

TRENDS AND DEVELOPMENTS

Alaska

NEW BIOLOGICAL LABORATORY AT AUKE BAY:

The Auke Bay Biological Laboratory, near Juneau, Alaska, is the newest research station of the U. S. Bureau of Commercial Fisheries. Although not fully equipped, it is already fulfilling an important role in providing basic information of Alaska's fishes--

only long-established facilities at Little Port Walter and Karluk and Brooks Lakes but also more recent stations at Kasitsna Bay, Olsen Bay, Traitors Cove, and Rampart. Basic research is conducted on herring, king crab, and the five species of Pacific salmon and on the food and predatory species associated with them. Physical environmental studies of lakes, streams, and the ocean itself are also part of the program.



The site of the Auke Bay Biological Laboratory near Juneau, Alaska. In the foreground is the salt-water bay and in the center of the photo is Auke Lake, a fresh water body of water.

information that is vitally needed to solve the problems of resource management created by Alaska's large harvest of fishes, which are distributed to the nation and the world.

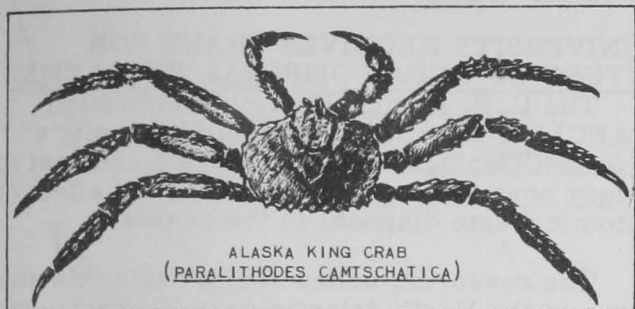
Studies organized at the laboratory involve farflung stations where necessary field data are obtained. They include not

The Auke Bay facility will be equipped to test field situations under controlled conditions. For this purpose salt water will be taken from the bay and fresh water from Auke Lake, which is located just across the highway from the laboratory and provides a convenient natural environment for observing salmon runs.

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KING CRAB TAGGED BY JAPANESE OFF KODIAK TAKEN IN ALITAK BAY:

A tagged king crab caught by crab pot in Alitak Bay, Kodiak Island by United States fishermen in early March 1961 was evidence that Japanese fishing operations had finally extended to the vicinity of Kodiak. On a red plastic disc attached to the leg of the crab was a number and the legend, "Hokuyo."



The tagged crab was taken to Port Wakefield and flown to the Alaska Department of Fish and Game Headquarters at Kodiak for further examination by a king crab specialist.

The specialist promptly wrote the Tokai Regional Fisheries Research Laboratories at Tokyo inquiring as to when and where the crab was tagged and released. A quick reply from a Japanese fisheries company revealed that limited king crab tagging had been done in the Shumagin and Kodiak Island areas during September 1960, when 235 king crabs were released by three vessels of the Shinyo Maru fishing fleet belonging to the company while engaged in an exploratory research program.

The crab caught at Alitak was one of these. It had been released off Kodiak and had migrated 27 miles to Alitak Bay after six months of freedom.

The Alaskan specialist surmised that the released tagged crabs were taken incidentally during Japanese exploratory bottom fish ventures during the past summer and that they were released in the same area of capture.

The crabs, as indicated by the one captured, were all tagged in an unusual manner. The tag was threaded through a leg near the body on the underside, instead of having their mark in a more typical location on top of the shell or through the isthmus for permanent retention. Powell believes this location was

chosen by the Japanese so as not to conflict with the crab-tagging programs of the United States.

During the period between August 31 and September 10, 35 male and 1 female king crab were tagged by the Shinyo vessels and released at four locations in the Shumagin Island area. All of these releases were within 12 miles of shore.

Between September 18 and 20, the Japanese released 76 male and 123 female king crab at nine locations off Alitak Bay. The locations extended from 9 to 47 miles outside the three-mile limit. Japanese records received by the specialist gave the tag number, latitude, longitude, depth, date, sex, width of shell, and weight relative to each of the crabs released.

Due to the excellent cooperation of the Japanese in supplying tag data, the specialist believes the offshore king crab studies proposed by the Alaska Department of Fish and Game in 1961 will benefit by these Japanese tagging operations.

The Japanese fishing company has requested the Alaska Department of Fish and Game that if any of their marked crabs are found in the future, that knowledge of their number, location, and date of capture be forwarded to them at Tokyo to facilitate the company's survey and research program.



Antarctica

NAVY CARGO SHIP TO BE REFITTED FOR RESEARCH:

The United States Navy ship Eltanin, an ice-strengthened cargo ship, will become a marine scientific laboratory of the U. S. Antarctic Research Program under the terms of an agreement announced on April 16, 1961, by the Director of the National Science Foundation (NSF) and the Commander, Military Sea Transportation Service (MSTS).

Research projects aboard the Eltanin will encompass any scientific work that may be carried out on shipboard. The Foundation is now accepting proposals for research in the oceans adjacent to the Antarctic, and it is expected that the first research cruise will begin in the late fall of 1961.

The ship will be fitted to accommodate numerous disciplines, including meteorology, upper atmosphere studies, marine and terrestrial biology, physical oceanography, submarine geology, and geomagnetic studies.

The agreement between the Foundation, which administers the Antarctic Research Program, and MSTS, which owns and operates the Eltanin, provides for conversion of the cargo vessel into a polar research ship during the summer and fall. Cost of conversion will be principally borne by the Foundation, but the MSTS will award the conversion contract and supervise the ship's modification.

Versatility and flexibility of equipment and laboratory deck spaces compatible with the demands of seaworthiness and safety are incorporated in the plans for alteration. It is planned to convert the present cargo hold and between decks to laboratories, quarters for scientific parties, and scientific stores. In addition, enclosed laboratories will be built on the forward part of the main deck extending from the forecabin head to the main mast. Main deck space forward of the bridge superstructure and aft of the main mast will in general be clear for trawling and allied overside operations.

A helicopter deck is to be installed aft of the bridge.

Under the terms of the agreement, the Eltanin will continue to be owned and operated by MSTS. The Foundation, as sponsor of the ship, is responsible for the scientific program and will designate a senior scientist aboard. It is expected that the ship will work in Antarctic waters at least ten months a year. Individual cruises will vary from a month to two or more months in length, depending on the research in progress. During refueling calls at Southern Hemisphere ports, scientists will be able to change equipment for experiments and resupply their projects.

The Eltanin is a small ice-strengthened cargo ship designed and built for polar supply missions. She is 266 feet long, has a 51-foot beam, and will draw about 19 feet. Double-hull feature is extended up to the main deck and other cold-weather operation characteristics are built in. Classed as T-AK 270, she is of welded steel construction with a raked icebreaker-type form bow and a modified cruiser stern. Engine space and

crew quarters are aft. Propulsion power is Diesel-electric, driving twin screws; shaft horsepower is 2,700, speed approximately 13 knots, and range at 12 knots about 10,000 miles.



Atomic Waste

UNIVERSITY RECEIVES GRANT FOR STUDY OF OCEAN DISPOSAL PROBLEMS:

The U. S. Atomic Energy Commission (AEC) has awarded Columbia University's Lamont Geological Observatory a contract to study ocean waters to determine the effect of atomic waste disposal in the oceans.

The research, scheduled to begin this summer in the North Atlantic near Bermuda, will include studying ocean movements by dropping a common red dye into the ocean at selected sites.

Water will be sampled at various ocean depths by a ship towing a sensitive device that can record as little as two parts of dye to 100 billion parts of water. The device will also contain other instruments for measuring the temperature and depth of the ocean water sampled.

Until the actual mixing, spreading, and circulation rates of specific ocean areas are known, no reasonable control over atomic waste disposal in the ocean can be expected, the director of the Observatory and the project said.

Although the research will cover a small portion of the Atlantic Ocean, the AEC hopes the program can eventually be extended to cover major ocean areas.

The research by the Observatory will be financed by a \$290,000 grant from the AEC. Another contract, involving \$200,000, was awarded by AEC to a Washington, D. C., firm for developing and testing the equipment to be used in the study.

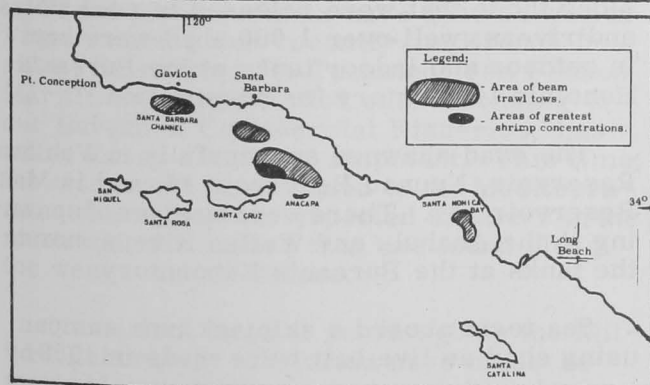
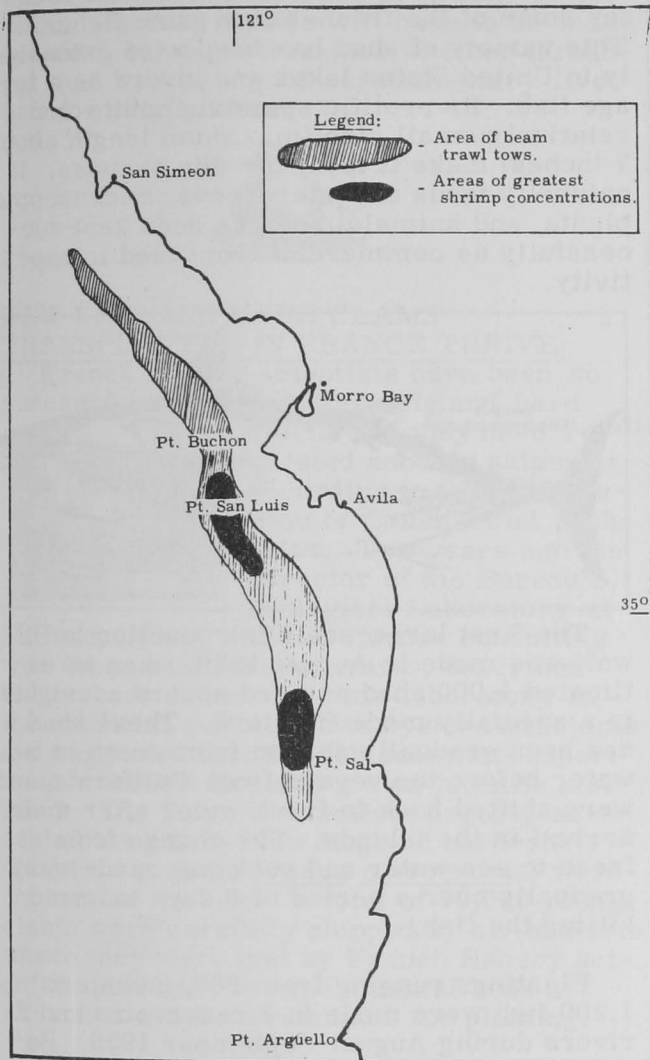


California

SHRIMP STUDY OFF CALIFORNIA COAST CONTINUED:

M/V "Alaska" Cruise 61-A-1-Shrimp:

The coastal waters off central and southern California from San Simeon to Santa Monica were surveyed (Jan. 16-Feb. 14, 1961) by the



M/V Alaska Cruise 61-A-1-Shrimp.

California Department of Fish and Game research vessel Alaska. Objectives were (1) to conduct exploratory fishing operations for pink shrimp, Pandalus jordani, to locate areas of concentration; (2) to determine size, sex and weight of shrimp from the areas examined; (3) to obtain bottom temperatures in shrimp-fishing areas; and (4) to determine species, numbers, and weights of fish and invertebrates caught with the shrimp.

