fishery. This spring's plantings were the largest made since the lake trout restocking program was started in 1959 under direction of the Great Lakes Fishery Commission.

State and Federal hatcheries in Michigan increased the number to 920,000 yearlings as compared with 560,000 last year. Ontario contributed 583,550 young lake trout to the rehabilitation program, while Wisconsin added another 256,000.

Latest lamprey control studies provide an encouraging note for lake trout survival under the stepped-up planting schedule. A sizable drop in the rate of fresh lamprey scarring on lake trout in different areas of Lake Superior has been reported. Also, only 88 lampreys had shown up at electrical weir barriers in Lake Superior streams through the end of April. A year ago,



Sea lamprey electrical barrier.

about 1,185 of those eel-like predators had been captured at the same barriers.

Michigan's plantings include 94,400 yearlings reared at that State's Conservation Department's Watersmeet Hatchery. They were set free offshore from Ontonagon. Another 70,000 lake trout were planted near Whitefish Bay from the Department's Harrietta Hatchery.

The spring schedule also called for planting 125,000 young trout in the Apostle Islands area where another release of that size will be repeated this fall. The Marquette-Munising area was due for a shoreline planting of 314,500 yearlings in late May or early June; another 315,500 trout will be turned loose at a Lake Superior site not yet determined. Stock for the plantings will come from the U. S. Fish and Wildlife Service hatchery at Pendills Creek.

Approximately 97,000 lake trout were trucked from the U. S. Fish and Wildlife Service hatchery at Charlevoix late in May for release in Lake Michigan. This was the last in a series of experimental plantings to learn more about the distribution, movements, and survival of hatchery trout in that Lake. (Michigan Department of Conservation, May 17, 1962.)



Industrial Products

FISH MEAL, OIL, AND SOLUBLES:

Major Indicators for U. S. Supply, April 1962: For the first three months of 1962,

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, April 1962					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Fish Meal:					
Production 1/:					
June	-	53,162	44,298	52,006	30,949
May	-	32,922	17,194	25,312	17,433
April	7,000	6,179	5,076	6,810	5,143
Jan.-Mar.	7,086	7,556	7,146	7,345	6,518
Jan.-Dec. preliminary tot. 2/ ..	-	289,039	257,969	275,396	216,510
Jan.-Dec. final tot. .	-	311,265	290,137	306,551	248,140
Imports:					
June	-	19,317	11,178	10,836	9,091
May	-	24,753	9,496	16,329	8,949
April	-	19,060	10,397	17,654	11,758
March	18,528	20,458	18,652	16,719	7,233
Jan.-Feb.	44,246	23,875	16,652	39,163	18,915
Jan.-Dec. totals . .	-	217,845	131,561	132,955	100,352
..... (Short Tons)					
Fish Solubles:					
Production 3/:					
June	-	17,772	20,735	26,756	16,561
May	-	13,629	7,370	18,639	9,351
April	2,690	2,965	2,870	6,987	3,619
Jan.-Mar.	6,384	5,834	5,971	6,506	3,889
Jan.-Dec. totals . .	-	112,241	98,929	165,359	130,177
Imports:					
June	-	207	149	202	137
May	-	283	59	4,874	1,405
April	-	220	134	1,622	45
March	308	135	87	410	84
Jan.-Feb.	2,522	374	2,089	1,357	622
Jan.-Dec. totals . .	-	6,739	3,174	26,630	14,567
..... (1,000 Gallons)					
Fish Oil:					
Production:					
June	-	6,296	4,672	4,826	3,267
May	-	4,367	1,768	2,604	2,166
April	530	440	248	436	200
Jan.-Mar.	161	162	168	144	179
Jan.-Dec. preliminary tot. 4/ ..	-	33,471	26,690	24,418	21,625
Jan.-Dec. final tot. .	-	34,416	27,886	24,978	22,028
Exports:					
June	-	280	208	1,514	242
May	-	426	324	1,455	293
April	-	980	761	1,116	254
March	-	753	421	600	1,664
Jan.-Feb.	2,954	4,121	3,453	1,897	1,863
Jan.-Dec. totals . .	-	16,331	19,155	19,264	12,539

1/Does not include crab, shrimp, and misc. meals.
 2/Preliminary data computed from monthly data. Fish meal production reported currently comprised 86 percent of the annual total for 1958, 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961.
 3/Includes homogenized fish.
 4/Preliminary data computed from monthly data. Represents over 95 percent of the total production.
 Note: Data for 1962 and 1961 are preliminary.

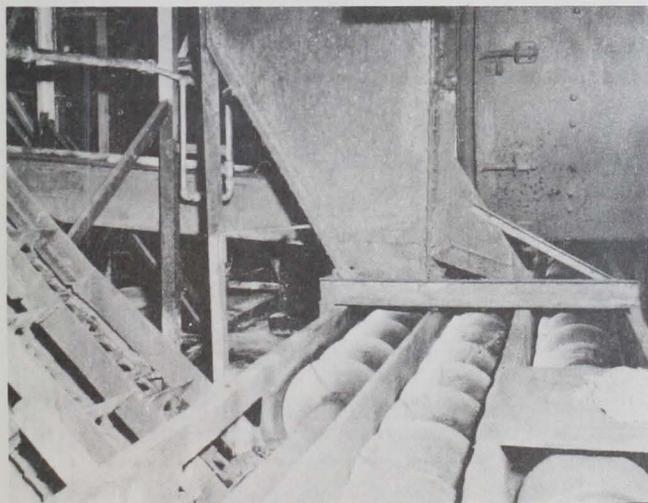


In some instances spotter planes are used in the Gulf of Mexico to spot schools of menhaden and to direct the setting of the purse seine. This bell-shaped loudspeaker helps to maintain radio contact between the spotter plane and the purse boats that set the net.

fish meal production was down, solubles production was up, and fish oil production was slightly less than in the same period of 1961.

* * * * *

U. S. Production, April 1962: Preliminary data on U. S. production of fish meal, oil, and solubles for April 1962 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.



Discharge end of hot-air dryer in an Empire (La.) menhaden products plant. Screw conveyor is used to transport the scrap.

U. S. Production ^{1/} of Fish Meal, Oil, and Solubles, April 1962 (Preliminary) with Comparisons				
Region	Meal	Oil	Solubles	Homog- enized
	Short Tons	1,000 Gallons	. . (Short Tons) . .	
<u>April 1962:</u>				
East & Gulf Coasts . .	4, 861	486	939	<u>3/425</u>
West Coast ^{2/}	2, 194	43	2, 084	-
Total	7, 055	529	3, 023	425
Jan. -Apr. 1962 Total	14, 638	719	7, 769	655
Jan. -Apr. 1961 Total	13, 735	601	7, 187	633

^{1/}Does not include crab meal, shrimp meal, and liver oils.
^{2/}Includes Hawaii, American Samoa, and Puerto Rico.
^{3/}Includes condensed fish.

* * * * *

U. S. Production, March 1962: During March 1962, 2,500 tons of fish meal and scrap and 42,400 gallons of marine-animal oils were produced in the United States. Compared with March 1961, this was a decrease of 9 percent in meal and scrap production and 34 percent in oil.

In March 1962, tuna and mackerel accounted for 1,600 tons or 64 percent of the meal total, and 31,200 gallons or 74 percent of the oil production.

There were 1,800 tons of fish solubles produced in March 1962--583 tons below the same month in 1961. The production of homogenized condensed fish amounted to 100 tons--a decline of 78 tons compared with March 1961.

During the first three months of 1962, meal and scrap production amounted to 7,300



Heaps of scrap meal in the warehouse of an Empire (La.) menhaden products plant. When fishing is good, large quantities of scrap accumulate. This scrap is ground into fish meal.

Table 1 - U.S. Production of Fish Meal, Oil, and Solubles, March 1962 with Comparative Data

Product	March		Jan.-Mar.		Total
	1962 ^{1/}	1961	1962 ^{1/}	1961	1961
 (Short Tons)				
<u>Fish Meal and Scrap:</u>					
Herring, Alaska	-	-	-	-	3,810
Menhaden 2/	-	-	-	531	247,551
Sardine, Pacific	-	-	689	-	2,518
Tuna and mackerel	1,596	1,972	4,524	4,852	21,243
Unclassified	899	779	2,080	2,162	16,215
Total	2,495	2,751	7,293	7,545	291,337
Shellfish and marine animal meal and scrap	<u>3/</u>	<u>3/</u>	<u>3/</u>	<u>3/</u>	19,928
Grand total meal and scrap	<u>3/</u>	<u>3/</u>	<u>3/</u>	<u>3/</u>	311,265
Fish solubles	1,803	2,386	4,876	5,556	100,551
Homogenized condensed fish	100	178	230	278	11,690
 (Gallons)				
<u>Oil, body:</u>					
Herring, Alaska	-	-	-	-	727,517
Menhaden 2/	-	-	-	-	31,355,570
Sardine, Pacific	-	-	19,111	-	86,167
Tuna and mackerel	31,182	48,840	103,694	100,748	762,509
Other (including whale)	11,197	15,167	62,944	73,549	1,477,042
Total oil	42,379	64,007	185,749	174,297	34,408,805

^{1/}Preliminary data.

^{2/}Includes a small quantity produced from thread herring.

^{3/}Not available on a monthly basis.

tons--252 tons below the same period of 1961; the marine-animal oil yield totaled 185,700 gallons--a gain of 11,500 gallons.

* * * * *

Imports and Exports, February and March 1962: Imports of fish meal and scrap totaled 18,800 tons during February and 18,500 tons in March 1962. Imports during the first three months of 1962 amounted to 62,800

tons--an increase of 18,400 tons compared with the same period of 1961.

Exports of fish and fish-liver oils amounted to 21.6 million pounds in February and 19.2 million pounds during March 1962. A total of 41.3 million pounds of fish and fish-liver oils was exported during the first three months of 1962--up 4.8 million pounds as compared with 1961.

Table 2 - U. S. Foreign Trade in Selected Industrial Products, February and March 1962 with Comparative Data

Product	February		March		Jan.-Mar.		Total
	^{1/} 1962	1961	^{1/} 1962	1961	^{1/} 1962	1961	1961
 (Short Tons)						
<u>Imports:</u>							
Fish meal and scrap	18,819	14,344	18,528	20,458	62,774	44,333	217,845
Fish solubles	2,249	155	308	135	2,830	509	6,739
 (Gallons)						
Whale oil, sperm (crude and refined)	275,556	-	140,408	665,260	718,998	1,026,497	7,807,625
 (Pounds)						
<u>Exports:</u>							
Fish and fish-liver oils ..	21,646,639	17,456,076	19,167,132	5,644,202	41,323,030	36,549,073	122,485,721
Whale and sperm oil	68,273	-	2,923	1,928	85,178	1,928	1,205,674

^{1/}Preliminary data.



Maine

FISHERY LANDINGS, 1961:

Landings of fish and shellfish at Maine ports in 1961 amounted to 198 million pounds valued at \$19 million. Compared with 1960, this was a drop of 96.7 million pounds or 33 percent in volume, and \$1 million or 5 percent in value.



Fig. 1 - Baiting a lobster pot aboard a New England lobster boat.

Sea herring (54.5 million pounds) was nearly 98 million pounds below the production in 1960. Ocean perch (77.4 million pounds) accounted for a decrease of almost 1 million pounds. These two species made up 67 percent of the year's total catch. Landings of Maine lobsters (20.9 million pounds) dropped 3.1 million pounds below 1960, while whiting (14.1 million pounds) landings increased 3 million pounds.

Knox County led all counties in production with 76.1 million pounds. Cumberland County was second in volume with 74.5 million pounds, and Hancock County third with

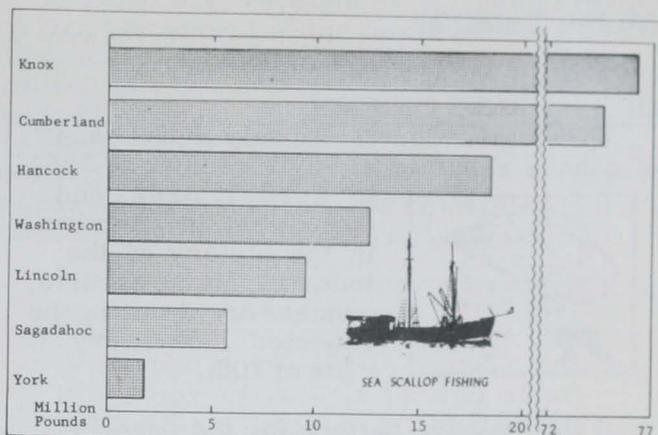


Fig. 2 - Landings at Maine ports by counties, 1961.

18.2 million pounds. Washington County accounted for 12.5 million pounds, while Lincoln, Sagadahoc, and York Counties contributed 9.4, 5.7, and 1.6 million pounds, respectively.

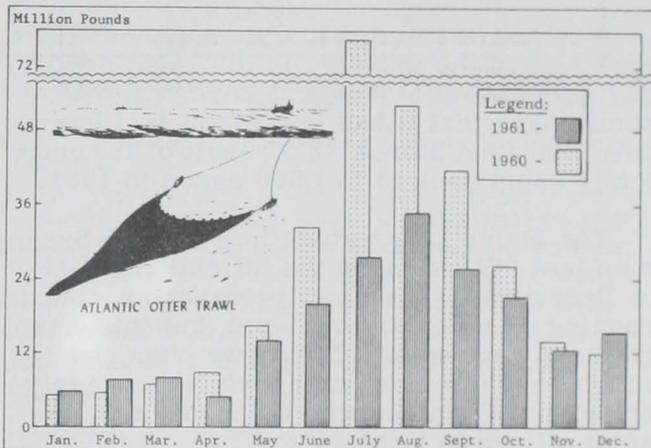
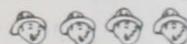


Fig. 3 - Landings at Maine ports by months, 1960-1961.

Landings in August were the highest of any month during the year with 34.3 million pounds. July was the second highest month in production with 27.3 million pounds. September followed with 25.9 million pounds, and October with 21 million pounds.

More than one-half of the 1961 catch was taken by otter trawls--101.6 million pounds. The remaining 96.4 million pounds were taken by several other types of gear.

Imports of Canadian sea herring through Maine ports during 1961 amounted to 43.5 million pounds--41 percent below 1960. Imports during the months of August, July, September, and January totaled 26.1 million pounds or 60 percent of the total imports in 1961.



Maine Sardines

CANNERS AWAIT ARRIVAL OF 1962 RUNS OF FISH:

With total production of only 15,541 cases of canned sardines from December 1, 1961, to April 7, 1962, and the lowest inventories in the history of the industry, Maine sardine canners are awaiting the expected 1962 heavy runs of fish.



If the average pattern for the past 14 years materializes, the tiny herring were expected to arrive in the inshore areas of Maine the latter part of May, although a full moon phase starting on the 19th was expected to delay good fishing conditions somewhat. The fish usually keep near the bottom in deep water during periods of light.

A total of 31 plants are in readiness for packing and the industry is in urgent need to replenish its stocks and to regain the shelf space that it has lost in several hundred thousand stores as a result of the critically short pack of 679,000 cases in 1961.

The Maine Legislature in a Special Session last fall extended the official April 15 to December 1 season to permit year-round canning on a temporary basis, but this has not been successful. Windy weather and rough seas for most of the winter and early spring have handicapped the fishermen despite efforts to fish.

If history is any criteria, there is no indication that the 1961 short pack should be repeated, according to the Executive Secretary of the Maine Sardine Council. He said that the industry had never had two critically bad fish years in a row since it was established in 1872.

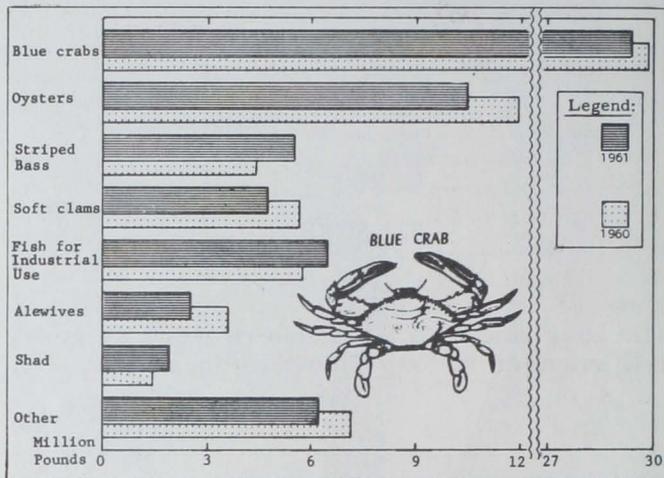
Previous to 1961, the last such year was 1938 when production was less than 600,000 cases. However, the following year saw plenty of fish and a banner pack of 2,250,000 cases.

Holdings of canned Maine sardines by wholesalers and multi-unit retail organizations were down 45 percent from last year on April 1 and canners' inventories were down 91 percent.

Maryland

FISHERY LANDINGS, 1961:

Landings of fishery products at Maryland ports during 1961 amounted to nearly 66.5 million pounds valued at \$12.8 million. Compared with 1960, this was a drop of 4 percent in volume and 8 percent in value. Lower catches of oysters, alewives, fluke, spot, croaker, soft clams, and blue crabs were mainly the cause of the decline.



Maryland landings of certain species, 1961 and 1960.

Oyster production continued downward in 1961--1.4 million pounds below 1960. The 1961 calendar year oyster yield was the lowest for which data are available for Maryland.

Hard blue crab production of 26.7 million pounds dropped nearly 2 percent below 1960. Ex-vessel prices averaged \$3 to \$4 per barrel for "picking" crabs. Prices were low all season due to a good supply and lighter demand. Soft blue crab production dropped 3 percent below last year.

The 1961 soft clam catch (4.7 million pounds of meats) was 877,000 pounds below 1960. This was the first year the catch dropped since the fishery began in Maryland 10 years ago. The fishery is still suffering from a limited market. The State can produce more clams than can be sold. Ex-vessel prices averaged \$3 per bushel in most areas.

Hard clam production rose considerably during 1961, due mostly to the passage of a bill allowing the use of clam scrapes in Worcester County. The 1961 production of this item was 285,000 pounds of meats above 1960.

The finfish catch amounted to 21.4 million pounds in 1961--a gain of only 200,000 pounds as compared with 1960. Lower catches of alewives, spot, fluke, and croaker were offset by increased landings of striped bass, white perch, shad, and menhaden. The alewife catch (2.4 million pounds) and croaker catch (48,000 pounds) were the lowest of any year on record in Maryland. The previous low years were 1945 with 2.5 million pounds of alewives, and 1904 with 166,000 pounds of croaker. The spot catch (9,500 pounds) was the second lowest on record, exceeded only by the years 1897 and 1908 when only 3,000 pounds were reported. There were record high catches of striped bass, white perch, and cod. Striped bass landings (5.4 million pounds) were 1 million pounds above the previous record high year of 1960. The cod catch of 789,000 pounds was 243,000 pounds above the previous record year of 1960. The active cod fishery is relatively new to Maryland, having started in 1959 when, in the absence of dragger fish, some vessels fished with long lines. In 1961, there were 24 vessels engaged in long-line fishing.



Massachusetts

FISHERY LANDINGS, 1961:

Landings by fishing craft at Boston, Gloucester, New Bedford, and other Massachusetts ports in 1961 amounted to 431.6 million pounds valued at \$32.9 million. These landings dropped 12.3 million pounds or 3 percent in quantity, but were up \$1.1 million or 3 percent in value as compared with 1960.



Fig. 1 - A scallop fishing vessel docked at New Bedford, Mass.

During 1961, receipts at Gloucester comprised 38 percent of the total poundage and 18 percent of the total value. Boston was second in volume with 27 percent and value with 29 percent. New Bedford ranked third in volume with 23 percent, but first in value with 45 percent. Landings at other Massachusetts ports made up the remaining 12 percent in quantity and 8 percent in value.



Fig. 2 - Unloading a small dragger at the State Pier in Gloucester, Mass.

Landings in July were the highest of any month during 1961 with 62.2 million pounds. August was the second highest month with 60.9 million pounds, followed by May with 40.2 million pounds, October with 40.1 million pounds, and September with 37 million pounds.

* * * * *

NEW LAW FOR IMPORTED PRODUCTS:

A law regulating the sale, offering for sale, and advertising the sale of imported goods, including fish and fishery products, was enacted on March 12, 1962, by the Massachusetts State Legislature. The law is "Chap. 206, An Act Further Regulating the Sale or Offering for Sale and Advertising the Sale of Imported Goods, Fish and Fish Products."

Sellers of foreign goods, including scallops and fish and fish products, must now display in a conspicuous place, in letters at least as large as the figures indicating the price of the goods to be sold, a sign marked "Imported Goods." Likewise, goods having an individual price marking must bear either the words "Imported Goods" or show the country of origin.

Similar controls are placed on advertising; but in this instance, newspapers and radio and television stations furnishing an advertising medium for sale of goods or fish and fish products by another are not subject to penalty.

Violations are punishable by fine and/or imprisonment--\$50-100 for the first offense and \$50-500 or imprisonment for one month or both for each subsequent offense.



Michigan

LAKE TROUT EGG SURPLUS EXPECTED:

In a report of the meeting of the Lake Trout Rehabilitation Committee at Milwaukee, Wis., on March 6 and 7, 1962, it was brought out that the expected production of lake trout eggs at Michigan hatcheries will exceed the number that can be handled at existing State and National Fish Hatcheries in 1962 and 1963. It is estimated that Michigan State hatcheries at Marquette and Harrietta will produce 8 million lake trout eggs in 1962; and even with a stepped-up rearing program at all participating State and national hatcheries, a surplus of 3 million eggs is expected.

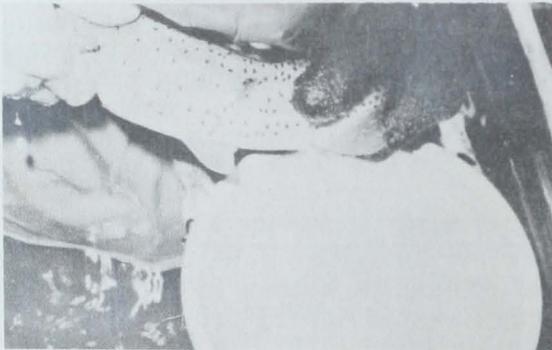


Fig. 1 - The eggs are taken from the female, fertilized with the sperm or milt from the male, and transferred to the hatchery.

Original plans for the construction of the Jordan River, Mich., National Fish Hatchery anticipated the completion of facilities in time to absorb the 1963 increase in lake trout egg production. Apparently, the egg production program is one year ahead of schedule, and the completion of the Jordan River hatchery may be delayed until 1964 if adequate construction funds are not included in the 1963 appropriation. The 1963 budget, as



Fig. 2 - As the yolk sacs are absorbed, the young trout swim up from the bottom of the troughs and are fed diets of packinghouse byproducts; later, livestock feeds are added.

passed by the House of Representatives on March 20, 1962, included \$101,000 of the \$467,000 needed to complete the hatchery. It has been estimated by the Michigan Department of Conservation that there will be a surplus of 8 million lake trout eggs in the fall of 1963 if the Jordan River National Fish Hatchery is not in operation.



National Fisheries Institute

ANNUAL CONVENTION IN NEW ORLEANS:

The Seventeenth Annual Convention of the National Fisheries Institute (NFI), the trade association of the United States fishing industry, was held at the Roosevelt Hotel, New Orleans, La., April 27 through May 1, 1962. It was attended by about 700 producers, processors, and distributors of fishery products, involving consumer purchases of one billion dollars a year.