A total of 122 tows was made with the 20-foot beam trawl, each averaging 20 minutes fishing time.

Summary of Exploratory Fishing for Pandalus jordani.

Area	Number of Tows	Depth (fathoms)	Results
Santa Monica Bay	10	88 to 150	Only a few shrimp in this area.
Santa Barbara Channel	54	107 to 170	Shrimp were in fair quantities off Santa Cruz Island; a trace or none in other areas.
Pt. San Luis, Morro Bay, Pt. Buchon, San Simeon	58	107 to 150	Greatest concentrations were off Pt. San Luis and Pt. Sal. Traces found off Morro Bay, Pt. Buchon. None off San Simeon.

Shrimp were captured in 54 of the 122 tows. Samples were taken of the shrimp and biological data are being processed to determine the potential for each of several species. Amounts per tow ranged from about 900 pounds of shrimp in one 20-minute haul to as few as one or two individuals.

A total of 120 bathythermograph casts was made. Bottom temperatures ranged from 8.4° to 10.3° C (47.12° - 50.54° F.).

The fish caught along with pink shrimp were primarily small hake, Merluccius productus, and splitnose rockfish, Sebastes diploproa. Invertebrates were chiefly jellyfish, sea urchins, and sea pens.

Note: Also see Commercial Fisheries Review, Feb. 1961 p. 16.



Central Pacific Fishery Investigations

COLLECTION OF BIOLOGICAL DATA ON TUNA AT AMERICAN SAMOA:

A biologist from the Hawaiian Biological Laboratory of the U. S. Bureau of Commercial Fisheries during the six-week period ending March 6 surveyed the American Sa-

moa tuna industry preliminary to establishing a station for collecting biological data.

The only tuna cannery is located on the island of Tutuila, American Samoa. Processing and canning of long-line-caught tunas was started in 1954 by the present management; however, the basic cannery facilities were erected some years prior to 1954. The tunas are supplied by a fleet of mostly Japanese and one or two Korean long-line vessels. As these fish are available to the long-line fishing gear throughout the year, the cannery operates the year-around. The catch is predominantly albacore and during the trip made by the biologist, albacore made up 86 percent of the total catch of 1,926 fish.

Fresh blood samples were collected on board the Yuki Maru, a combination salmon gill-netting and tuna long-lining vessel. During the trip, fishing operations were carried out on 22 days in waters north and northwest of the Samoan Island group. The blood collection brought back to the Hawaii Laboratory included 85 albacore, 30 yellowfin, and 24 samples from other miscellaneous species taken on long-line gear.

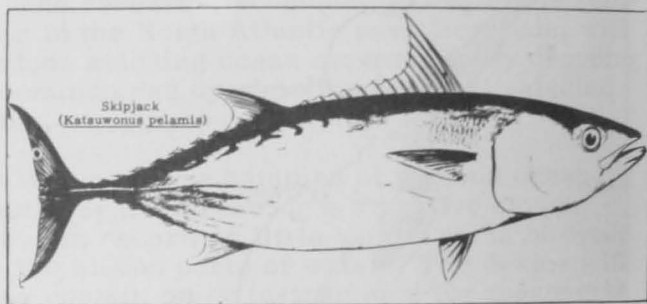
Other data collected on the trip included the daily catch, vessel position, length and sex of various species of fish, and details of the operational aspects of fishing. With regard to the latter, it is interesting to note the long hours of work that the long-line fishing method requires. The Yuki Maru fished 280 baskets of gear (1,400 hooks) with setting operations commencing at 5 a.m. and ending about 8:30 a.m. Hauling operations started at about 12:30 p.m. and generally did not end till about 2 a.m. the following morning.

The organization of a biological sampling program at the cannery was found to be feasible for albacore tuna. Under the present operating conditions, the size and sex of albacore can be obtained at the butchering line since these fish are landed in the round. On the other hand, with yellowfin and big-eyed tuna, the sex determinations at the cannery lines are dependent upon gonad remnants in the body cavity, since those fish are gutted at sea. General locality of capture information may be obtained by interviewing vessel personnel.

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THREADFIN SHAD CONTINUES TO SHOW PROMISE AS LIVE BAIT FOR SKIPJACK TUNA:

The threadfin shad (*Dorosoma petenense*) was introduced in Hawaii by the U.S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu and the Hawaii State Division of Fish and Game as a possible supplementary live bait for skipjack tuna and as feed for some of the fresh-water game fishes. This variety of shad has been used extensively in United States lakes and rivers as a forage fish. Its prolific spawning habits and relatively small size (maximum length about 7 inches) make it ideal for this purpose. It naturally feeds on water weeds, microscopic plants, and animals, and has been kept successfully as commercial trout feed in captivity.



The first large-scale introduction to Hawaii was made in August 1959, when an estimated 4,000 shad arrived aboard a freighter in a specially made fish tank. These shad had been gradually shifted from fresh to sea water before the voyage from California, and were shifted back to fresh water after their arrival in the islands. The change from fresh to sea water and back was made very gradually over a period of 3 days to avoid killing the fish.

Plantings ranging from 200, and up to 1,200 fish were made in 3 reservoirs and 2 rivers during August-September 1959. Besides those that were released in reservoirs and rivers, well over 1,000 shad were kept in outdoor and indoor tanks at the Bureau's Honolulu Laboratory for observation.

The shad spawned successfully in Wahiawa Reservoir, Nuuanu Reservoir #4, and in Maui Reservoir #44. There were no signs of spawning in the Anahulu and Wailua Rivers, nor in the tanks at the Bureau's Laboratory.

Sea tests aboard a skipjack tuna sampan using shad as live bait were made in 1958 by

the Hawaiian Tuna Packers and Bureau biologists. The results were very encouraging as they showed that skipjack tuna readily accepted this type shad as food, and the rate at which skipjack tuna were caught with threadfin shad was better than with other live bait (nehu) during the test. However, this was not conclusive since only a few buckets of threadfin shad were available for the tests. Further studies will have to be made before it can be determined whether threadfin shad will be a good supplementary live bait for skipjack tuna.



Clams

NEW ENGLAND HARD CLAMS TRANSPLANTED IN FRANCE THRIVE:

French fishery scientists have been so successful in growing New England hard clams that they have requested another shipment, according to the U. S. Bureau of Commercial Fisheries. Two years ago the Director of the Bureau's Biological Laboratory at Milford, Conn., while in Europe consulting with other shellfish scientists, described the success achieved by his laboratory in the artificial cultivation of oysters and clams and suggested that French scientists experiment with New England grown juvenile molluscs. The French scientists eagerly accepted his offer. New England hard-shell clams or quahogs (*Venus mercenaria*) were chosen for the test. A total of 70,000 young clams were carefully shipped by air to Paris where they were met by French fishery scientists and sped to experimental beds at Arcachon and La Tremblade for planting.



These pioneer clams have done so well in French waters that recently the French Institute Scientifique et Technique des Pêches Maritimes, an institution corresponding to our Bureau of Commercial Fisheries, has asked for an additional shipment. This time, the clams will be assigned to the Mediterranean where they are expected to thrive in the much warmer waters than are found along the west coast of France.

Clams sent several years ago by the Milford Laboratory to Florida have made remarkable progress so there are high hopes for the latest shipment which will make

their new home in the warm waters off the south of France.

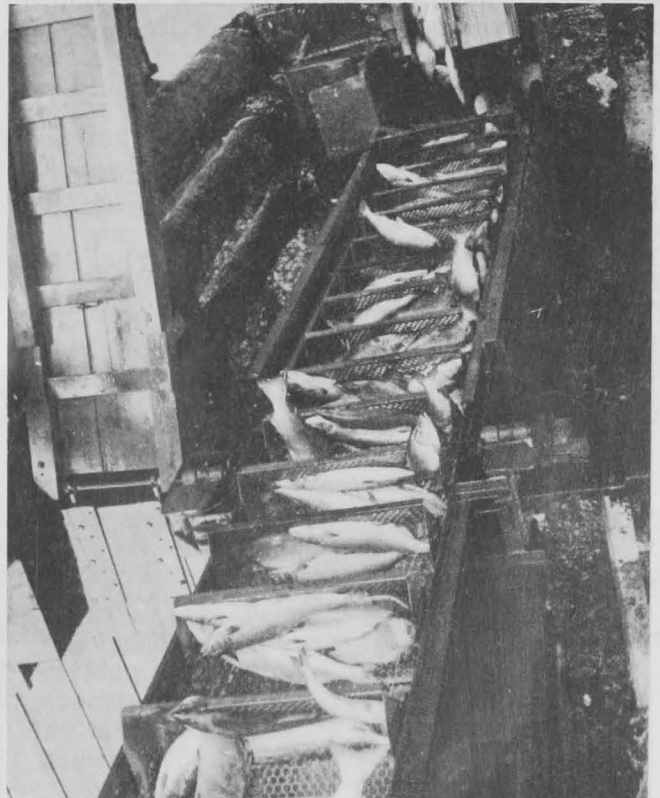


Films

INTERIOR RECEIVES INTERNATIONAL MOTION PICTURE AWARD FOR FISHERY FILM:

Presentation of awards for two Department of the Interior sound-color films shown at the Edinburgh, Scotland, International Film Festival were made at the British Embassy in Washington, D. C., on March 28, 1961.

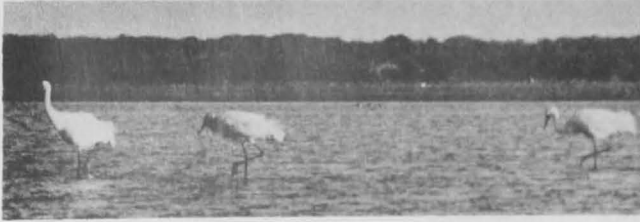
The films are Salmon--Catch to Can, produced by the Bureau of Commercial Fisheries, and financed by the salmon industry, and The Whooping Crane, produced by the Bureau of Sport Fisheries and Wildlife.



Using a conveyor belt to unload fresh salmon at a cannery. Salmon being transported to be washed and cleaned prior to canning.

Salmon--Catch to Can is a documentary portraying the biology of salmon, methods of catching, and a glimpse at its utilization. It was one of the seven U. S. Government films so honored at the Film Festival in 1960.

The Whooping Crane is a documentary of America's all-but-extinct whooping crane. It was shown at the Edinburgh Festival in 1959. Presentation of the award was unavoidably delayed.



Family of whooping cranes at Long Lake, Aransas Refuge, Tex.

The awards are diplomas of participation in acknowledgement of the fact that the pictures were selected and shown at the Edinburgh Festival. To qualify for such a showing the films had to undergo a severe screening test in this country in competition with other Government-produced films and then equally severe screenings in London and Edinburgh before final selection. The Edinburgh International Film Festival is held each September.

Other Bureau of Commercial Fisheries films honored at Edinburgh in past years were The Story of Menhaden in 1951 and Outboard Fisherman U.S.A., 1956. The Whooping Crane also won an award at the 1959 Venice, Italy, International Film Festival.

Note: These films and others are available on a free loan basis. Write to the Office of Information, Fish and Wildlife Service, U. S. Department of the Interior, Washington 25, D. C.

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SPONGE FILM OF U. S. BUREAU OF COMMERCIAL FISHERIES WINS RECOGNITION:

Sponge--Treasure from the Sea, a 16-mm, sound-color film recently made available to the public.



has won an American Film Festival award. The award is a certificate showing that the film passed screening requirements for screening at the Film Festival April 19-22 at the Barbizon-Plaza

Hotel in New York City. The Festival is sponsored by the Educational Film Library

Association which has its headquarters in New York.