On April 27, the NFI Industrial Products Division met. The discussions centered around the 1962 fish meal, oil, and solubles production; the depressed fish oil market; and the standard of identity for fish protein concentrate as proposed by the U. S. Food and Drug Administration. On the same day there were executive and other committee meetings, including a Processed Shrimp Committee meeting. At the Shrimp meeting, the principal discussions were on a revision of the breaded shrimp standard; a proposed grade standard for frozen raw, peeled and deveined shrimp; and the pending standard of identity for breaded shrimp to be issued by the U. S. Food and Drug Administration.

The First General Session of the Convention, a Small Business Luncheon, and a Small Business Clinic were held on April 28. On Sunday, April 29, there were meetings of other local and national association groups and committees. Also, there was a meeting on Public Relations where the fishing industry's two major promotion programs were discussed: "National Fish in Seafood Parade" (the fall promotion) and "It's Fish in Seafood Time" (the Lenten promotion).

The Second and Third General Sessions of the Convention took place on Monday, April 30.

On Tuesday, May 1, the Seafood Radiation Pasteurization Committee met.

Among some of the other fishery associations that met during the convention were: the National Shrimp Breeders Association; the Board of Directors of the Shrimp Association of the Americas; the American Seafood Distributors Association; the Halibut Association of North America; and the Board of Directors of the National Shrimp Congress.

The U. S. Bureau of Commercial Fisheries Market News Service set up a temporary office together with a teletype. Each day the Convention was in session, information was received over the teletypewriter on current landings, receipts, prices, and market trends as transmitted by the Fishery Market News Service Field Offices throughout the country. A total of 1,200 visitors stopped at the temporary office to obtain information.

"The fishing industry should adopt principals, not policies," Dr. Noah Langdale told members of NFI in his address on April 30 at a general luncheon. Speaking on the subject of "Ethics and the Business Man," the speaker outlined the five elements of business--materials, money, machines, markets and man--and stressed the importance of good individual and collective motive as being essential to the continued progress of the industry. Langdale is President of Georgia State College.

Fishing Industry Seeks Greatly Expanded Sales: At the First General Session of the Convention on April 28, plans were revealed for greatly expanded sales during the next few years. Basing their optimism on the fact that 85 percent of the fishery products now available in retail stores were not even on the market ten years ago and also the fact that the per capita consumption of their products took a spurt upward in 1961 for the first time in ten years, the fisheries group was talking of still more new processing methods. Some were predicting that the next ten years would see as radical changes as the past ten when pre-cooked and portioned products made their appearance.

The keynote of the group's outlook was sounded by Harvey H. Bundy, Jr., Boston, President of the Institute, in his opening speech.

"For the first time in the last ten years, there has been a substantial improvement in the per capita consumption of fish and seafood in the United States. When this is superimposed on the normal population increase and the resulting increase in our sales, it foretells substantial growth for our industry," he said.

"A significant factor in this increased consumption has been a growing recognition of the healthful qualities of our products. Medical authorities, like Dr. Fredrick Stare, Director of Public Health, Harvard University, have indicated that we Americans would be well advised to increase the amount of fish and seafood we consume," Bundy said.

He called for more Liberal tariff regulations and Federal subsidies to enable the American seafood producers to compete with overseas fishing boat builders. He also indicated that the industry is encouraging the develop-

ment of a national fisheries center in Washington and is asking governmental permission to sell fish flour as a food for human consumption. Presently such flour cannot be offered for sale for human consumption under rules of the Federal Food and Drug Administration.

Fishery Products a Dynamic and Profit Opportunity: A national shipping executive called on the fishing industry to allot more funds for expanded nutritional and medical research programs on fish and fish products for a healthier America and a healthier economy for the industry. In an address on April 28 at the First General Session of the Convention, he emphasized that these expanded nutritional research projects must be well planned, well sponsored, and when completed and analyzed "the whole industry must support them in promoting them to the public." He also called upon representatives of the fishing industry and the industry itself to increase their advertising budgets to sell more of their products to meet the "increased competition for the food dollar."

Government Aid For Small Business: "We are eager to help small firms of your industry," John E. Horne, Administrator of the U. S. Small Business Administration (SBA), told members of the Institute on April 28 at a luncheon preceding a Small Business Clinic.

In outlining the services of the SBA, he emphasized those which the fishing industry could take advantage of: (1) financial assistance to small businesses through direct Government loans in which banks and SBA participate; (2) indirect financial assistance to small firms through privately owned, but SBA-licensed, investment companies; (3) loans to businesses which have been damaged or destroyed by natural disasters, or have suffered because of displacement by Federally-financed projects; (4) help to small business in obtaining a fair share of Government purchases; and (5) assistance to small businesses in overcoming management problems.

"In its lending program," Horne reminded his audience, "SBA does not compete with private lending institutions. Before we consider an application, a businessman must show he is unable to obtain financing from a private institution."

In helping small firms with management problems, SBA provides personal counseling, issues a variety of helpful publications, and acts as co-sponsors of management courses for businessmen.

The speaker also told of an SBA-sponsored research study now under way at the University of Miami of special interest to the shrimp industry. This study is aimed at improving the operation of the small fisheries for shrimp in the Atlantic and Gulf coast areas by exploring the technical and economic feasibility of utilizing scrap fish, as well as large quantities of other usable material, that is now being wasted.

The luncheon talk by the SBA Administrator was followed by a Small Business Clinic. Panel members and those present discussed the problems of the small fishery firm.

Month-Long National Promotion to Feature Seafood Plate Contest: Plans for an industry-wide fisheries

promotion throughout the entire month of October, featuring a hotel and restaurant Seafood Plate Contest with 13 valuable prizes, were announced on April 29 by the Fish and Seafood Promotions Division of NFI.

Five fishing industry leaders participated in a panel presentation at an open meeting during the convention, at which plans were outlined and reports of results of the promotional work during the past year were given.

"We have charted a course for the 1962 Fish 'n Seafood Parade, which gives it greater scope, greater appeal and a more direct tie-in with every segment of our industry," said the Chairman of the 1962 Fish 'n Seafood Parade in presenting the plans for an expanded fall promotion. "In the past, the Parade has been a one-week promotion. After careful consideration, our committee decided to extend the promotion throughout October. This expansion of the period will enable us to avoid the variable dates of the promotion from year to year; the uncertainty of fresh fish supply in any one week; the conflict with variable dates of religious holidays and the conflict with individual promotions of the big chains.

". . . we have decided to sponsor a Seafood Plate Contest for owners, managers, and personnel of restaurants and mass-feeding operations. Participants will be asked to submit seafood plates of their own creation, bearing in mind appetite appeal, inventiveness, practicality, and flavor. Entries will be judged in three categories: (1) portions of fish; (2) fillets, steaks and other fish; (3) shellfish. Winners will be selected by a panel of editors of restaurant and other mass feeding magazines.

New Processing Methods and New Fishery Products: This was the subject on April 30 of the Second General Session of the Convention.

On the subject of fish protein concentrate, attention was called to the role that it could play in relieving the hunger that affects two-thirds of the world's population. It was pointed out that such a fish protein concentrate can contribute significantly to the problem of world food shortage and will boost our local fisheries industries by providing them with a new multimillion dollar outlet and creating new markets, both in this country and abroad.

A representative of the Atomic Energy Commission (AEC) discussed the goals desired and the problems to be solved by government, educational and industrial researchers in the radiation preservation of fish and shellfish. The objective of the program, he stated, is "to double or even triple the storage life of fresh seafoods by exposing them to low doses of radiation from radioisotope or machine sources, and then storing at refrigerated temperatures. This process might be termed 'radiopasteurization.' . . . Since seafood is so desirable for its vitamins and high protein content as well as for its high degree of palatability, researchers must study the effect of radiation on the protein, fatty acid, and vitamin content of the radiopasteurized fish. Present results indicate that they will contain adequate amounts of these essential nutrients. Initial studies also give expectation that correct radiation levels will extend the refrigerated storage life of fishery products to several times that of unirradiated products without significantly affecting desirable odor, texture, or flavor."

Citing the results of a market study by the U. S. Department of Interior's Bureau of Commercial Fisheries, the AEC representative stated that "initial consumer resistance and the cost of an appropriate educational program were given as the main disadvantages." However, many of those interviewed during the study--processors, distributors, home economists, food editors, and other business and food specialists, "reported that they were impressed by the prospects of preservation of fishery products through radiation but preferred to withhold final judgment until the results of further research are known."

Outlining experimental work now in progress, and future program plans of the AEC, Dr. Aebersold expressed confidence that "the use of radiation to extend the shelf life of fish will be used commercially and with benefit to the housewife, producer, processor, and distributor."

Frontiers in Fisheries: The Under Secretary of the U. S. Department of the Interior, the principal speaker at the Second General Session on April 30, told the Convention that the manufacture of an economical fish flour or fish protein concentrate can be a valuable answer to the world's hunger problem and a boon to the United States fishing industry--once the processing flaws are worked out and mass production started. Carr said that this fish protein concentrate is highly nutritious and can be easily transported and stored. If it can be produced cheaply enough it can be both a blessing to humanity and can give a real boost to this country's domestic fishing industry.

Carr said that fish are the only readily available source of inexpensive animal protein in sufficient quantities to remedy widespread malnutrition and undernutrition in the world which is caused by protein deficiency in diets.

"Fish can supply these diet deficiencies in the form of concentrated protein," the secretary said. "Wisely utilized and managed, the sea with its vast fish populations represents an almost unlimited reservoir of high quality protein."

He emphasized also that mass production of a satisfactory fish protein concentrate in the form of fish flour "would provide a tremendous economic stimulation for the United States fishing industry." He said it would also provide a market for the great quantities of fish which are inadvertently caught with the more valuable varieties and now discarded at sea because there are no markets for them.

Carr pointed out that if fish processors were able to manufacture fish flour, periods of surplus in the fishing industry and fish markets would tend to stabilize "and starving individuals the world over would benefit."

The Under Secretary mentioned that the United States might very well be a market for this fish protein concentrate--as a supplement to breakfast cereals and baby foods. In addition, he said that cookies, doughnuts, noodles, and other foods could be transformed into improved quality protein foods when supplemented by fish flour.

"In the event of a nuclear emergency, United States fisheries alone could supply in one fishing season more than the protein required to sustain the entire United

States population during the crucial days immediately following such an emergency," Carr said.

In regard to the European Common Market and its effect on the United States fishing industry, Carr said he believed it is possible that changes in buying habits brought about by higher standards of living in the Common Market may have beneficial effects on total trade—including the fish trade.

"A greater use of edible fishery products may be among the favorable effects of a high consumer income," he said.

Resolutions Adopted: The Convention adopted the following resolutions:

1. **CONFIDENTIALITY OF BUSINESS REPORTS TO GOVERNMENT:** ". . .the proper Legislative Committees of the Congress be urged to immediately schedule public hearings and take whatever action is necessary to protect the confidentiality of business reports to Government."

2. **NEED FOR FISHING VESSEL LEGISLATION:** ". . .Whereas, the laws of the United States prohibit the purchase of vessels from abroad and require that fishing vessels be constructed in foreign yards, thus making it impossible for the United States industry to economically compete on the high seas, and . . .be it resolved that the seriousness of the United States high seas fishing vessel situation be brought to the attention of the President of the United States and the Congress of the United States, together with an appeal for immediate necessary Executive and Legislative action."

3. **LEGISLATION TO AUTHORIZE A NATIONAL FISHERIES CENTER AND AQUARIUM:** ". . .the National Fisheries Institute make an urgent appeal to the Honorable Jennings Randolph, Chairman of the Senate Subcommittee on Public Grounds and to the Honorable Dennis Chavez, Chairman of the Senate Committee on Public Works, to expedite action on said legislation; and be it further resolved that the National Fisheries Institute request the President of the United States to take such executive action as may be necessary to recommend immediate adoption of pending legislation to authorize a National Fisheries Center and Aquarium in the nation's Capital."

4. **CONTENTS OF FISH BLOCKS, FISH STICKS, AND FISH PORTIONS:** ". . .it is the sense of the National Fisheries Institute. . . that the terms fish blocks, fish sticks and fish portions are proper only when they are composed solely of substantially whole fillets and/or pieces of fillets but not of ground, flaked, minced, comminuted or finely chopped fish flesh.

"Items made from the latter have a definite place as food but not as material for sticks or portions which have been generally accepted by the consuming public and understood to be made from larger sized sections of fish fillets.

"It is suggested that clearly distinguishable names be used for products processed from this other material."

5. **FROZEN FOODS WEEK:** ". . .the National Fisheries Institute actively cooperate with the National Frozen Foods Association in the promotion of National

Frozen Foods Week during May of each year and that the staff of National Fisheries Institute utilize its communication media to advise its members of the dates and promotional activities and possible tie-ins with National Frozen Foods Week each year."

6. **TITLE OF DIRECTOR EMERITUS:** ". . .WHEREAS, Captain John G. Murley, of Fairhaven, Massachusetts, was one of the original members of the National Fisheries Institute and has served continuously on the Board of Directors from Region I since the beginning of the organization, thus making an outstanding contribution to the success of the organization; therefore, be it resolved that the title of Director Emeritus be conferred upon Captain John G. Murley."

7. **PROPOSED REGISTRATION OF EXEMPT AND PRIVATE CARRIERS:** ". . .the National Fisheries Institute. . . vigorously oppose legislative efforts to directly or indirectly narrow the effectiveness of the fishery exemption (for motor carriers), including the proposed registration requirements, but reaffirm its support for maximum enforcement of I.C.C. safety regulations affecting all highway users, such enforcement to be continued by the Federal, State and Local regulatory bodies presently responsible therefor."

8. **EXTENSION OF MOTOR CARRIER EXEMPTION TO RAILROADS:** ". . .the National Fisheries Institute. . . reaffirm its support for the preservation of Section 203 (b) (6) of the Interstate Commerce Act which makes possible the expeditious and flexible distribution of the fishery industry's highly perishable products without burdensome administrative regulation, and to further support the President's recommendations for the equalization of competition between rail and motor carriers serving the fishery industry."

New NFI Officers: Louis Vitale of Pasadena, Calif., was elected President of the National Fisheries Institute at the closing session of the Convention. He succeeds Harvey H. Bundy, Jr., Gloucester, Mass., who becomes Chairman of the Board. The new President assumes his new duties on September 1, 1962.

Other officers elected were: Louis Goldstein, Philadelphia, Pa., President-elect; Palmer Olson, Seattle, Wash., Secretary; Thomas C. Thomas, Wilkes-Barre, Pa., Treasurer; and Sidney H. Cohen, Boston, Mass., Treasurer-elect.

New General Manager for NFI: "No foods have a greater future than fish and shellfish. I am, therefore, looking forward with great enthusiasm to my work with the National Fisheries Institute," said F. P. Longeway, Jr., newly-appointed General Manager of NFI. Longeway succeeds Charles E. Jackson, who is retiring. Longeway further stated that he felt the increase of one-half pound per capita of fishery products during 1961 was indicative of the importance of the industry.

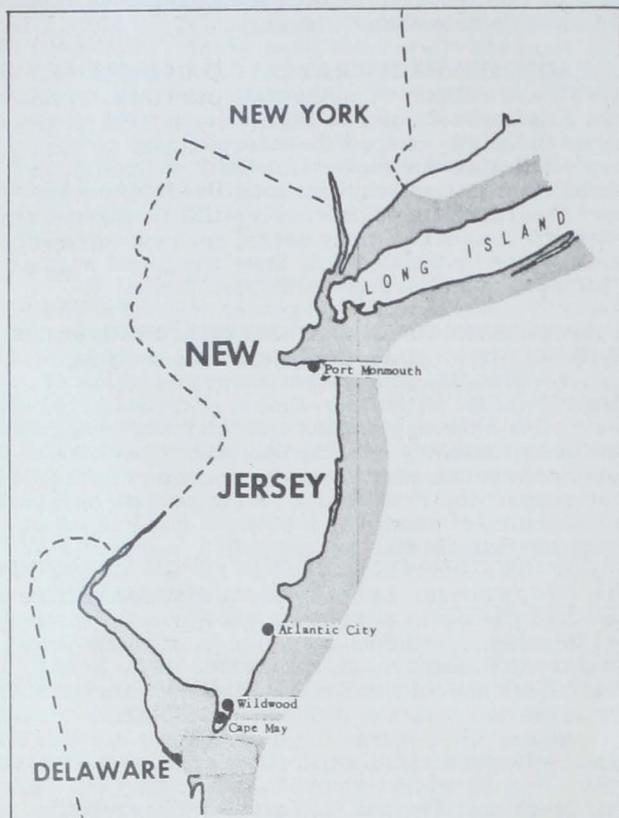
"The great variety of seafoods and many methods of their preparation add infinite interest to American menus," he said. "Fish and shellfish are generously endowed with food values of the highest quality, and their fats are of the polyunsaturated type, which counteract the harmful effects of saturated fats, number one suspect in heart disease and hardening of the arteries. Therefore, I welcome the opportunity of being of service to the industry which represents foods which mean so much to the health and well-being of our country."



New Jersey

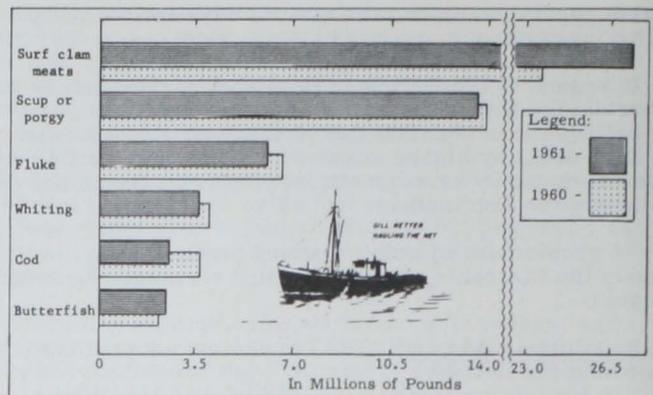
FISHERY LANDINGS, 1961:

Landings of fish and shellfish at New Jersey ports during 1961 totaled 397 million pounds with a value of nearly \$11 million. Compared with 1960, this was an increase of 6 percent in quantity and 13 percent in value. The catch for industrial use was up 22.6 million pounds, while that for food increased 1.2 million pounds.



In 1961 fish (principally menhaden) and shellfish used for industrial products amounted to nearly 331 million pounds, while the quantity used for food totaled over 66 million pounds. Surf clam meats and scup or porgy made up 61 percent of the edible items. Other important food species were fluke, whiting, cod, butterfish, hard clams, lobsters, oysters, and hake.

Compared with 1960, the 1961 catch of surf clams was up 14 percent--a record year for this species. Landings of striped bass were more than triple the quantity landed in the previous year. As a result of the opening of oyster seed beds which had been closed for 3 years, the oyster



New Jersey's catch of certain fish and shellfish, 1960 and 1961.

catch was up in 1961. The catch of cod and sea bass was lower than in 1960 by 33 percent and 32 percent, respectively.



North Atlantic Fisheries Exploration and Gear Research

MIDWATER TRAWL GEAR TESTED:

M/V "Rorqual" Cruise 62-1 (April 18-May 25, 1962): The Bureau's 65-foot research vessel Rorqual has undertaken explorations with midwater-trawl gear similar in design to that used by the Bureau's vessel Delaware.

Initial effort carried out in Massachusetts Bay waters was devoted to testing of equipment which included combination electrical-conductor/towing-warp, the use of which eliminates the need for a "third" wire to the depth-sounder transducer mounted on the headrope of the net.

After the gear had been satisfactorily tested the operation was devoted to scouting for fish schools and sampling.

Location of fish was accomplished by the use of sounding equipment continuously operated from the vessel. Upon reception of traces indicating concentrations of fish, sets were made to sample the fish. Herring were taken in each of the 5 midwater-trawl tows completed.

Scouting transects were made in depths from 15 to 55 fathoms along the southwest-



Catch of 4,000 pounds of sardine-size herring taken during a one-hour midwater-trawl tow in Cape Cod Bay.

ern Maine coast from the Isles of Shoals to Casco Bay. No significant signs of fish were seen and no fishing was done at that time.

Note: See Commercial Fisheries Review, May 1962 p. 23.

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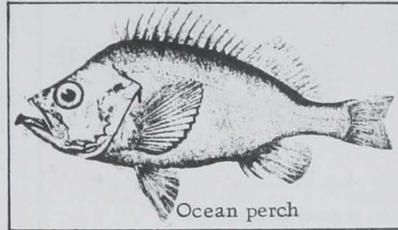
MIDWATER TRAWL TESTED IN FISHING FOR OCEAN PERCH:

M/V "Delaware" Cruise 62-5: To test the effectiveness of the midwater trawl in taking schooled ocean perch during the nighttime when the fish come off the bottom was the principal purpose of the May 7-18, 1962, cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. Particular care was taken to record the action and operation of the net under deep water conditions.

Scanning and scouting operations were conducted until fish concentrations were found. Fishing was conducted in the vicinity of Wildcat Knoll, 30 miles northeast of Provincetown, Cape Cod, and in Western and Eastern Holes, 15 to 20 miles southeast of Cape Sable, Nova Scotia. Toward the end of the cruise, operations were shifted to more shoal areas

on Georges Bank and off Nauset Beach for additional net performance tests.

In general, fish behavior was not conducive to successful midwater trawling. During the mornings, the fish gathered 2 to 5 fathoms above the bottom before settling. In the evenings, the fish rose 2 to 3 fathoms above the bottom and dispersed. The periods when off-the-bottom schooled fish were available were not longer than 25 minutes. At-



tempts to take fish during those times were not particularly successful as the slow towing speed necessary to keep the net so close to the bottom

allowed the fish to easily go under the net; this was clearly indicated by the headrope-mounted sounder transducer. Ocean perch were readily taken when the net was experimentally dropped to the bottom; this gear, however, is not designed to replace standard ocean perch bottom trawls and would not for long withstand conditions encountered in bottom trawling.

Modifications which will result in being able to tow the net more rapidly and at required depths are necessary before the midwater trawl can be successfully used for fishing ocean perch under conditions encountered.

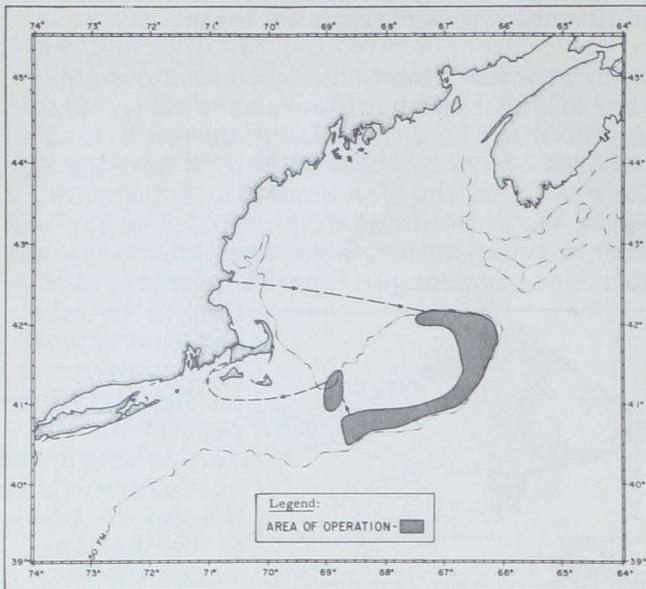
Several good tracings of herring schools occurred during the cruise but catches by the midwater trawl were small. The waters where good fish tracings occurred were generally abundant in Euphausiid shrimp. Most catches included at least $\frac{1}{2}$ to 20 pounds of these small crustaceans and many of the tracings made by the echo-sounder were attributed to them.