The action of the screening committee put Sponge--Treasure from the Sea in the Blue Ribbon competition in the Agriculture, Conservation and Natural Resources category.

The picture tells the story of the natural sponge industry in the United States where it is conducted with all the old world color and culture. It shows the two methods of harvesting, hooking and "hard hat" diving; the sponge auction which features a silent auctioneer, with gestures taking the place of calls; the blessing of the waters and the diving for the Golden Cross. The center of the American sponge industry is Tarpon Springs, Fla., where sponge divers of Greek origin carry on their work in traditional style.

The film was produced by the Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service. It was sponsored by the Sponge and Chamois Institute and the Sponge Industry of Tarpon Springs.

Note: Prints are available on a free loan basis from cooperating film libraries throughout the country and from the Bureau of Commercial Fisheries, U. S. Department of the Interior, P. O. Box 128, College Park, Maryland.



Fish Flour

INTERIOR SECRETARY LUNCHEON POINTS WAY TO END PROTEIN DEFICIENCY:

A prelude to a program aimed at helping to end dietary protein deficiency, and which may prove a boon to peoples in underdeveloped areas, was given on April 4 at a luncheon at the Department of the Interior by Secretary Stewart L. Udall.

Secretary Udall served cookies to his guests to which had been added fish flour, a convenient supplement to diets of protein-starved persons--an innovation which many believe could change the lives of countless persons in the nations of the world. Over two-thirds of the world's population suffer from protein malnutrition.

The term "fish flour" is actually a misnomer, and those engaged in the research to produce this material in quantities prefer to call it "animal protein concentrate." It contains little or none of the carbohydrates and

starches found in grain flour. Rather, it contains up to 95 percent of animal protein. These proteins contain all of the 10 amino acids which are essential for the development of bone and muscle and for the daily maintenance and repair of bodily tissues.

The concentrate can be made from non-utilized fishes, the Department's Fish and Wildlife Service technicians report. The United States alone could easily supply from one locally available species of fish and without reference to other species of industrial fish commonly available, sufficient concentrate to treat 100 million humans with a dietary supplement level of one ounce of concentrate daily, for about a year.

The amount could be increased many times by utilization of the numerous domestic fish species which are little used or not used at all, at present. In developing countries, where many but not all of the 10 amino acids are available from vegetable protein sources, the United States production from one species of fish alone would adequately supplement the diet of 330 million humans for a year.

Major obstacles to the development of a substantial fish concentrate industry in this country is the lack of process engineering studies which would assure an inexpensive but consistently highly nutritious product. The Bureau of Commercial Fisheries, Fish and Wildlife Service, hopes to undertake such work in the near future.

The Bureau's home economists made the cookies used by Secretary Udall today. In the amounts used, the concentrate was undetectable as to taste or appearance. Nevertheless the protein concentrate added was sufficient for five cookies to provide 14 percent of the animal protein needed daily by a 6-year-old child, and 8 percent of the amount needed by a 154-pound United States adult male.

Guests at the Udall luncheon included Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife; Charles E. Jackson, General Manager of the National Fisheries Institute, and Harold J. Humphrey, consultant to the Food Conservation Division of the United Nations International Children's Emergency Fund. Jackson presented the cookies to Secretary Udall and explained the possibilities of the concentrate in the diet of underdeveloped nations and to people of all nations.



Secretary of the Interior Stewart L. Udall (right), Charles E. Jackson, Gen. Mgr., N.F.I. (left), and Asst. Sec. of the Interior for Fish and Wildlife Service, Frank P. Briggs (center), enjoy cookies made from fish flour at the luncheon. The "fish flour," actually an "animal protein concentrate," designed to end dietary protein deficiency, may prove an addition to menus everywhere, and a boon to peoples in underdeveloped areas.

At the fish meal meeting in Rome held by the United Nation's Food and Agriculture Organization in late March several matters pertinent to the world's diet were discussed.

Lack of adequate protein in the child's diet results in failure of growth, muscular wasting, and oedema of varying degrees--the so-called "kwashiorker" of West Africa--or in "marasmus", failure of growth and wasting of tissues. The mortality rate in both instances, if untreated, is high.

The Rome meeting attempted to estimate how many human beings in the world now suffer from protein deficiency. An estimate of at least 500 million was made, including four-fifths preschool age children with most of the remainder being pregnant and nursing mothers.



Fisheries Loan Fund

LOANS APPROVED,
JANUARY 1-MARCH 31, 1961:

From the beginning of the Fisheries Loan Fund program in 1956 through March 31, 1961, a total of 905 applications for \$27,428,566 have been received by the Fund as administered by the Bureau of Commercial Fisheries of the U. S. Department of Interior. Of

these, 488 (\$11,649,419) have been approved, 303 (\$8,254,073) have been declined or found ineligible, 77 (\$4,752,132) have been withdrawn by applicants before being processed, and 37 (\$1,529,463) are pending. Of the applications approved, 180 were approved for amounts less than applied for and the total reduction was \$1,243,479.

The following loans were approved during January, February, and March of 1961:

New England Area: John Bruno & Son Co., Inc., Boston, Mass., \$15,000; Schooner Joseph S. Mattos, Inc., Gloucester, Mass., \$13,722.

South Atlantic and Gulf Area: Crawford Packing Co., Palacios, Texas, \$85,000; Dougherty Shrimp Co., Fernandina Beach, Fla., \$16,000; Herbert M. Storter, Naples, Fla., \$14,000; Mack Terrebone, Brownsville, Texas, \$22,500; and James E. Wade, Brownsville, Texas, \$20,300.

California Area: Frank Brenha, Jr., et al, San Diego, \$80,000; Roy A. Gowdy, San Diego, \$6,172; G. P. Ellington, Long Beach, \$80,000; Herbert C. Packer, Eureka, \$7,600; Donald H. Richcreek, Crescent City, \$9,950; Jose da Silva, et al, San Diego, \$80,000; and Walter E. Wallin, Eureka \$3,725.

Pacific Northwest Area: Edward J. Fagan, McMinnville, Oreg., \$8,489; Harold R. Jensen, Edmonds, Wash., \$3,800; Pete M. McNally, Port Angeles, Wash., \$5,500; Walter E. Nevaril, Seattle, Wash., \$3,948; and Don Sjogren, Mount Vernon, Wash., \$6,896.

Alaska: Donald J. Adams, Ketchikan, \$3,050; Jesse Galloway, Ketchikan, \$2,000; Marion F. Goodrich, Wrangell, \$3,500; Edwin T. Grabowski, Seldovia, \$30,000; Johnnie W. Huff, Ketchikan, \$5,500; Wilhelm Jordan, Petersburg, \$1,800; Kenneth G. Nauska, Sr., Wrangell, \$3,000; Hjalmar Savikko, Douglas, \$4,000; Annie L. Taylor, Petersburg, \$2,500; and Horace S. True, Juneau, \$4,264.



Fishing Vessel Construction and Differential Subsidy

FIRST APPLICATION RECEIVED:

The first application to the U. S. Bureau of Commercial Fisheries for a construction

differential subsidy to aid in the construction of a fishing vessel to be used for fishing for groundfish in New England fishing areas has been received. Assistant Secretary Frank P. Briggs announced on April 25, 1961.

The application was filed from New Bedford, Mass. The proposed vessel will be approximately 78 feet in length and is expected to cost about \$90,000.

The payment of construction differential subsidies with certain restrictions was approved by the Congress in 1960. The amount of subsidy, where applications are approved, will be equal to the difference between the cost of construction in a shipyard in the United States and the cost in a foreign shipyard, or one-third the cost of construction, whichever is the smaller.

To be eligible for a subsidy, the vessel must be designed for use in a fishery which has received a finding of injury due to increased imports. The plans and specifications must be approved by the Maritime Administrator and the Secretary of Defense. The finding of injury is made by the Secretary of the Interior except when the fishery is eligible to apply for, or has obtained, a recommendation for relief from the Tariff Commission as an "escape clause" action.

When completed, the vessel must be documented as a United States vessel, must employ only citizens or resident aliens in its crew, and must deliver its catches to a port in the United States.



Fishing Vessel Mortgage and Loan Insurance

CASES APPROVED, JANUARY-MARCH 1961:

The Federal Fishing Vessel Mortgage and Loan Insurance Program was implemented



the latter part of 1960 as a result of enabling legislation passed by the Congress in that year. Administered by the Bureau of Com-

mercial Fisheries, U. S. Department of the Interior, the program provides for Federal Government insurance of mortgages and loans for construction, reconstruction, and reconditioning of fishing vessels. The first insured mortgage and loan under the program was approved early this year. The mortgages and loans insured under the program during January, February, and March 1961, were:

New England Area: Major J. Casey Corporation, New Bedford, Mass., \$60,000.

South Atlantic and Gulf Area: Ric-Man Shrimp Co., Inc., Tampa, Fla., \$34,500.

Pacific Northwest Area: Joseph R. Fribrock, Seattle, Wash., \$75,000.



Great Lakes Fishery Investigations

LAKE ERIE FISH POPULATION SURVEY FOR 1961 SEASON BEGINS:

M/V "Musky II" March 1961: The 1961 field operations of the U. S. Bureau of Commercial Fisheries research vessel Musky II on Lake Erie were begun on April 1. Installation of crew quarters, galley, and laboratory facilities was completed during the winter. Subsequent cruise schedules and operations will most certainly be improved as a result of these additions. The 1961 program will be largely a continuation of 1960 activities which includes the spring, summer, and fall 3-day series of trawl operations off Bono and East Harbor, periodic visits to other areas of the western basin, and biological samplings at seven established stations. In addition, the Musky II will be used for one week each month to obtain limnological data.

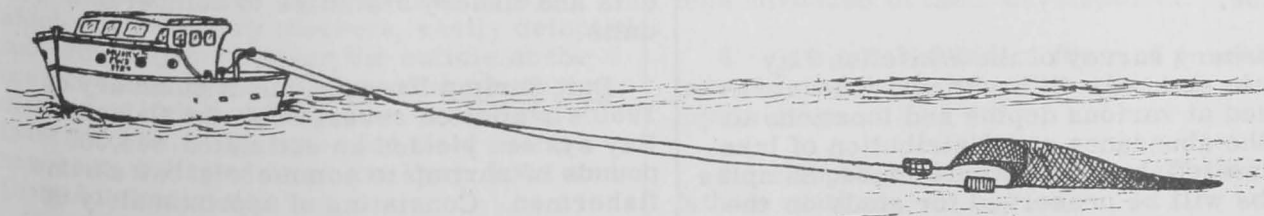
Unlike a year ago, the western section of Lake Erie was relatively ice-free for the opening dates of the new fishing season. Ice and weather conditions, however, delayed somewhat commercial activities to the east. High winds and rough waters, which are not unusual for the time of year, hampered fish-

ing. Landings consisted mostly of yellow perch, sheepshead, carp, white bass, and to a lesser extent, yellow pike--principally of the 1959 year-class.

A brief resumé on the early life history of various fish, as determined from records of the past year, is as follows: Studies of young-of-the-year fish in western Lake Erie in 1960 have demonstrated a rather wide divergence in growth characteristics of some of the more important species. The general hatching span for these fish covered May 1 through July 15. Major hatching periods and average temperatures for individual species were: May 1-15 (50° F.) smelt, yellow pike, and yellow perch; June 1-15 (68° F.) spot-tail shiner and trout-perch; June 15-30 (72° F.) alewife and gizzard shad; July 1-15 (75° F.) white bass, emerald shiner, and sheepshead.