North Atlantic Fisheries Investigations

DISTRIBUTION AND ABUNDANCE OF SEA SCALLOPS ON GEORGES BANK STUDIED:

M/V "Delaware" Cruise 62-6 (May 28-June 6, 1962): To collect data on the distribution and abundance of sea scallops on Georges Bank for comparison with similar data collected previously was the purpose of this



Sea scallop survey on Georges Bank by the research vessel Delaware, May 28-June 8, 1962.

cruise by the research vessel Delaware of the U. S. Bureau of Commercial Fisheries. Live scallops and clapper shells caught with a 10-foot standard dredge with a 2-inch ring bag were measured from 163 stations. A total of 184 10-minute tows were made. Also, 5 additional 5-minute tows were made at designated stations with a 30-inch Digby dredge with a $\frac{1}{2}$ -inch mesh liner. Special collection of meat samples and shell samples were brought back to the laboratory for detailed study. Live scallops were returned to the laboratory and placed in specially designed tanks for aging and spawning studies. Hydrographic information was collected at each station and at hourly intervals while steaming. This 10-day cruise ended on June 6.

Note: See Commercial Fisheries Review, July 1961 p. 25.



North Pacific Exploratory Fishery Program

MARINE FAUNA OFF COLUMBIA RIVER TO BE SAMPLED:

In order to sample fauna and bottom substrate in the region southwest of the mouth of the Columbia River at depths of 50 to 1,000 fathoms, the Bureau of Commercial Fisheries, in cooperation with the Atomic Energy Commission, has chartered the University of Washington research vessel M/V Commando. The vessel left Seattle, May 14, 1962, and will return June 15, 1962.

The area of operation will be south of the Astoria Canyon and west-southwest of Tillamook Head, Oregon, in 50 to 1,000 fathoms of water.

Primary purposes of the cruise are: (1) to monitor stations established during previous cruises for distribution and abundance of demersal fishes and invertebrates; (2) collect samples of the fauna for analysis by the University of Washington, Laboratory of Radiation Biology; and (3) to conduct experimental trawling at depths greater than 600 fathoms.

Electronic navigational equipment will be used as aids in locating stations and trawlable bottom. A standard otter trawl will be used to depths of approximately 500 fathoms, and a Gulf shrimp trawl will be employed in deeper areas. A Van Veen bottom grab will be used to sample the substrate for invertebrates at various stations.



Oceanography

FIRST FOLIO OF NORTH ATLANTIC MARINE ENVIRONMENT SERIAL ATLAS:

The first folio of an unusual atlas project designed to aid the work of oceanographers and other scientists dealing with the sea was published in May by the American Geographical Society.

The project--a Serial Atlas of the North Atlantic Marine Environment--was begun two years ago by the Society in cooperation with other scientific institutions, following a two-year preparation period. The atlas is of a type never before attempted in this country--an effort to present a picture of the sea as a whole. It is to be published like a journal, in separate folios. Each folio will consist of a map or series of maps constituting a study of a particular aspect of the ocean, whether physical, biological, chemical, or geological.

In time, oceanographers should have a comprehensive range of studies in all disciplines. The atlas will thus provide simultaneously a medium for the publication of rapidly accumulating information about the sea and a guide for future research.

The first of the atlas folios, a study of sea surface temperatures in the western North

Atlantic, is the work of a meteorologist with the U. S. Bureau of Commercial Fisheries. It consists of 55 maps, 12 of which analyze a great volume of observations collected by commercial vessels at sea. The other 43 maps are interpretive. They show how the material can bring out detailed, month-to-month patterns of difference in the sea surface temperature. The study is expected to be a valuable contribution to environmental research.

Other folios in preparation include a study of the distribution of more than 130 species of fish off Georges Bank; a study of sea temperature at a depth of 656 feet; and a study of *Spisula polynyma*, a species of clam.

The atlas project is financially supported by a grant from the National Science Foundation, and by industrial companies and individuals. Cooperating institutions include the Royal Society of Canada, the Food and Agriculture Organization, U. S. Fish and Wildlife Service, the Woods Hole Oceanographic Institution, and the International Council for the Exploration of the Sea.

Note: See *Commercial Fisheries Review*, April 1962 p. 23.



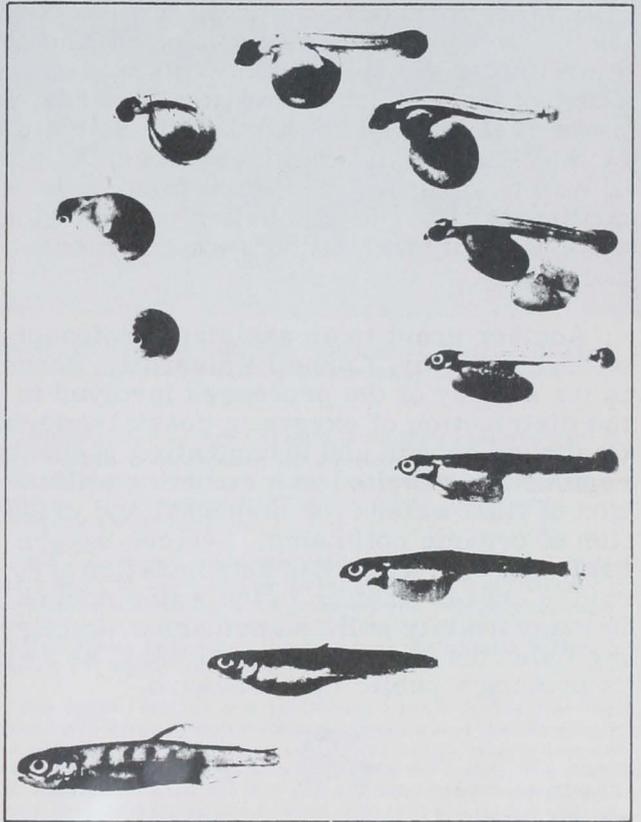
Oregon

SILVER SALMON FRY RELEASED IN LUCKIAMUTE RIVER:

The release by the Oregon Fish Commission of 105,000 silver salmon fry this spring into the waters of the upper Luckiamute River near Valsetz was announced on May 9 by the State's Fisheries Director. The liberation followed the removal earlier in the year of an old splash dam that had long kept from production several miles of prime spawning gravel in the upper reaches of the stream.

The dam was constructed in 1903 to facilitate removal of logs from the woods with the now-outmoded "splashing" technique wherein logs were periodically flushed downstream from a collection point behind the structure. Building of the Valley and Siletz Railroad rendered the dam obsolete. It remained across the stream, however, and during the nearly 40 years since it was last used, a monumental mass of debris had built up behind the structure. The barrier measured some 300 feet in length and was as much as 20 feet deep in places.

After a concerted attack on the dam and the jam behind it, a Fish Commission crew succeeded in breaching the barrier, and the stream began flowing in its normal channel for the first time in 60 years.



Stages of development of silver salmon (*Oncorhynchus kisutch*) from eyed egg to feeding fingerling. Approximately twice normal size.

Many miles of once-productive spawning stream have been taken out of use by poor logging practices and other land-use activities conducted without due consideration for maintaining good stream conditions. The Luckiamute project is part of the Fish Commission's efforts to restore salmon and steelhead production to the fullest extent possible in Oregon's remaining anadromous fish spawning areas.

The young fish will stay in fresh water for approximately one year, then migrate to the ocean. The fall of 1963 will see some of the early returning jacks back up the river, but most of the fish surviving the rigors of ocean life and the two-way river migration will come back as spawners in the fall of 1964.

Pollution

RESISTANCE OF FISH TO REFINERY WASTES TO BE STUDIED:

A study on the life history, behavior, and methods of handling fish to measure their resistance to refinery wastes will be conducted by a professor of zoology, Oklahoma State University, Stillwater. This was one of a total of 40 research grants (totaling \$647,000) made to 40 college and university scientists by the U. S. Public Health Service's Division of Water Supply and Pollution Control in a continuing effort to find better technological ways to purify the Nation's water sources and supply.

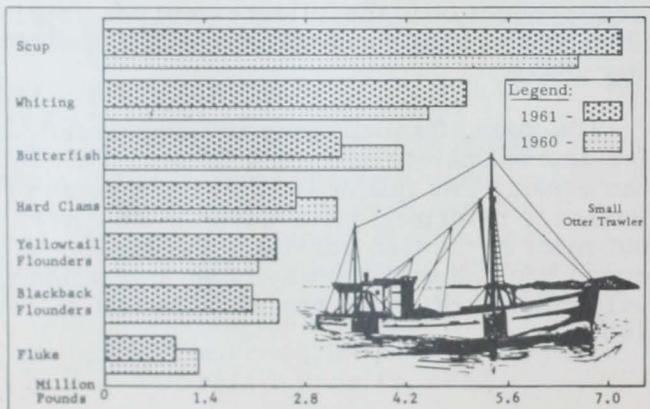
Another grant to an assistant professor of oceanography, Cornell University, Ithaca, is for a study of the processes involved in the distribution of oxygen in coastal waters. Continued growth and urbanization of coastal regions has resulted in a mounting utilization of tidal waters for dispersal and oxidation of organic pollutants. Serious oxygen depletion with a marked accumulation of decaying organic matter in the water occurs in many heavily polluted estuaries, damaging fisheries and recreational uses, as well as proving a public health hazard.



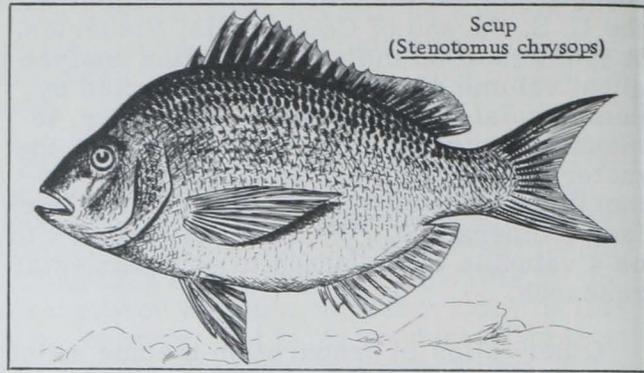
Rhode Island

FISHERY LANDINGS, 1961:

Landings of fish and shellfish at Rhode Island ports during 1961 amounted to 83.4 million pounds valued at \$3.2 million ex-vessel. Compared with 1960, this was a gain of 14.1 million pounds, but a drop of \$651,000. The catch used for food was down 10 percent, while that used for industrial



Rhode Island's landings of certain fish and shellfish, 1961-1960.



purposes, principally fish meal, was up 43 percent.

During 1961, scup led all edible items with 7.1 million pounds. Whiting was next with 5 million pounds, and butterfish third with 2.9 million pounds. Hard clams, yellowtail and blackback flounders, and fluke followed. Those seven items comprised 86 percent of the 1961 total edible production.

The majority of the 1961 production was taken by otter trawlers--51 million pounds or 61 percent of the year's total landings. Purse seines accounted for 22.7 million pounds or 27 percent, while the remaining 9.7 million pounds or 12 percent were taken by other types of gear.

Landings were highest during August with 16.5 million pounds. Fish for industrial use made up 88 percent of the August landings. June was second with 12.9 million pounds, followed by July with 12 million pounds.



Sharks

TAGGING PROGRAM ON TROPICAL PACIFIC SPECIES:

As part of its program of research on sharks, the U. S. Bureau of Commercial Fisheries Biological Laboratory, San Diego, this year started a tagging program on tropical Pacific species of sharks.