Differences in lengths of newly hatched fish larvae are large and lengths of incubation periods vary widely between species. Sheepshead larvae may be only 1/10-inch long, but gizzard shad larvae may be as long as 1/4 inch. Sheepshead and emerald shiners may hatch less than 24 hours after the eggs are laid. Perch and yellow pike eggs may not hatch for as long as 3 weeks and eggs of the fall spawners (cisco and whitefish) usually require several months to hatch after spawning.

Growth for the season of these young-of-the-year fish largely terminated during the following periods: September 16-30 (70° F.) yellow perch and emerald shiners; October 1-15 (65° F.) smelt, spot-tail shiner, alewife, gizzard shad, and sheepshead; October 15-30 (60° F.) trout-perch, white bass, and yellow pike. Average lengths at the end of the growing season and weekly growth increments (in parentheses) for each species were as follows: yellow pike, 10.0 inches (0.44 inch); sheepshead, 4.5 inches (0.31 inch); alewife, 4.4 inches (0.20 inch); gizzard shad, 4.3 inches (0.28 inch); white bass, 4.0 inches (0.27 inch); yellow perch, 3.4 inches (0.20 inch); trout-perch, 3.3 inches (0.17 inch); spot-tail shiner, 3.0 inches (0.18 inch); em-



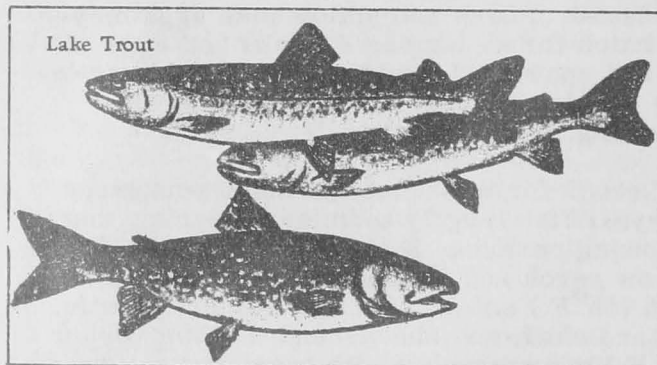
erald shiner, 2.4 inches (0.22 inch); and smelt, 2.4 inches (0.10 inch). Average weekly increments were determined by dividing the number of week's growth into the differences in length at the time of hatching and at the end of the growing season.

The age of a fish, to some extent, will determine the length of its growing season. Young-of-the-year yellow perch and yellow pike, for instance, start growth in early May, whereas growth of the older fish may be delayed until about June 1. On the other hand, young-of-the-year white bass may not hatch and start growing until July 15 but older fish will put on growth as early as June 1.

* * * * *

RESEARCH VESSEL "SISCOWET" PROGRAM FOR 1961:

The 1961 operations of the U. S. Bureau of Commercial Fisheries research vessel Siscowet have been designed to meet the needs of individual projects of the Lake Superior research program and to continue long-term observations of environmental conditions and fish populations.



Special studies will cover problems such as early life-history observations, food-habit studies for several species, electrophoretic analyses of the coregonids and lake trout, and collection of data and materials on the spawning habits of several species. Other operations will be devoted to limnological surveys at "index" stations and systematic fishing with trawls and gill nets at various depths and locations in western Lake Superior.

A fishery survey of the Whitefish Bay region is planned. Gill nets and trawls will be fished at various depths and locations to study the abundance and distribution of lake trout, whitefish, herring, and chubs. Samples of chubs will be preserved for study in the laboratory.

A study of lake trout in the Keweenaw Bay area is also planned. Information will be gathered on the contribution of hatchery-reared fish to native stocks of young trout, and attempts will be made to evaluate the comparative survival of lake trout planted from shore with those planted offshore with boats. A study of the Isle Royale area is contemplated to assess the abundance of small lake trout and to make further collections of chubs from the region.

The annual assessment of spawning populations of lake trout in western Lake Superior will take place in October. Discontinuance of the spawn-taking operations of the Wisconsin Conservation Department makes this study of vital importance in following the status of the lake trout in Lake Superior.

Other operations will be devoted to the collection of data and materials on the life history of the common whitefish.



Gulf Fishery Investigations

Following are some of the highlights of the studies conducted by the Galveston, Tex., Biological Laboratory of the U. S. Bureau of Commercial Fisheries during January-March 1961:

SHRIMP FISHERY INVESTIGATIONS:
Population Dynamics: Activity during the quarter centered upon completing a detailed examination and gross analysis of the first 4 years' commercial shrimp catch statistics.

Collection and organization of various shrimp measurement data continued. Computation and analysis of factors relating length to weight, total length to carapace length, "tail" weight to total weight, etc., neared completion. While certain of these factors will primarily aid the industry in standardizing buying and selling practices, all will provide biologists and statistical agents with means for converting research data and fishery statistics to comparable units.

Bait Shrimp Production: A summary of 1960's statistics reveals that the Galveston Bay system yielded an estimated 943,000 pounds of shrimp to commercial bait shrimp fishermen. Consisting of approximately 60 percent white and 40 percent brown shrimp,

this represented an 83-percent increase over the previous year's production. Retail value was estimated at \$1.1 million.

During the first quarter of 1961, white shrimp dominated Galveston Bay's bait shrimp fishery, being infrequently supplemented by small amounts of pink shrimp and *Trachypeneus* sp. For the first time in 6 years, bait-size white shrimp were consistently plentiful throughout the winter. Catches came almost exclusively from the deep waters of the Galveston Ship Channel.

Shrimp Migrations: Emphasis throughout the quarter was given recovery phases of shrimp marking experiments initiated late last year. Commercial fishermen turned in 42 and 76 recaptures, respectively, from releases at Bottle Key (13,300) in November and Lower Pine Island Sound (32,900) in December. Of the Bottle Key recaptures, 10 were taken in Florida Bay within 6 miles of the release site, and 32 on the Tortugas grounds about 120 miles to the west. To date all Pine Island Sound recaptures have been taken on the southern portion of the Sanibel fishing grounds, 20-25 miles south and southwest of the release site. The results of these and previous experiments indicate that: (1) all of Florida Bay constitutes nursery area for pre-recruit segments of the Tortugas pink shrimp stock, and (2) Barnes Sound and Biscayne Bay on the east coast, and estuaries north of Cape Romano on the west coast, may be discounted as such.

The number of shrimp marking (staining) experiments that can now be carried out concurrently is restricted by the number of stains that have proved satisfactory for this purpose. Investigation has disclosed, however, that supplementary marks produced with certain machine inks can at least double present marking possibilities. Shrimp injected with Trypan blue or fast green dyes which concentrate in the gills may be given a secondary mark with black or red machine ink in the subabdominal region. The most suitable for this purpose appears to be Sanford's check-writer ink, red (No. 639), which leaves a very discrete, easily detected spot when injected under the cuticle at the base of the pleopods. It remains clearly distinct in living shrimp over periods of at least 60 days. Clearance for field use is now being solicited from the Pure Food and Drug Administration.

Shrimp Larvae Studies: A new phase of the shrimp larvae project was begun during the quarter. Objectives are:

1. - Delineation of penaeid shrimp spawning grounds in the Gulf of Mexico adjacent to Galveston.
2. - Determination of spawning conditions of the various species with respect to season, area, and depth.
3. - Study of the effects of environmental factors (such as temperature, salinity, and bottom composition) on the distribution, abundance, and spawning activities of penaeids.
4. - Study of seasonal and areal abundance of penaeid larvae and the importance of currents in their transport to inshore nursery areas.

The 60-foot shrimp trawler Miss Angela of Freeport, Tex., has been chartered for sea sampling. Four cruises at 3-week intervals have been made over an area extending from Freeport, Tex., to Cameron, La., and from 7 to 45 fathoms. Eleven stations are occupied during each 395-nautical-mile cruise. Biological sampling at each station consists of a 1-hour drag with a 45-foot flat trawl and a 20-minute step tow of the Gulf V Plankton Sampler. Hydrographic observations include vertical profiles of temperature, salinity, and current direction and velocity.

Preliminary examination of data resulting from the first three cruises (January 17-19, February 8-10, and March 28-April 3) shows:

1. - The great majority of penaeid females were undergoing some ovarian development during this season.
2. - Female brown shrimp, *Penaeus aztecus*, and rock shrimp, *Sicyonia brevirostris*, were most advanced in their sexual development.
3. - Ovaries of white shrimp (*P. setiferus*), pink shrimp (*P. duorarum*), *Sicyonia dorsalis*, and *Trachypenaeus similis* were generally less advanced in their development.
4. - The most abundant form of penaeid larvae found in the plankton samples was the mysis stage.
5. - Nauplii were taken only at 25- and 45-fathom stations.

6. - Post-larvae of the genus Penaeus were taken at a 45-fathom station some 80 miles offshore.

In attempts to rear early penaeid larvae, ripe females of Penaeus aztecus, Sicyonia brevirostris, S. dorsalis, and Trachypeneus similis were held in the laboratory. Although spawning occurred in some cases, the eggs failed to develop. One spawn of S. brevirostris took place in the recently completed recirculating sea-water system. The resulting eggs appeared relatively free of micro-predators and generally in better condition than eggs previously spawned in standing-water systems.

To complement post-larval rearing experiments, live plankton was brought in from offshore collections. An attempt is being made to develop satisfactory procedures for the description of succeeding instars of larvae obtained from these live plankton samples.

INDUSTRIAL FISHERY STUDIES: A total of 27 life-history samples were processed during the quarter from the dominant species group. Length-frequency and length-weight curves have been worked out for some of this group. Studies show that fish caught west of the Mississippi River Delta are larger in size generally than those east of the river. Studies on geographic differences are continuing. Length-weight relationships between individuals of spot, Leiostomus xanthurus, are scattered after 200 mm. in length for all samples worked to date. However, the croaker, Micropogon undulatus, has shown an excellent curve in the 1 year of data completed this quarter.

All specimens of all species examined show close conformity to spawning periods as described in the literature.

Routine sampling was continued throughout the quarter. A total of 78 landings were sampled. The program was reduced somewhat during March when the local plant curtailed landings to install new equipment for facilitating fish handling. Many vessels of the fleet took advantage of the respite to perform overhaul tasks which further reduced local landings.

In January a total of 577.5 pounds were sampled from 1,572,108 pounds landed. Croaker, trout, and spot constituted 88 percent by weight and species of less than 1 percent by weight were 9 percent of the total.

In February 490 pounds were sampled from 1 million pounds landed. Croaker took an unusual upturn to 72 percent by weight, while spot and trout were 10 and 3 percent, respectively. Miscellaneous species contributed 9 percent of the total.

In March croaker was somewhat more than 50 percent of the total, while trout and spot were 11 and 10 percent each. Miscellaneous species were 9 percent by weight.

The average number of species in January was 12, while in February and March it was 13 each.

Thirteen frozen fish samples taken off the Texas coast by the Bureau's M/V Oregon were processed this quarter. The long-spine porgy (Stenotomus caprinus) bumper (Chloroscombrus chrysurus), and thread herring (Opisthonema oglinum) were the dominant species, comprising by number 49 percent of the total catch.

Additional fish samples are being obtained through extended activity of the shrimp larval study project. Two random 5-pound samples are being taken at each of 11 stations which range in depth from 7½ to 45 fathoms, on a 3-week basis. Thus far, 64 such samples have been received and processed, and a total of 74 species have been identified.

Examination of plankton samples for the removal of fish eggs and larvae was continued. This phase of the larval fish study is nearing completion.