Fishermen should be on the lookout for the strap tags attached to the dorsal fin of sharks. A reward of one dollar will be paid for the return of tags to the Laboratory with information on date and location of capture.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, MAY 1962:

Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs., Heads-Off)					
Total landings, So. Atl. and Gulf States:					
July	-	10,477	21,746	17,493	13,457
June	-	8,220	12,427	14,547	10,241
May	5,500	5,279	6,335	6,885	6,523
Jan.-Apr.	14,200	17,453	18,013	14,080	19,333
Jan.-Dec.	-	91,280	141,035	130,660	116,552
Quantity canned, Gulf States 1/:					
July	-	3,042	6,319	3,085	4,805
June	-	3,744	7,537	7,641	5,107
May	1,600	1,316	1,591	2,680	1,462
Jan.-Apr.	944	345	712	617	540
Jan.-Dec.	-	15,760	28,594	24,679	26,404
Frozen inventories (as of end of each mo.) 2/:					
July 31	-	2,871	7,077	7,062	3,832
June 30	-	19,416	15,338	19,283	10,664
May 31	-	24,696	17,540	21,137	11,013
April 30	16,147	27,492	20,502	23,331	12,211
January 31	-	31,842	34,332	30,858	17,963
Imports 3/:					
July	-	6,635	7,319	7,861	6,340
June	-	8,065	8,932	8,300	6,018
May	4/	8,278	9,902	8,264	5,666
April	10,219	9,208	7,733	9,051	5,446
Jan.-Apr.	43,383	40,825	32,531	33,262	20,594
Jan.-Dec.	-	126,268	113,418	106,555	85,393

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.
 2/Raw headless only; excludes breaded, peeled, and deveined, etc.
 3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
 4/Not available.
 Note: Data for 1962 and 1961 are preliminary. May 1962 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



Sport Fishing

SKIN DIVERS TAKE MARINE FISH CENSUS:

Salt-water fish along all coasts of the United States were tallied in an underwater census, the Department of the Interior announced. The census, known as the Memorial Day Fish Count, began May 26, 1962, and lasted through June 3. It consisted of identifying, counting, and recording salt-water fish by 70 census teams in 16 coastal states. The teams varied from 3 to 15 persons and included men, women, and teenagers.

The census takers were 400 skin-diver volunteers of the American Littoral Society, an organization of amateur underwater naturalists, with headquarters at Sandy Hook, N. J. The program is coordinated by the Sandy Hook Marine Laboratory of the U.S. Fish and Wildlife Service's Bureau of Sport Fisheries and Wildlife.



Sandy Hook Marine Laboratory and a local American Littoral Society team cooperated in a New Jersey coast survey.

Divers listed as many of the United States marine fish as they could find during the nine-day period. In a pilot study held last summer, 24 test teams counted 23,000 fish of 93 species. These ranged from one-inch long angelfish to twelve-foot tiger sharks.

The American Littoral Society seeks to encourage underwater study of shore life by direct observation of fish and other marine animals, assist members in solving problems of a scientific nature, foster public information about shore life and public awareness of needs for conservation action, and act as "eyes" for marine scientists.

For years, marine biologists have been troubled over their inability to make simultaneous observations of the distribution and abundance of fish over their entire range, which, in some cases, may be thousands of miles along the coast. The planned fish counts will help fill this gap and answer such questions as where migratory fish come from, where they go, and where their centers of abundance are. Further study of the data collected during the census is expected to give some clues on why fish distribution and abundance are patterned the way they are.

The Director of the U.S. Bureau of Sport Fisheries and Wildlife hailed the skin divers' efforts as "a fine example of the growing interest of our people in conservation activities."

The present fish count will be followed by two others later in the year--one on the Fourth of July and another on Labor Day.



Storm Damage

ATLANTIC COAST AREA DAMAGED BY HIGH TIDES:

High tides and strong winds hit a large portion of the Atlantic Coast March 6-8, 1962, and caused much damage to property and some damage to shellfish resources in coastal bays. Some Bureau facilities were damaged. Several fishing vessels were lost at sea, and con-

tour shifts along the coast caused many navigation problems. The coastal areas of North Carolina, Virginia, Maryland, Delaware, New Jersey, and New York all suffered some damage from the storm. The damage to fishing vessels, equipment, docking facilities, and shore plants was not as heavy as had been reported immediately after the storm. But the full effect of the storm on shellfish resources, like oysters and clams, will not be known for some time.

The U. S. Interior Department's special task force on Atlantic Coast storm damage made an aerial survey on March 28 of the hard-hit beaches of New York, New Jersey, Delaware, and Maryland. The task force continued its aerial reconnaissance the next day over the Virginia and North Carolina coasts. The Coast Guard furnished the aircraft and flight crew.

Governors of all six States cooperated in the study. The Department launched the study at the request of Chairman Clinton P. Anderson of the Senate Committee on Interior and Insular Affairs Committee. The New Mexico Senator said the Federal study was needed to help States plan for future protection of their coastal areas, and to save some of their beach areas under public ownership.

Losses due to the storm to Interior Department installations were estimated at more than \$3.5 million. Virtual loss of two National Wildlife Refuges in Virginia and North Carolina and serious damage to nine other refuges resulted. Loss was assessed at approximately \$2 million. Some damage also was suffered by the Department's fishery laboratory at Franklin City, Va. Restoration of all areas is under way.

Fish and Wildlife Service officials said that the sport and commercial varieties of finfish did not suffer serious loss from the storm. Concern was felt regarding shellfish resources because of extensive silting, but no extensive damage was reported by the shellfish industry as of early April 1962.

The Coast and Geodetic Survey, U. S. Department of Commerce, in mid-March mobilized a special land-sea-air task force to begin a resurvey of the storm-ravaged Atlantic coastline from Long Island to South Carolina. Work to re-map the coastline with new aerial photography was begun on March 13. Preliminary examination of this photo-

graphy confirmed the belief that existing charts are now obsolete in areas of radical shoreline change.

The Coast and Geodetic Survey has given high priority to updating its charts, particularly in those areas of ship channels and marine commerce. A series of little "chartlets" have been issued. These are intended to supplement existing nautical charts until new chart editions can be issued later this year. But basic hydrographic surveys will also be ordered for most of the affected states to learn what has happened to channel depths and the ocean floor.

Reports indicate that the photography revealed some very prominent alterations in the shoreline complex. The Hatteras photos, for example, show new inlets connecting the Atlantic Ocean and Pamlico Sound. Much of the land around Ocracoke Island is gone, and definite changes have been noted in the barrier islands along the Virginia-Maryland shoreline.

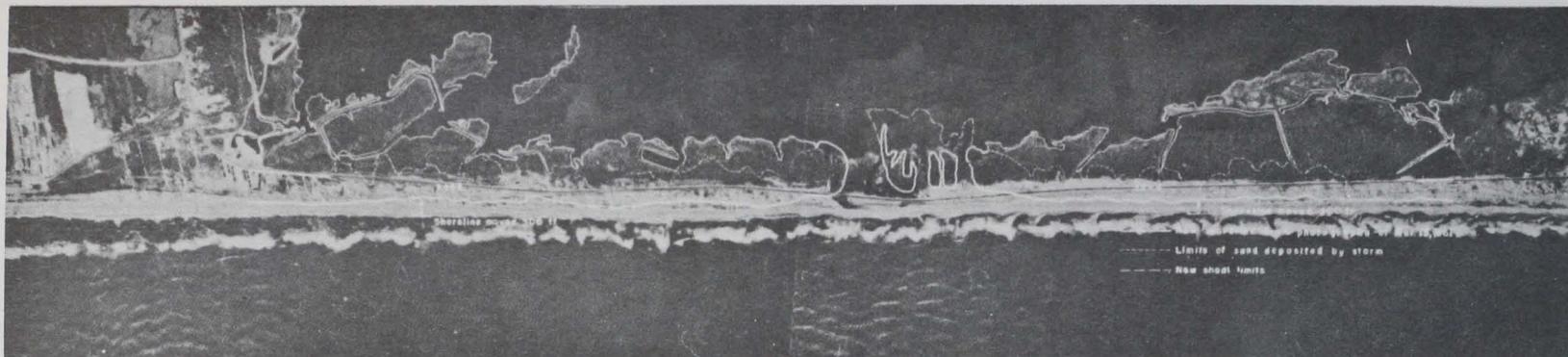
The most significant changes were delineated in the 18 "chartlets" to supplement regular Coast and Geodetic Survey nautical charts. Eight of these areas were given top priority. They are: Ocean City, Md.; Absecon Inlet, N. J.; Beaufort Inlet, N. C.; Cape Fear, N. C.; Lookout Bight, N. C.; Little Egg Harbor Entrance, N. J.; Chincoteague, Va.; and Ocracoke, N. C.

Oceanographers of the Survey believe that when the ocean completely "settles down" and the sand begins to adjust to a new level, that further changes will be apparent in the shoreline. This process, they say, may take a year or so, and a survey of selected coastal areas will be required again at that time.

In Maryland there was some damage to the fisheries and beach resorts. Ocean City in Maryland was extremely hard hit. The majority of the Maryland fishing fleet came through without too much damage, except for one vessel which was washed ashore on Assateague Island (the captain and one crew member were drowned). Two other vessels engaged in the cod long-line fishery were sunk at the dock, but were quickly raised for repairs.

Fishing communities along the Maryland portion of Chincoteague Bay were hampered by high waters. A packing plant at George Island Landing was about demolished with

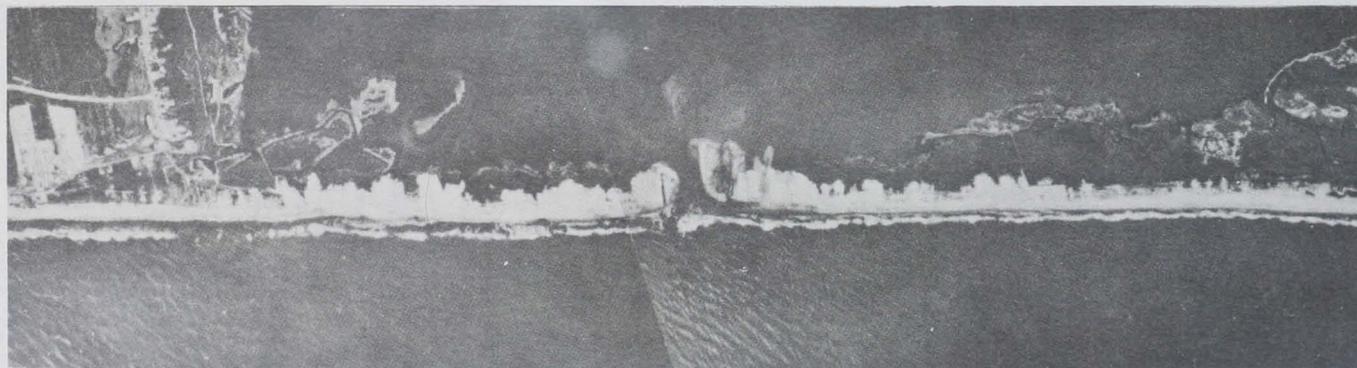
CAPE HATTERAS, NORTH CAROLINA



↑
Shoreline moved 300 ft.

↑
Shoreline moved 300 ft.
New shoreline from photographs of March 13, 1962.
----- Limits of sand deposited by storm.
----- New shoal limits.

Date of Photography - October 10, 1958



Date of Photography - March 13, 1962

\$25,000 damage. Other plants along the Bay were flooded and equipment was water damaged.

In Chincoteague, Va., all 11 of the oyster-packing houses were water-logged and damaged. A large number of the boats used in dredging oysters were gone. The loss in production before things returned to normal and costs of repairs were estimated at a conservative \$500,000. Other oyster sections hard hit were Greenbackville, Va., and George Island Landing and Taylor's Landing in Maryland. In the latter port 7 or 8 packinghouses were closed after the storm for some time. The storm hit almost at the peak of the oyster season in the Virginia and Maryland areas. Shucking and shipments were stopped for several weeks by health authorities because of the danger of pollution. Some of the public oyster grounds in the area were covered by sand; the same was true for private oyster grounds in the Northampton and Accomack counties area.

In the Hampton Roads area of Virginia, the biggest loss was in pond nets and equipment. Some nets and the supporting poles were swept away entirely. All others were damaged to some degree. The largest pond nets were located off Buckroe Beach and Grandview. Some of the pond nets were repaired, but others were discarded as not worth repairing. Crab-picking plants in the area were idle for more than a week after the storm because of the lack of crabs. Most dockside facilities were under water for several days and some damage was reported to those facilities.



Turtles

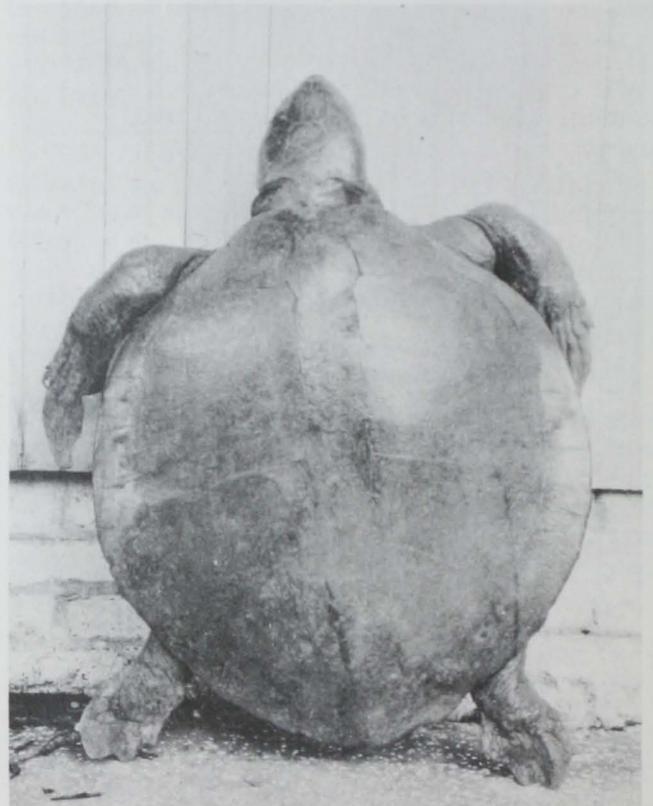
UNITED STATES NAVY PLANTS GREEN TURTLES IN CARIBBEAN:

Between 20,000-30,000 green sea turtle hatchlings were deposited throughout the Caribbean Ocean area in September 1961 by a United States Navy seaplane.

The objective is to replenish the rapidly-diminishing population of green turtles (*Chelonia mydas*), which has been the main source of meat for natives of the area for centuries. At the same time, the Navy will study the migration habits of the green turtle, which is considered to have superior navigational abilities the same as the salmon.

The planting operation was a cooperative venture of the Navy and the Caribbean Conservation Commission (CCC), a non-profit institution, and was under the direction of a professor of the University of Florida, Gainesville, who is also the director of the contract research project from the Office of Naval Research (ONR).

The freshly-hatched turtles were transported in plastic bags by a Navy Grumman seaplane from the green turtle hatchery operated by the CCC at Tortuguero, Costa Rica, about 50 miles north of Limon, one of the few areas in the Caribbean where green turtles are still plentiful. The baby turtles were flown to British Honduras; Cartagena, Colombia; Barbados, Grenada, and St. Lucia in the Windward Islands; Antigua and St. Kitts in the Leeward Islands.



Full grown green sea turtle.

The operation is based on the theory that green turtles return to their spawning grounds three years later to lay their eggs, similar to the return of the salmon to spawn. It is hoped that by transplanting the baby green turtles just after they have been hatched, the turtles will accept their new location as their spawning ground and return there to lay their eggs rather than to

Tortuguero where they were hatched. If the turtles return to the various places in the Caribbean where they were planted, then natives of those areas will be provided eventually with an abundant supply of meat for the first time in many years, solving a critical problem of protein deficiency.

Scientific research will be served by obtaining knowledge of whether turtles use certain clues to navigate for distances up to thousands of miles out to sea and back to the place from where they first enter the sea or whether they use other clues to return to the place where they were hatched. ONR has also under consideration a research study to determine how baby green turtles, which are spawned far inland and usually behind dunes, unerringly find their way to the sea which they have never seen. This would throw more light on their navigation mechanisms.

The Navy also plans to develop a system of marking baby green turtles, which are about the size of a half-dollar, so that as they grow to their huge adult size they can be located and identified periodically throughout their migration period.

ONR's study of green turtles is part of a broad, long-range program in biological orientation through which the Navy hopes to improve its navigation and long-range detection devices by learning how birds and marine animals can navigate with remarkable accuracy over long distances to reach destinations over routes they have never traveled before.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, MARCH 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in March 1962 were up 22.4 percent in quantity and 15.6 percent in value as compared with the previous month. During that period there were greater imports of cod fillets, haddock fillets, swordfish, canned salmon, frozen and canned tuna, canned sardines, canned spiny lobster, and frozen sea scallops. But imports were down for frozen shrimp, frozen frog legs, ocean perch fillets, fillet blocks and slabs, and sea catfish fillets.

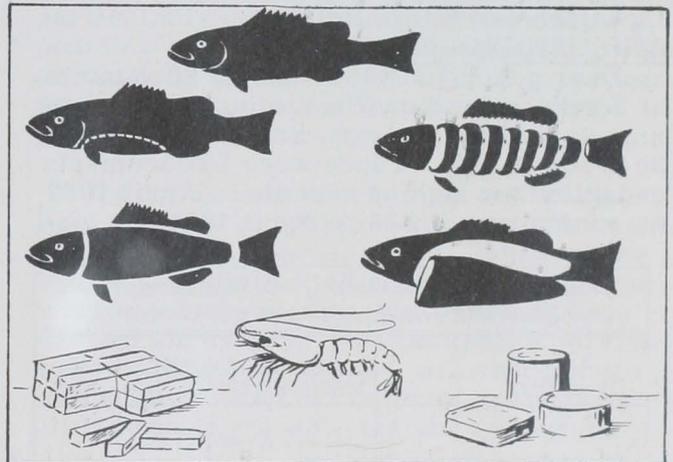
Compared with the same month in 1961, the imports in March 1962 were up 22.8 percent in quantity and 20.2 percent in value. This March there were more imports of frozen cod and flounder fillets, sea catfish fillets from West Germany, canned salmon (from Canada and Japan), frozen tuna (from Japan, Ecuador, Peru), canned tuna (from Japan), canned sardines, and frozen scallops from Canada. Imports dropped off for frozen haddock fillets, blocks and slabs, canned crab meat

U. S. Imports and Exports of Edible Fishery Products, March 1962 with Comparisons								
Item	QUANTITY				VALUE			
	Mar.		Jan.-Mar.		Mar.		Jan.-Mar.	
	1962	1961	1962	1961	1962	1961	1962	1961
	. . (Millions of Lbs.) (Millions of \$) . . .			
Imports:								
Fish & Shellfish:								
Fresh, frozen, & processed ^{1/} . . .	102.9	83.8	275.9	251.7	33.3	27.7	94.3	80.9
Exports:								
Fish & Shellfish:								
processed only ^{1/} (excluding fresh & frozen)	3.7	1.7	10.1	8.6	1.3	1.0	4.0	4.0

^{1/}Includes pastes, sauces, clam chowder and juice, and other specialties.

(from Japan), spiny lobster tails (from South Africa), shrimp (from Mexico), and frozen frog legs (from Cuba).

In the first three months of 1962, imports were up 9.6 percent in quantity and 16.6 percent in value as compared to the same period in 1961. The greater increase in value was because of the higher prices which prevailed the first part of this year for nearly all imported fishery products. This year there were more imports of blocks and slabs, sea catfish fillets, canned salmon (from Japan and Canada), frozen tuna (mostly from Japan and Peru), canned tuna (from Japan), canned sardines, frozen shrimp, and frozen scallops.



United States exports of processed fish and shellfish in March 1962 were up 117.6 percent in quantity and 30.0 percent in value as compared with March 1961. The increase was due to greater exports this March of canned mackerel, salmon, sardines not in oil, and squid (principally to Greece). Because of the scarcity on the United States market, exports were down for frozen shrimp, canned shrimp, and canned oysters.

Compared with the previous month, the exports in March 1962 were up 27.6 percent in quantity, but the value was the same. The lower-priced products like canned mackerel and squid were exported in greater amounts in March, with some increase in the exports of frozen and canned salmon and canned sardines. Exports of canned shrimp, frozen shrimp, and canned oysters dropped in March.

Processed fish and shellfish exports for the first three months of 1962 were up 17.4 percent in quantity, but the value was the same as in the same period of 1961. The following products were exported in substantially greater quantities in 1962: canned mackerel, frozen salmon, and canned squid; but exports dropped for canned sardines not in oil, canned shrimp, and canned oysters. Since most of the increase in exports January-March this year was in the lower-priced products, there was no change in value.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-June 2, 1962, amounted to 22,325,162 pounds (about 1,063,100 std. cases), according to data compiled by the Bureau of Customs. This was 11.4 percent more than the 20,035,659 pounds (about 954,100 std. cases) imported during January 1-June 3, 1961.

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty is limited to 59,059,014 pounds (about 2,812,000 std. cases of 48 7-oz. cans). Any imports in excess of the quota are dutiable at 25 percent ad valorem.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, APRIL 1962:

During April 1962, a total of 39 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 35 in April 1961. There were 22 documents cancelled for fishing vessels in April 1962 as compared with 25 in April 1961.

Area (Home Port)	April		Jan.-Apr.		Total 1961
	1962	1961	1962	1961	
.....(Number).....					
<u>Issued first documents 2/:</u>					
New England	6	2	9	11	33
Middle Atlantic	-	-	1	1	12
Chesapeake	5	9	12	21	75
South Atlantic	3	1	10	12	44
Gulf	3	7	28	34	103
Pacific	22	15	37	38	149
Great Lakes	-	1	-	4	12
Puerto Rico	-	-	-	2	2
Total	39	35	97	123	430
<u>Removed from documentation 3/:</u>					
New England	2	-	8	5	20
Middle Atlantic	4	2	19	12	32
Chesapeake	2	2	5	16	28
South Atlantic	1	-	15	8	29
Gulf	5	10	34	40	104
Pacific	8	8	50	34	111
Great Lakes	-	3	8	7	17
Hawaii	-	-	3	-	-
Total	22	25	142	122	341

1/ For explanation of footnotes, see table 2.

Gross Tonnage	Issued 2/	Cancelled 3/
(Number).....	
5-9	6	6
10-19	22	8
20-29	4	-
30-39	1	1
40-49	-	1
60-69	1	3
70-79	2	-
80-89	-	1
100-109	1	-
110-119	1	1
210-219	1	-
450-459	-	1
Total	39	22

1/ Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
 2/ Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 29 in 1962, 3 in 1961, 5 prior to 1951, and 2 unknown. Assigned to areas on the basis of their home ports.
 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.