EFFECT OF PESTICIDES ON MARINE ORGANISMS: Results of bioassays conducted in small glass and polyethylene jars at a volume of 6 liters indicated strongly that toxic elements are partially absorbed or otherwise bound by the polyethylene. During this quarter, the acquisition of larger-capacity glass jars (40 liters) permitted a more extensive study of this problem. The hypothesis that polyethylene significantly reduces the toxicity of these chlorinated hydrocarbons tested thus far was confirmed. Pinfish (Lagodon rhomboides) exposed to DDT at a concentration of 0.05 ppm. suffered 80 percent mortality in glass jars compared to 10 percent in polyethylene vessels. At a concentration of 0.07 ppm. in glass, 100 percent mortality was noted in 10 hours. A slightly higher concentration (0.08 ppm.) in polyethylene caused only 50 percent

mortality in 48 hours. Since it has been demonstrated by others and corroborated here that at equal concentrations, solutions increase in toxicity with increasing volume (at least up to some level), an experiment was run concurrently to compare the effects of 100 liters of the 0.05 ppm. solution. Only polyethylene vessels, however, were available. Despite the fact that polyethylene reduces the toxicity of a solution, the greater volume caused 100 percent mortality in less than 24 hours, which is higher than that noted in 40 liters either in glass or in polyethylene. These problems are being considered further.

Tests of technical chlorinate hydrocarbons on postlarval blue crabs (*Callinectes sapidus*, approximately 4 mm. in carapace width) yielded the following 24-hour TLM values: DDT (0.003 ppm.), Endrin (0.01 ppm.), Dieldrin (0.05 ppm.), and Heptachlor (0.05 ppm.).

Studies of sublethal levels of pesticides on estuarine organisms were initiated this quarter. Young sailfin mollies (*Mollienisia latipinna*, 16-17 days old) were exposed to a running solution of DDT (2 parts per billion). Experimental tanks hold approximately 40 liters and new medium is added at the rate of approximately 1 liter per hour. Every 2 weeks, animals are counted, measured, and returned to the tanks. Thus far, growth and survival in the control animals have been slightly but insignificantly greater than in the experimental animals. Initial length of all animals was 11.3 mm. Studies of environmental factors that affect the toxicity of pesticides suggest that silt is important. The addition of 4 gm. of fine clay (Pennsalt Diludust) significantly reduced the toxicity of 40 liters of a 0.05 ppm. solution of DDT to pinfish. In 48 hours only 20 percent mortality was recorded compared to 80 percent in a similar concentration without clay.



Hawaii

COMMERCIAL FISHERIES LANDINGS, 1960:

The commercial fisheries landings of sea and pond fish and shellfish in the State of Hawaii during the calendar year 1960 amounted to 11.1 million pounds valued at \$2.7 million ex-vessel, according to the Hawaii Division of Fish and Game. Compared

with the previous calendar year, the catch showed a decrease of 5.4 million pounds (32.8 percent) in quantity and \$473,899 (14.9 percent) in value. The decrease was largely due to the skipjack tuna (*Katsuwonis pelamis*)

Table 1 - Hawaiian Commercial Fishery Landings and Ex-Vessel Values, 1959-60

English Name	Hawaiian Name	1960		1959	
		Quantity 1,000 Lbs.	Value US\$ 1,000	Quantity 1,000 Lbs.	Value US\$ 1,000
Ocean Catch:					
Amberjack	Kahala	86	25	79	23
Big-eyed scad	Akule	298	207	156	125
Dolphin	Mahimahi	91	50	119	53
Goatfish	Weke-ula Weke Moana Kumu	141	79	127	78
Crevalles	Ulua Omilu	102	45	63	29
Mackerel	Opelu	193	82	192	76
Snappers:					
Grey	Uku	46	21	46	22
Pink	Opakapaka Kalekale	105	55	110	56
Red	Ulaula Koae (Onaga) Ulaulu (ehu)	59	51	73	65
Swordfishes, sailfishes, spearfishes, & marlins	A'u & A'u lepe	584	168	797	200
Tuna & tunalike fish:					
Albacore	Ahipalaha	9	3	11	2
Big-eyed & bluefin	Ahi	1,296	582	1,322	574
Yellowfin	Ahi	356	152	569	178
Skipjack	Aku	7,360	1,001	12,413	1,475
Bonito	Kawakawa	4	1	19	4
Shellfish:					
Crabs	Kona, Papai	14	7	8	4
Limpet	Opihi	14	6	13	5
Lobster, spiny	Ula	10	7	12	8
Octopus	Hee	5	3	4	3
Shrimp	Opae	-	-	-	-
Squid	Muhehe	5	2	5	2
Turtle	Honu	4	1	-	-
Other fish & shellfish	-	297	115	346	139
Total ocean catch		11,079	2,663	16,484	3,121
Pond Catch:					
Clams	Olepe	1	-	3	1
Crabs	Kuakonu, Papai, Samoaan	6	3	2	1
Milkfish	Awa	8	4	32	13
Mullet	Amaama	34	29	45	37
Other species	-	8	6	14	6
Total pond catch		57	42	96	58
Grand Total		11,136	2,705	16,580	3,179

landings which dropped 5.1 million pounds (40.7 percent) in quantity and \$474,225 (32.1 percent) in value. The skipjack tuna catch in 1959 was nearly 6 million pounds more than in 1958. In addition to skipjack tuna, landings of other important species which decreased-substantially were yellowfin tuna (*Neothunnus macropterus*) by 212,963 pounds (37.5 percent) and black marlin (*Makaira ampla*) by 118,256 pounds (27.1 percent). Landings increased for crevalles (*Carangidae*) by 39,430 pounds (73.4 percent) and big-eyed scad (*Tachurops crumenophthalmus*) by 142,838 pounds (91.8 percent).

Note: Also see *Commercial Fisheries Review*, May 1960 p. 25.

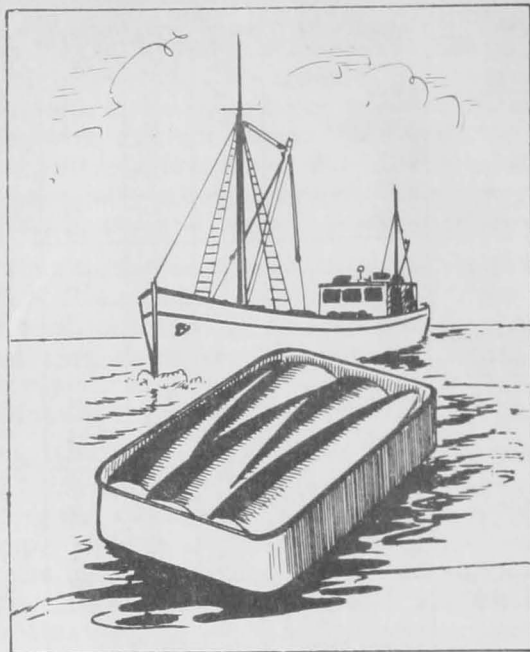


Maine Sardines

CANNING INDUSTRY READY FOR 1961 SEASON:

When the small herring start running along the Maine coast, 31 canneries will be

ready to convert them into sardines. Although the 1961 canning season legally opened on April 15, no significant production was expected until late May or early June if the spring runs of fish follow the same pattern of the past 10 years.



The Maine canning industry produced nearly 2 million cases (100 3³/₄-oz. cans) during the 1960 season, which is the pack goal for the plants until the closing date on December 1, 1961.

Milbridge which was recently totally destroyed by fire.

Veteran fishermen see no reason why the fish should be running in large numbers any earlier than in the past few years.

CANNED STOCKS, APRIL 1, 1961:

Distributor's stocks of Maine sardine totaled 267,000 actual cases on April 1, 1961--15,000 cases more than the 252,000 cases on hand April 1, 1960. Stocks held by distributors on January 1, 1961, amounted to 233,000 cases, and on November 1, 1960, totaled 277,000 cases, according to estimates made by the U. S. Bureau of the Census.



Canner's stocks on April 1, 1961, totaled 506,000 standard cases (100 3³/₄-oz. cans), an increase of 109,000 cases (27.0 percent) as compared with April 1, 1960. Stocks held by canners on January 1, 1961, amounted to 1,029,000 cases and on November 1, 1960, totaled 1,258,000 standard cases.

The 1961 packing season opened on April 15, 1961, but no production was expected before late May or early June.

At the beginning of the 1960 packing season on April 15, 1960, the carryover in the

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, April 1, 1961, With Comparisons 1/

Type	Unit	1960/61 Season			1959/60 Season				
		4/1/61	1/1/61	11/1/60	7/1/60	6/1/60	4/1/60	1/1/60	11/1/59
Distributors	1,000 actual cases	267	233	277	172	197	252	235	296
Canners	1,000 std. cases 2/	506	1,029	1,258	359	235	397	843	1,001

1/ Table represents marketing season from November 1-October 31.
2/ 100 3³/₄-oz. cans equal one standard case.

Correction: In the March 1961 issue of Commercial Fisheries Review, Table 1 on page 32, the first column under "1960/61 Season" should read "1/1/61."

Sales were excellent in the early months of 1961 and the industry was reported to be in a good inventory position.

This will be the fourth consecutive season during which the State-administered quality control program has been operating, and regulations are expected to be even more strict than in the past.

An additional plant at Eastport, Maine will be in operation in 1961 but there is still some question as to the status of a plant at

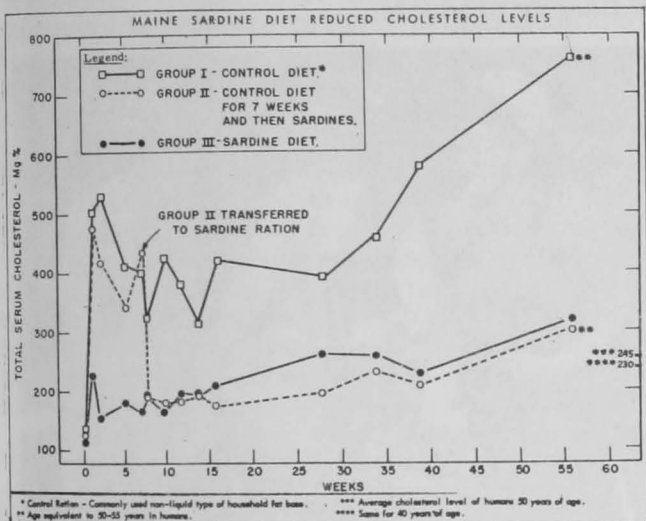
hands of canners from the 1959 pack was 335,000 cases. This carryover plus the 1960 pack of 1,998,000 cases of all types of Maine sardines made the available supply as of April 15, 1961, a total of 2,333,000 cases--more than the supply of 2,171,000 cases on April 1, 1960. Canners' shipments from April 15, 1960 to April 1, 1961, amounted to 1,794,000 cases as compared with 1,774,000 cases for the same period a year earlier.

Note: Also see Commercial Fisheries Review, March 1961 p. 32.

FEEDING TESTS INDICATE VALUE AS A CHOLESTEROL DEPRESSANT:

A 55-week feeding test has shown that a diet with a Maine sardine base will greatly reduce high serum cholesterol levels in laboratory animals. The project was conducted for the Maine Sardine Council by an internationally famous research organization.

Blood cholesterol is currently considered by many leading physicians and nutritionists to be definitely related to numerous serious heart diseases affecting or killing millions of people annually.



Graph of tests showing change in cholesterol levels as the animals were fed the cholesterol-cholic acid added diets of Maine sardines versus a control ration.

The Sardine Council's Chairman states that the researchers and one of the country's top nutritionists considered the results of the test to be so impressive that they had recommended that a similar study be conducted on humans.

Examination of the animals at the end of the test showed the cholesterol level of those on the sardine diet to be less than half as high as those on a control diet with a highly saturated fat base of a commonly used non-liquid type of household fat.