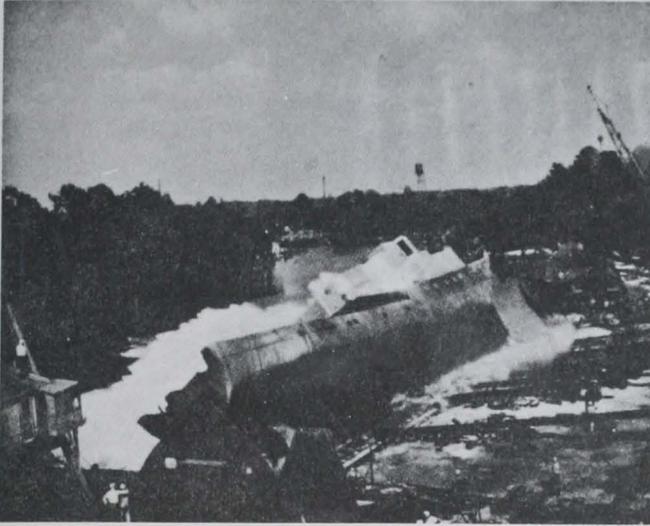
Vessels

NEW RESEARCH VESSEL LAUNCHED FOR FISH AND WILDLIFE SERVICE:

Albatross IV, the new oceanographic vessel of the Fish and Wildlife Service's Bureau of Commercial Fisheries, has been launched by the Southern Shipbuilding Corporation at Slidell, La., the Department of the Interior reported on May 23, 1962. Finishing of the interior and installation of additional machinery and equipment are under way and delivery of the \$1,773,948 vessel is scheduled for September 1962.

Albatross IV was designed by Dwight S. Simpson and Associates, naval architects and marine engineers of Boston, Mass., to meet requirements of fishery scientists of the Bureau. The craft is a 187-foot single-screw stern trawler, the first stern trawler to be built in the United States. It is equipped with a ramp to haul loaded nets aboard, permitting exploratory and experimental fishing during heavy weather. The Albatross IV is powered by twin Diesel engines, has a controllable pitch propeller, and is designed to travel at 12 knots with a range of 9,000 miles. 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.

Comfortable quarters and mess space are provided for a maximum crew of 26, plus 15 scientific personnel. Complete laboratory and research facilities are also provided, including wet and dry laboratories; photographic and electronics laboratories, an aft open deck laboratory for handling fish immediately after catch; a bow engine for steering and maneuvering on station; a steerable nozzle rudder,



Albatross IV launching on April 19 at Slidell, La.

designed for holding position during research work; underwater sonar equipment; underwater television and closed-circuit television aboard ship; and an underwater electromagnetic log.

Albatross IV carries on the traditional name of major fishery research vessels of the United States. Albatross I was a 234-foot, twin-screw iron steamer, commissioned in 1882, which visited both coasts of the United States, Alaska, South and Central America, the Galapagos Islands, the Hawaiian Islands, Japan, the tropical Pacific Islands, and the Philippine Islands during her 39 years of service that ended in 1921. Her successor, Albatross II, was a 148-foot, former Navy tug that operated from 1926 to 1932, engaging in research and explorations on mackerel and haddock fisheries and preliminary experiments with "savings" gear.

Albatross III was acquired from the General Seafoods Corporation in 1939 for \$1. She was originally the Harvard, a steam-driven trawler built in 1926. While awaiting reconversion to a research vessel, World War II started and she was drafted by the Navy, transferred to the Coast Guard, renamed the C.G.C. Bellefonte, and was rebuilt as an Atlantic patrol vessel. She was returned to the Fish and Wildlife Service in 1944, was reconverted in 1947 to a research vessel along the lines of the Boston otter trawlers, and was commissioned March 19, 1948.

Albatross III represented the first blending of efficient fish and scientific skills, and her career included such accomplishments as an over-all census of commercial fishes on the New England banks, experiments on refrigeration of fish at sea, development of "savings" gear, effects of waste-acid disposal off New York, and the location and charting of wrecks and other obstacles destructive to the nets and gear of New England commercial fishermen. She was deactivated in 1959 due to age and high cost of maintenance.

Albatross IV will be carrying on the fishery and oceanographic research vital to the Nation's commercial fisheries and oceanographic programs--to help the domestic fishing industry in the quest for the three billion additional pounds of fish the Nation will be consuming annually 20 years hence; and to conduct various phases of oceanographic research, such as the Bureau's Tropical Atlantic Fishery Investigations program beginning in January 1963. This program has just been adopted as an international program by the Intergovernmental Oceanographic Commission of UNESCO in Paris, France.

New dock facilities at the Bureau of Commercial Fisheries Woods Hole, Mass. Biological Laboratory will be the home port of Albatross IV.



Virginia

STUDY OF EFFECTS OF INDUSTRIAL HOT WATER DISCHARGES ON MARINE ENVIRONMENT:

The effects of thermal (heated) effluents discharged into the marine system by industries using river water for cooling and processing will be determined by a comprehensive scientific investigation now being initiated at the Virginia Institute of Marine Science. Formulation of the project, which is to be supported by a recently-approved \$11,711 research grant from the U. S. Public Health Service, was announced by the Institute on May 16.

The study would measure the response of selected marine plants and animals to elevated temperatures caused by the release of heated water into streams. Heated water might produce a thermal barrier which would interfere with the normal upstream and downstream migrations of important fish species, particularly during spawning seasons, and possibly have a direct effect upon succeeding populations of those species. Elevated temperatures may also effect the food chain present in marine waters.

The study is deemed important in the light of rapid industrialization and community growth in coastal areas. While these trends are vital to the progress of the Commonwealth of Virginia, their effects upon the marine system must be measured. Results of this investigation will thereby aid in the realization of continued maximum utilization of valuable marine resources.



Washington

ANOTHER SALMON FISH FARM GOES INTO PRODUCTION:

The Washington State Department of Fisheries on May 15 announced that Whiteman's Cove in Case Inlet, Pierce County, was planted on May 1 with 250,000 young chinook salmon. This is the 28th salmon fish farm in the Department of Fisheries' continuing effort to produce more salmon for all fishermen. The chinook, about 365 to the pound, weighed around 719 pounds. They had been converted to salt water at the Department's Hoodsport Hatchery.

The installation includes an electric screen, a control structure for bringing in sea water for circulation, two 52-inch pipes for inlet and outlet, and a boat-hauling ramp. Total cost was just under \$200,000, making it the most expensive of any of the fish farms established so far in the State.



Wholesale Prices, May 1962

More liberal landings of haddock at Boston accounted for the 28.3 percent drop in fresh large drawn haddock prices from April to May. But those prices were still 9.1 percent higher than in the same month a year earlier. Seasonally heavier landings of fresh-water fish in the Great Lakes area caused whitefish and yellow pike prices in May to drop 16.5 percent below April prices. But with landings light and demand good, fresh salmon prices in May were up 15.9 percent from April and were also 13.7 percent higher than a year earlier. With the arrival on the market of halibut from this sea-



Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, May 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			May 1962	Apr. 1962	May 1962	Apr. 1962	Mar. 1962	May 1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					119.4	118.9	120.3	103.6
<u>Fresh & Frozen Fishery Products:</u>					118.1	117.2	119.4	101.0
<u>Drawn, Dressed, or Whole Finfish:</u>					119.9	119.1	121.8	106.6
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.12	65.7	91.6	124.0	60.2
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.41	.45	122.2	133.1	116.8	103.0
Salmon, king, le. & med., drsd., fresh or froz.	New York	lb.	1.00	.86	139.7	120.5	120.5	122.9
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.71	.85	106.0	126.9	111.9	98.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.71	.85	116.3	139.2	120.4	117.1
<u>Processed, Fresh (Fish & Shellfish):</u>					119.7	120.4	123.2	101.7
Fillers, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.33	.38	80.1	91.1	121.4	70.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.02	.99	119.6	116.0	117.2	89.7
Oysters, shucked, standards	Norfolk	gal.	7.50	7.75	126.5	130.7	130.7	122.2
<u>Processed, Frozen (Fish & Shellfish):</u>					110.2	108.0	109.0	88.1
Fillers: Flounder, skinless, 1-lb. pk.	Boston	lb.	.40	.40	100.1	100.1	100.1	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.33	96.7	96.7	101.1	93.8
Ocean perch, lge., skins on 1-lb. pk.	Boston	lb.	.32	.33	110.4	115.7	119.2	101.6
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.99	.95	116.8	112.7	112.1	81.2
<u>Canned Fishery Products:</u>					122.1	122.1	122.1	110.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	124.2	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	12.15	12.15	107.9	107.9	107.9	97.7
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	118.5	101.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	12.81	12.81	164.3	164.3	164.3	112.2

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/Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.
 3/Recomputed to be comparable to 1957-59=100 base indexes.

son's catch, prices for the fresh and frozen product were down 8.2 percent from April to May, but were still 18.6 percent higher than in May 1961. With the higher fresh salmon prices offsetting the lower prices in the other products under the drawn, dressed, or whole finfish subgroup, the index for the subgroup rose 0.7 percent from April to May and was 12.5 percent higher than in May 1961.

Except for fresh shrimp at New York City, May prices of fresh haddock fillets at Boston were down 12.1 percent and shucked oyster prices at Norfolk were down 3.2 percent from April. With landings light and demand good, May shrimp prices at New York City were up 3.1 percent from April and they were up 33.3 percent from the same month in 1961. The processed fresh fish and shellfish subgroup index, principally because of higher shrimp prices, rose 0.6 percent from April to May and was 17.7 percent higher than a year earlier.

From April to May prices for frozen fillets of flounder and haddock remained steady, but ocean perch fillet prices dropped 4.6 percent because of heavier landings of ocean perch in New England ports. With stocks still at a low level, frozen shrimp prices at Chicago in May were 3.6 percent higher than in April and 43.8 percent higher than in May 1961.

All frozen fillets this May were priced higher than in the same month of 1961. Because the higher shrimp prices more than offset the lower ocean perch fillet prices, the processed frozen fish and shellfish index rose 2.0 percent from April to May and was 25.1 percent higher than in the same month of 1961. Frozen fishery products continued to move well in May. Markets were reported steady for most of the major products.

Canned fishery products prices remained at the same level from February through May. But the index for the subgroup this May was 10.5 percent higher than a year earlier. Compared to May 1961, prices this May were up 1.8 percent for canned pink salmon, up 10.4 percent for canned tuna, up 16.7 percent for California sardines, and up 46.4 percent for Maine sardines. The canned tuna pack this year was only slightly ahead of last year at the end of May, but less light meat and more white meat was packed the first five months of this year. A substantial drop in domestic landings of yellowfin tuna in California curtailed the pack of light meat tuna. Through May the pack of Maine sardines was still light and the available stocks had practically been sold out by the end of April. The 1961/62 season pack for California sardines was again a small one.



VACUUM FREEZE-DRYING TESTED FOR APPLICATION IN FOOD FIELD

One of the "hottest" developments in food processing today is vacuum freeze-drying, which is beginning to move from the laboratory and pilot-plant stage into tonnage production.

The process, known for many years in the United States, but until recent times limited largely to blood plasma and drugs, is catching on in a big way. Major food firms, which have been quietly testing the merits of the process, are expressing optimism for the future of vacuum freeze-dried foods.

The list of foods which have successfully been subjected to the new process is impressive. Some of the foods include: in meats: beef steaks, pork chops, ground beef, diced beef, sausage meat, chicken parts and diced chicken; in seafoods: shrimp, crab meat, crab cakes, clams, oysters, fish fillets, fish sticks, whole lobster, and lobster tails; in dairy products: whole milk, homogenized milk, goat's milk, mother's milk, whole eggs, egg albumen, and cottage cheese, and numerous fruit and vegetable products.

The vacuum freeze-drying process, also called lyophilization and sublimation, removes the moisture from foods under high vacuum conditions with only a small amount of heat. The resulting product can reportedly be stored indefinitely without refrigeration.

There is a slightly higher processing cost for freeze-drying, but proponents of the new process say that the savings in refrigeration equipment and in the low transportation cost compensate for this.

Food subjected to this process does not change shape, but takes on the consistency of a dry, brittle sponge. Sealed in a tin can, foil, or plastic pouch to keep out the moisture, such foods will keep for years at ordinary temperatures. The food is reconstituted by placing it in water for approximately 20 minutes. The sponge-like food absorbs water into the original spaces left by the evaporated ice, thus bringing the food back to nearly its original flavor and texture. (Food Field Reporter, April 24, 1961.)