Furthermore, according to the Chairman, the study showed that when a group of animals on the control diet for seven weeks were transferred to the sardine ration their cholesterol level dropped by more than 60 percent in a short time.

Numerous experts have long contended that foodstuffs with a high saturated fat content tend to favor increased cholesterol lev-

els in humans while those with unsaturated fat content, such as Maine sardines, appear to help control cholesterol levels.

A much larger than normal amount of cholesterol was added to both diets for each feeding and the serum levels for those on the control rose steadily to an abnormal high at the end of the tests. Those on the sardine ration enjoyed a steady low and more normal level.

The animals used attained an age equivalent of 50-55 years in humans by the 55th week and the tests indicated that their bodies were less able to adapt to the added cholesterol as they got older.

The tests were hailed as an important research development in the field of nutrition and may boost the consumption of Maine sardines once the results are generally known.



Michigan

SMELT DIP-NET FISHING SEASON PROSPECTS POOR:

Prospects were not encouraging for Michigan's dip-net smelt season which was due to begin in mid-April in tributary streams of the Great Lakes. Winter's generally below-par snowfall points to low water levels which were expected to cut down spawning runs of smelt.



Dip-net fishing for smelt in Great Lakes.

The Great Lakes commercial catch, a good barometer of spring catches in streams, was up from 1960 during the first months of this year. However, last year's commercial take was down nearly 50 percent from the year before. During spring runs, smelt fishermen on tributary streams usually approach the annual catch of commercial fishermen in the Great Lakes.

Major upstream migrations of smelt were expected to start about April 10 and hit their peak about April 20. Exact timing of runs may vary considerably from stream to stream or even with the same stream, depending upon water temperatures. Smelt begin their upstream journeys when water temperatures rise to about 40° F.

Heaviest runs normally occur in streams which flow into the northern third of Lake Michigan, including the Green Bay region. Streams and cuts that drain into Saginaw Bay generally yield good returns. The smelt catch has picked up somewhat during recent years in Lake Michigan tributaries along the southwestern part of the State and in streams of the northeastern Thumb area.

Hand nets not more than five feet in circumference may be used to dip smelt from March 1 to May 31 in waters designated by the Michigan Conservation Department.



National Fisheries Institute

16th ANNUAL CONVENTION:

Representatives of the United States commercial fishery industry, meeting at the 16th Annual Convention of the National Fisheries Institute (NFI), at Washington, D. C., April 14-18, learned that domestic consumption of edible fishery products will climb to nearly 6 billion pounds (round weight) a year by 1975. According to U. S. Bureau of Commercial Fisheries estimates, this will be an increase of about 1.5 billion pounds over the 1960 fishery products consumption.

Nearly 800 delegates from the commercial fisheries and allied industries attending the 4-day convention heard addresses by NFI officers, Government officials, and nutritional specialists. Among the principal speakers who addressed the convention were Secretary of Interior Stewart L. Udall, As-

sistant of Interior for Fish and Wildlife Frank P. Briggs, and Dr. Frederick J. Stare, Chairman of Harvard University's Department of Nutrition. The theme of one of the General Sessions was "New Frontiers in Food Service." Another General Session consisted of two panel hours: "New Product Opportunities Build on Research" and "Implementing Industry Voluntary Operating Practices." Also, on the agenda were meetings covering food services in restaurants and other dining-out places, outdoor cookery of seafoods, advances in technological research, and handling and distribution of frozen fishery products.



Fig. 1 - At the fishery cook-out demonstration during the National Fisheries Institute Convention on the hotel terrace: Congresswoman Gracie Pfof, Idaho; Congresswoman Iris Faircloth Blich, Georgia; Mrs. Rose Kerr, Chief of the Home Economics Unit, U. S. Bureau of Commercial Fisheries.

During the convention, a number of other fishery associations had meetings: The National Shrimp Congress; American Seafood Distributors Association; Shrimp Association of the Americas; National Shrimp Breeders Association; as well as the Fish 'N Seafood Promotions Division of NFI and Fish 'N Seafood Parade.

The Fishery Market News Service of the U. S. Bureau of Commercial Fisheries established a temporary office at the convention hotel where information on landings, receipts, prices, and market data on fishery products was received by teletype from the Market News Service field offices, and made available to those attending the convention.

Make America More Conscious of the Value of Fishery Products: The theme of Secretary of Interior Udall's address was

that "no industry can consider itself an isolated or solitary unit. Each industry affects and is affected by industries in other countries, and that the major task ahead is fitting the American fishing industry into world economics." The Secretary told his audience that one way to improve the standing of the fishing industry in this country and put it in a stronger position in the international field would be to make America more conscious of the value of our product--not only in terms of advertising, but in terms of research. This research, he declared, should put the industry in a more competitive position by increasing the variety of the products and by improving techniques in their preparation and marketing. The Secretary conceded that "there may be times when the industry feels that the Nation does not appreciate its problems or its efforts... . But I want to impress this point upon you. This Administration is deeply concerned over the problems of the fishing industry and is trying to render maximum service. America has many problems of its own--internal and external. It cannot solve one set of problems without first studying the possible effect on others. America itself is adjusting to fit into the world economy," he declared.

Harvesting Crops from the Sea a Conservation Challenge: In his address, Frank P. Briggs, Assistant Secretary for Fish and Wildlife of the Interior Department, stated that he believed the task of harvesting the crops from the seven seas as one of the greatest conservation challenges of all times. The big conservation challenge for the ocean conservationists, he added, is an interlocking problem of fishery biological and technological research, exploratory fishing and gear research, and market research and market development. In part, Assistant Secretary Briggs stated:

"...The goal, it appears to me, is to learn all we can about the fishes of the sea and the various natural phenomena which affect them in order that we may have the maximum sustained yield from the sea to give the people of the world the food they need. Second to this, but of top importance, is the orderly harvest of those resources so that each nation will get its fair share of the resources.

"This puts conservation on an international footing far greater than at any other time in history... ."



Fig. 2 - Frank P. Briggs, Assistant Secretary for Fish and Wildlife, U. S. Department of the Interior, addressing the Sixteenth Annual Convention of the National Fisheries Institute in Washington, D. C., April 15.

The Assistant Secretary then pointed out that the conservation movement is to accomplish three things--(1) assure the world the highest sustained yield of our ocean food resources; (2) arrange for orderly harvest and utilization thereof; and (3) finally, see that the American fishing industry gets a fair share of this harvest and the benefits thereof.

Fishing Industry Must Meet Challenge to Supply Food from the Sea: T. D. McGinnis, President of the National Fisheries Institute, declared on April 10 in opening the convention: "The nation's fisheries must be ready to meet the challenge set forth in President Kennedy's recent plea for appropriations of \$97.5 million to study means of feeding future populations with foods from the sea." McGinnis cited President Kennedy's letter of March 29th to Vice President Johnson, in which the President noted:

"The seas offer a wealth of nutritional resources. They already are a principal source



View looking south on South Street in the salt-water section of New York City's Fulton Fish Market.

fishery products and canned fish because of increased fishing and processing in the third quarter.

United States imports of most fishery products through the first half of 1962 were generally greater than a year earlier, and are expected to continue so for the remainder of this year.

Note: Prepared by the Bureau of Commercial Fisheries, Fish and Wildlife Service, U. S. Department of the Interior, and published in the Department of Agriculture's July 1962 issue of The National Food Situation (NFS-101).



Massachusetts

MARINE FISHERIES PROMOTION AND DEVELOPMENT LAW ENACTED:

A new Massachusetts marine fisheries law was signed (Chapter 715) by the Governor of Massachusetts on July 23, 1962, and became effective as of that date. The purpose of the new law, which was declared an emergency law, was to immediately bring about the orderly and coordinated activities of the Massachusetts marine fisheries and all activities relating there.

The law as amended provides for the following:

1. A Marine Fisheries Advisory Commission composed of 9 members within the Division of Marine Fisheries, such members to be appointed by the Governor with the approval

of the Council. Initially, 3 members of the Commission are to be appointed for terms of 3 years, another 3 members for terms of 2 years, and the other 3 members appointed for terms of 1 year. As the term of a member expires, his successor is to be appointed for a term of 3 years.

2. The Commission shall hold public hearings and make recommendations to the Director for the proper management and development of the marine fisheries of the Commonwealth of Massachusetts.

3. Additional funds for maintaining, managing, operating, and administering the Division of Marine Fisheries in carrying out its functions.

The new law is designed to help both the commercial and sports fisheries of Massachusetts, and is expected to result in expanded activities in the fields of fishery biology and statistics.



Oceanography

"WILLIAMSBURG" AS BIOLOGICAL RESEARCH SHIP FOR INDIAN OCEAN EXPEDITION:

Activation of the former Presidential yacht Williamsburg as a United States biological research vessel for the International Indian Ocean Expedition was announced on July 10. The National Science Foundation today announced award of a contract to the Woods Hole Oceanographic Institution for activation of the vessel.



Fig. 1 - The former presidential yacht Williamsburg is being re-activated as a United States biological research vessel and its name changed to Anton Bruun.



Fig. 2 - The former presidential yacht Williamsburg was transferred to the National Science Foundation of Washington on August 9 in brief ceremonies at the Philadelphia Naval Base.

Amount of the cost-plus-fixed-fee contract is \$500,000. Under the terms of the contract, the Institution will select the shipyard to accomplish the activation, subject to approval by the Foundation, and will supervise the work for the Foundation.

"The International Indian Ocean Expedition is a significant step forward in scientific cooperation," said the Foundation Director in making the announcement. "It represents not only the cooperative efforts of many countries, but cooperation among scientists of widely varying disciplines. Biologists as well as physical scientists will have a major share in the work. We are delighted that the Williamsburg is available as an important addition to their research capabilities."

Title to the ship remains with the United States Government, and she will be operated as a public vessel. Transfer of accountability from the Navy to the National Science Foundation, an independent agency of the Government, is now in process.

The Williamsburg early in July was in reserve status at the Philadelphia Naval Shipyard. She was to be towed to a private shipyard for activation, which is expected to take about 60 days from the date of her arrival in the yard.

Activation will include minor alterations necessary to make a research vessel capable of carrying 26 scientific personnel and 19 crew members. The former Presidential suite will be converted into laboratory areas. A wet lab will be installed below, where specimens will be received, bottled, and prepared for storing. A dry lab above will be equipped with microscopes and other instruments for preliminary examination and classification of specimens, and for such work as measurements of plankton density.

Two winches and a small crane will be installed for dredging and deep-sea work. In addition, a side deck platform will be constructed for fishing long lines.

Activation will also include bringing the engines to full operating condition, and installing larger bilge keels to enhance the ship's stability.

Following activation and a shakedown cruise, the Williamsburg is expected to begin her Indian Ocean cruise in early 1963. Present plans call for the ship to spend most of her two-year research cruise period in the western half of the Indian Ocean, although one track is planned in the Bay of Bengal on the eastern side of the Indian subcontinent. Her voyages will take her from the northern part of the Arabian Sea west of India down to the latitude of the Cape of Good Hope, crossing and recrossing the equator.

While participating in the International Indian Ocean Expedition, she will make port chiefly at Bombay, India, for resupply and to exchange personnel and specimens. Many biological specimens, particularly plankton, will be exchanged and sorted at the International center at Cochin, India.

Among the questions that biologists aboard Williamsburg will be seeking to answer are:

What organisms are found in the Indian Ocean--from microscopic plankton to large fish, oceanic mammals, and sea weeds?

What is the distribution, both seasonal and geographic, of these organisms, and what is their relative abundance?

What is the productivity of these organisms? -- particularly organisms which if properly exploited could contribute greatly to the food needs of the peoples of the area.

The President announced on March 13, 1962, that he was making the Williamsburg available for participation in the International Indian Ocean Expedition, and assigned responsibility for conversion and assignment of the ship to the National Science Foundation.

The Williamsburg is 243 feet long and displaces 1,700 tons. Built in 1930 as the Aras, her name was changed during World War II when she became a Navy escort vessel. She was later converted to a Presidential yacht.

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"WILLIAMSBURG" RENAMED
"ANTON BRUUN" AND CONVERTED
TO A RESEARCH VESSEL:

The former Presidential yacht Williamsburg will be renamed the Anton Bruun, the Director of the National Science Foundation announced on July 30, 1962. The ship was recently transferred to the Foundation for conversion to a research vessel for the International Indian Ocean Expedition.

"Anton Bruun was a noted marine biologist, associated with the University Zoological Museum of Copenhagen, and was first chairman of the International Oceanographic Commission, which is now sponsoring the Indian Ocean expedition," the Director said. "So it is most fitting that the ship be named after him."

The Director made the announcement during a talk at the NATO Advanced Study Institute on Algae and Man, held at the University of Louisville, Kentucky.



Oregon

ALBACORE TUNA STUDIES IN NORTH PACIFIC:

To study albacore tuna movements and to collect oceanographic data affecting tuna

movements off the Oregon coast were the objectives of the June 28-July 8 exploratory cruise by the Sandra Lee, a vessel chartered by the Oregon Fish Commission. The Commission has sponsored an annual exploratory cruise to study tuna for the last four years.

The Sandra Lee followed a zigzag course within an area 40 to 140 miles off the Oregon coast. The initial catch, consisting of 3 albacore tuna, was made at 8:30 a.m. July 5, about 115 miles west of Cape Sebastian. Water temperature in the area of the first catch was 59° F. Water temperature readings in other areas ranged between 58° and 60° F. Many forage fish and numerous birds were seen north of the area of the first catch. No commercial vessels were observed fishing for tuna in the area at the time of the first catch.

Last year the first tuna was caught on July 6, and 15 fish were taken during Oregon's 1961 exploratory tuna cruise.

Note: See Commercial Fisheries Review, August 1961 p. 34.

* * * * *

CHINOOK SALMON TRUCKED AROUND COUGAR DAM:

The erection of Cougar Dam, a U. S. Army Corps of Engineers' flood control structure, on the South Fork of the McKenzie River in Oregon created a serious upstream passage problem for fish. During construction, the South Fork has been diverted through a tunnel. The diversion is no obstacle for young downstream migrant salmon heading for the ocean. But adult chinook salmon heading upriver are unable to negotiate the fast moving waters in the tunnel.

A temporary fish passage facility, operated by the Corps of Engineers under supervision of the Oregon Fish Commission, has been located just below the dam site to move the important South Fork spring chinook run past the construction area. A cement and steel adaptation of the ancient weir and funnel trap has been built across the stream. The weir shunts the salmon into a cement chamber. A strong current of water leads them next through a funnel entrance into a steel tank. When 20 to 50 fish are in the tank the entrance is closed and the steel tank trap is lifted by crane to a waiting truck. Water-recirculating hoses and an air line

are attached to the tank and the salmon are hauled seven miles upstream to the release site.

The salmon taxi, now in its third season of operation, had moved over a thousand adult salmon from this year's spawning run past the Cougar Dam project by the end of June.

* * * * *

NEW CRAB-TAGGING METHOD:

The success of the Oregon Fish Commission's new Dungeness crab-tagging program became more apparent as the season advanced, according to the head of shellfish investigations at the Newport Laboratory at Newport. He emphasized that the retention of the tag through several successive sheddings represents a major breakthrough in the study of the migration, distribution, and growth rates of crabs. An insertion point was found along the splitting line of the crab shell which makes retention possible, and paves the way to a much more comprehensive study of crabs. Two types of tags are used in the operation, a nylon spaghetti-type and a plastic dart-type tag. According to the Laboratory chief, more has been learned in the past year regarding growth rate than was determined during several previous seasons of study. The value of tagging efforts in the past was limited by the fact that crabs shed their shells as often as two or more times each year, with the tag being lost at the first shedding.

The Laboratory chief stated that as of July 1962, over 100 recoveries had been made from the 1,000 specimens released last summer with the new tag. More were being reported almost daily. One recovered crab was tagged in July 1961 in the Sally's Bend area of Yaquina Bay and recaptured in June 1962. This crab, when tagged, was of sub-legal size, measuring $4\frac{1}{2}$ inches across the back. It had grown to $6\frac{1}{2}$ inches in width, had shed its shell twice, and regenerated a claw which was missing when tagged.

The Commission's biologist pointed out that the public could render a valuable service in the study of this important food species by reporting tag recoveries. "So far we have received tags from both ocean- and bay-caught crabs," he said, "and recoveries have been made as far from the Yaquina Bay tagging locale as Alsea Bay, some 20 miles

down the coast." If crab fishermen would send in the carapace, or back shell, and the tag, along with details regarding location and date of catch, the information gained would be of great value in the management and development of this important resource. According to the Laboratory chief, occasionally a tag is returned without the back shell, and while these are helpful in the study, the back shells are of very great importance as they are the means of determining growth rate.

Note: See Commercial Fisheries Review, May 1962 p. 25.

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RAZOR CLAM TAGGING STUDIES:

A method of tagging razor clams that will help provide biological facts to guide clam conservation measures has been devised by Oregon Fish Commission biologists. The razor clams are tagged by drilling a small hole through the upper edge of the shell. One end of a monofilament fishing line four feet in length can then be tied to the clam's shell. Color-coded plastic beads are slipped on the line to identify individual clams. A float one-half inch in length is then tied to the other end of the monofilament line and the clam is returned to the beach.

Periodically the tagged clams are dug and examined to determine the rate of growth and the extent of movement from one area of the beach to another. The Oregon Fish Commission has requested sport and commercial clam diggers to avoid removing tagged razor clams from the beach. In most tagging programs, the recovery and reporting of tagged specimens is desired. But tagged razor clams are an exception at present.



Oysters

PROGRESS IN DEVELOPMENT OF CHEMICAL CONTROL METHOD FOR ENEMIES:

Various aspects of a chemical control method for oyster enemies are being studied in Lewis Gut, an arm of Bridgeport Harbor. It is traditionally known as an area where oysters set quite consistently, and where growth of young adult oysters is quite rapid. That area is also known as a "drill hole." During recent years, that oyster-seed-producing section of Long Island Sound has not



Planting of adult clams, *Mercenaria (Venus) mercenaria*, on experimental lots in New Haven Harbor prior to their treatment with different concentrations of drill-controlling chemicals.

been extensively used because of the predatory oyster drills.

Chemical treatment was applied on June 27 and 29, 1962, by biologists of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn. Approximately 30 acres of the bottom were treated using the Laboratory's formula, consisting of a mixture of sand, Polystream and Sevin, at the rate of 5 yards of sand per acre. Biologist-divers examining the bottom of the "Gut" after treatment found that all forms of snails had been affected. This included oyster drills, *Urosalpinx* and *Eupleura*, and conchs, such as *Busycon* and *Polinices*. The *Polinices* is the arch enemy of clams. It kills them by boring holes through the shell near the umbo and then consuming the molluscan meats through the holes. The rest of the clam was affected only slightly, or not at all. The only exception was noted among the worms, which were seen twisting out of their burrows.

It is too early to evaluate all aspects of this experiment on oysters because final conclusions may be drawn only at the end of the season. But it can be stated now, that the chemical treatment reduced the oyster drill population by more than 99 percent.

A method for determination of Polystream in meats of oysters and clams has been successfully developed and has been submitted to the Pesticide Branch, Division of Food, Food and Drug Administration, for approval. Quantities of Polystream of less than 0.05 parts per million in shellfish meats can now be accurately detected.

Using newly-developed analytical methods, preliminary tests of samples, collected from the area receiving twice the maximum dose of treated sand needed to exterminate drills, indicated that although Polystream is present in minute quantities in oyster meats collected soon after treatment of the beds, this residue almost completely disappears within 120 days even though the oysters remain on the chemically-treated bottom. A sample of clam meats, taken 120 days after the bed had been treated, showed no traces of Polystream. The oysters and clams were planted on the experimental beds several days before the chemically-treated sand was spread over them.

As reported earlier concerning use of the insecticide Sevin, the second component of the Laboratory's formula, no traces of it were found in oysters or clams two weeks after the treatment.

Regardless of these promising preliminary results, no final conclusions as to the safety of the method have been formed. That will be possible only after examination of much larger numbers of samples of clam and oyster meats from areas treated in various manners, and after the results of these examinations are studied and accepted by the U. S. Public Health Service and the Food and Drug Administration.

The Milford Laboratory was informed by a marine biologist of the State of Oregon that, by using the Milford Laboratory's formula at the rate of 1,000 pounds of Polystream Sevin-treated sand per acre in their experiments, they achieved near absolute extermination of the mud shrimp, *Upogebia* and *Callinassa*. The experiment demonstrated that two other enemies of oysters may be easily and cheaply controlled at an approximate cost of \$10 per acre. Since some of the shrimp-infested oyster grounds of the Pacific Northwest formerly produced up to 1,000 bushels of oysters a year, the cost of controlling mud shrimp may be only about one cent per bushel, or even less if the treated ground does not become reinfested for several years. (Bulletin No. 2, July 26, 1962.)

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LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING AS OF JULY 26:

Setting of Starfish: The first setting of starfish appeared on the collectors on June 27. They were most common in the Bridgeport area. Starfish setting has continued since

that date, reaching its highest between July 12 and 16 and then decreasing. Thus far, nevertheless, starfish setting has remained heaviest in the Bridgeport area although one station at a 30-foot depth in Milford also showed quite an intense setting of starfish between July 2 and 12, the U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn., reports.

Setting of Oysters: Systematic studies of the plankton collected at 3 stations have been conducted since the oyster spat collectors were placed in the water in June. Plankton samples from the auxiliary stations, including one station on Lot 152 in New Haven Harbor and 3 stations in Lewis (Bridgeport) Gut, are also collected as a matter of routine. Each sample consists of the plankton contained in 250 gallons of water.

The numbers of bivalve larvae have been unusually light all summer. Oyster larvae first appeared about July 18 at 3 stations. Several days later, on July 23, 25 oyster larvae per 250 gallons of water were recorded at one station; 5 at another station; and 10 at another. All of these were mature, ready-to-set individuals. No oyster larvae of any age were found in samples taken at the Bridgeport Station or in Lewis Gut, where extensive experiments on chemical control of drills are conducted, but copepods, crab, and barnacle larvae, as well as larvae of gastropods and worms, were present in large numbers and appeared normal.

The first setting of oysters occurred on July 18. Thus, once again, the formula for prediction of the beginning of setting, which states that, "setting is normally expected to occur on July 19±4 days," proved to be correct. At first, recently-set oysters were found only at two stations in the New Haven area, but later the setting became of a more general nature, being the most intense at 3 stations. A light setting also occurred in the Milford area, while virtually none took place in Bridgeport.

Because of the presence of mature larvae in plankton samples collected in New Haven and because many oysters from the collectors removed from the water July 23 were only a few hours old, good setting was expected to continue for several more days at 3 stations. If the intensity is maintained at about the same level, or if it increases, the industry may expect a set of commercial importance in that area provided, of course, that it can be protected against predators.

Biologists of Milford Laboratory, using information obtained from studies of plankton samples and other observations, are advising the members of the Connecticut oyster industry as to where shells should be planted to secure the best possible results. For example, they advised against planting shells at the time in the Bridgeport area where no setting was occurring. Instead, it was suggested that advantage be taken of the setting in the New Haven area by planting shells in that location.

In mid-July several auxiliary stations for observations on spawning and setting of oysters and starfish were established. On one of the stations located in New Haven Harbor near Lighthouse Point, studies will be conducted on intensity of oyster and starfish setting on chemically-treated and untreated oyster shells planted as cultch. Five stations were established in Lewis Gut where experiments on extermination of drills by the Laboratory's chemical method are now in progress. (Bulletin No. 2, July 26, 1962.)

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MARYLAND OBSERVATIONS ON SPAWNING AND SETTING, JULY 1962:

July of this year was unseasonably dry and cool. This has prevented further strong rises in water temperatures that continued to run around 77° F. locally, a little below seasonal normal, but favorable to oyster spawning. Salinities continued

above normal, according to the "Special Oyster Bulletin" of the Maryland State Chesapeake Biological Laboratory, Solomons.

The combination of long continued summer water temperatures, attained earlier than usual in May, and the above normal salinities resulted in an early build-up of the fungus parasite, *Dermocystidium*, in the southern portions of the Maryland Chesapeake area (from the vicinity of Solomons to Virginia). A number of oysters heavily infected by the parasite were found on trays in St. Marys River, Holland Straits, and at Solomons. There was an accompanying mortality on those trays that is definitely above normal for this season and among some groups quite heavy.

Oysters crowded together on a tray are known to develop a higher degree of infection by *Dermocystidium* than do oysters that are more scattered on the bottom. However, oysters infected by the parasite also are appearing on natural beds in the affected areas. On Cinder Hill in Holland Straits 17 out of 20 living oysters collected on July 19 showed positive *Dermocystidium* infection, mostly light. A number of recent boxes were present on the bar. Gapers from trays and the one gaper (dead oyster) taken from a natural rock were all heavily parasitized by the fungus to the extent that the oyster deaths were almost certainly due to *Dermocystidium*.

High water temperatures and high salinity favor development of the fungus and intensity of infection with subsequent oyster mortality tending to increase in proportion to the length of time that water conditions remain favorable to the parasite. Usually, peak losses occur in late summer. The present conditions indicate that such losses will be higher than usual during 1962. Future seasonal conditions, however, will influence the severity of the expected mortality.

Dermocystidium has shown no tendency to spread among oysters growing in low-salinity water such as usually is found over the extensive oyster-growing grounds above the Solomons area. Moving infected oysters to lower salinity, however, does not kill the parasite and oysters seriously affected by it will continue to die. Oysters on a densely-populated bottom tend to develop a higher degree of infection than do oysters that are more scattered because of the easier transmission of the fungus from one oyster to another. Young oysters generally appear to be immune to the parasite but develop infections during the second year and may undergo heavy losses during the third year in areas where *Dermocystidium* is common.

Sizable losses from the parasite have occurred during other seasons in St. Marys River and in Holland Straits where oyster populations are fairly dense. Also, on several bars in Pocomoke Sound and in upper Tangier Sound oyster losses occurred in the past on bars that were then densely populated but now contain fewer oysters.

Losses can be reduced by not permitting dense populations of oysters to remain in *Dermocystidium* infested areas for more than two years before harvesting them. In portions of the Gulf Coast where this parasite is a very serious pest, it has been found that better oyster crops can be produced when oysters are harvested while young. Furthermore, the more rapid growth of young oysters results in a higher bushel return from two successive crops of young (3'+) oysters than from a single crop that is left for the same total number of years to produce oysters that are larger but slower-growing and fewer in numbers due to the natural mortality over a longer period.

No increases of infection by the parasite MSX were observed through July this year. The principal oyster mortalities associated with MSX were observed to occur in early summer and again in late summer and early fall with scattered deaths throughout the rest of the year. It is too soon for the late summer losses to be apparent this season. Since MSX infection in Maryland has continued to be quite low and confined to the Tangier-Pocomoke Sound area, it is hoped that it will not be a serious problem in this year's oyster production.

The number of oyster spat attached to clean test shells exposed for one-week periods continued to increase in most areas. A substantial set already had occurred in St. Marys River and along the eastern side of the Bay at Punch Island and Barren Island.

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MARYLAND SETTING OBSERVATIONS, JULY 1962:

An increase in oyster setting rates in the Tred Avon River and Broad Creek, Md., compared with last year was apparent, according to a July 26, 1962, report from the Biological Laboratory of the U. S. Bureau of Commercial Fisheries, Oxford, Md. This development was revealed in laboratory counts of oyster spat in bottom collector bags tended on a weekly replacement schedule at 5 stations in the Tred Avon River and 4 stations in Broad Creek. All stations were occupied both years. Setting rates are expressed as the accumulated counts of spat on 20 inner oyster shell faces per bag per week from late June to mid-July, approximately half the expected most active oyster-setting season.

Counts of setting at the Cedar Point station were of some interest because they demonstrated differences in bottom and off-bottom rates. In addition to the regular bottom weekly collector bags at Cedar Point this year, the Laboratory tended weekly bags suspended in 1-foot strata off the bottom to just below the low-water mark.

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WEED "STEALS" OYSTERS PLANTED IN OYSTER RIVER:

Deliberate or accidental introduction of a foreign species into oyster coastal waters often upsets the balance of nature and causes unexpected trouble. Some years ago a Japanese species of green marine weed known as Codium fragile appeared in Peconic Bay at the eastern end of Long Island and rapidly spread over the bottoms of planted oysters. In the spring of 1961, several thousand bushels of Peconic Bay oysters, apparently clean of large fouling plants, were planted in Oyster River near Chatham, Mass. Shortly after that Codium was found on shellfish grounds, attached to newly planted stock. Its rapid growth during the following months amazed the oystermen and caused them considerable concern when it became necessary to spend extra time in cleaning the oysters for marketing.

Codium continued its rapid growth in the summer of 1962. Specimens examined at the U. S. Bureau of Commercial Fisheries Woods Hole Laboratory in July 1962 were much heavier and larger than the oysters to which they were attached. The unwanted weeds were nearly 3 feet high. On good sunny days so many gas bubbles were formed at the

blunt, sausage-like tips of the Codium branches, that both oysters and the attached plants floated in the water and were carried away by the tides. Codium has become an "oyster thief." In the past weeds that "steal" oysters were rarely found on shellfish grounds of the American coast.



Pacific Territories

EXPANDED FISHERIES DEVELOPMENT PROGRAM PLANNED:

Programs to increase the fishery economy, said Secretary of the Interior Stewart L. Udall, is one of the priority points of a five-point program to accelerate the development of the Pacific areas (Samoa, Guam, and the Pacific Trust Territory) administered by the United States. The announcement of the five-point program to accelerate social, political, and economic progress in those Pacific areas was made by the Secretary following his return from an inspection tour. The tour included an inspection of fisheries facilities in the areas visited.

Secretary Udall said priority would be given to fisheries development programs which represented the best immediate hope of islanders for economic self-sufficiency. This would include not only development of such facilities as tuna canneries, but the training of natives in long-line fishing, and boat construction and operation. Most of the natives in those areas are skilled only in fishing close to shore, and have neither the knowledge or equipment for deep-sea fishing.

Negotiations have been under way with some of the major fisheries firms which would result in new sources of income for the islanders. A new tuna cannery which will employ about 400 persons, is planned for American Samoa. A tuna cannery in American Samoa operated by a United States firm has been packing tuna for several years.



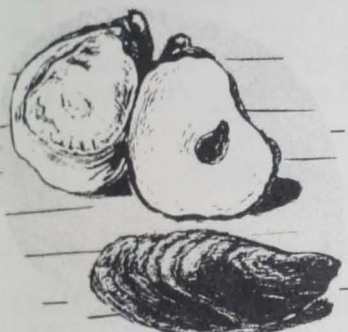
South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, APRIL-JUNE 1962:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for April-June 1962:

Oyster Research: A number of small sub-tidal oyster beds have been located and charted in the last four months off South Carolina. Because these "deep-water" beds are usually quite small, they have little commercial value but, being generally unmo-
lested, the oysters are superior in quality and configuration to intertidal oysters. Experimental planting is being done to try to enlarge several of these sub-tidal oyster beds.

The rather large-scale planting of the substitute cultch (solite) made last August did not produce oysters. One cause of failure may have been silting. Recently the solite beds in Toogoodoo Creek were washed by slowly running the Laboratory's boat back and forth over the beds at high water. This



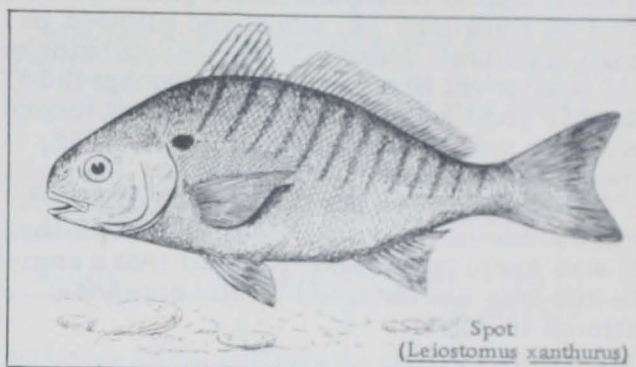
Oyster

did clear up some silt and left fresh-looking solite exposed. About fifty standard bushels of the solite were dredged, washed, and re-planted in Leadenwah River. To date there has been only a light set on the material. The set is not comparable to that noted on steamed-shell cultch.

Bears Bluff has been cooperating with a Yorges Island canning company in an effort to rehabilitate old oyster beds in Beaufort County in the Fripp Island area. A mechanical raking device was used to dig off the tops of the high old oyster beds in an attempt to soften them, lower the elevation, and expose clean shell which would serve as fresh cultch for a new population of oysters.

Shrimp Research: Experimental plankton tows at regular stations throughout the in-shore area were continued during the second quarter. Results showed that postlarval brown shrimp were more than five times as abundant during the 1962 recruitment period as in 1961. Postlarval brown shrimp entered tidal sounds and rivers for a longer period of time this year and were more consistent in quantity than during either 1961 or 1960. Postlarval white shrimp began to show up in plankton catches in mid-May and became increasingly abundant towards the end of the quarter. These postlarvae should reach

peak abundance sometime in July, judging from data obtained in previous years.

Spot
(*Leiostomus xanthurus*)

Otter-trawling at regular shrimp survey stations indicated that spot have been about 30 percent more numerous during the April-June quarter of this year as compared with that of 1961. Croakers showed an increase of over 40 percent during the present quarter as compared with last year's. White shrimp were only slightly more numerous in experimental trawl catches this quarter than in 1961, but brown shrimp showed a considerable increase this year, being almost 60 times as plentiful at regular stations as they were during 1961.

Bears Bluff Laboratory's cast-net records also indicate a great increase in numbers of brown shrimp this year. Over 20 times as many brown shrimp were taken at cast-net stations in May and June of 1962 as in the same period of 1961. This indicates that the commercial catch of brown shrimp should be considerably better than in 1961, and quite possibly the best in the past three years. If white shrimp also have a successful season, a bumper crop of shrimp should result this year.

Pond Cultivation: Two one-acre experimental shrimp ponds were drained and harvested during this quarter. One of the ponds was drained and closed off completely on February 12, 1962. This pond was then stocked by means of pumping water from a nearby creek with an 8-inch irrigation pump. During the period of February 12 to March 30, 1962, approximately 3½ million gallons of water were pumped into this pond. On April 16, the pond was treated with rotenone (3 lbs. per acre foot) to remove predatory fish. On June 25 the pond was drained and harvested. Approximately 19 pounds of brown shrimp were taken and the number of fish harvested was minimal, indicating that the rotenone treatment had been successful.

The other one-acre pond had been drained on February 1, 1962, and screened with 1/2-inch wire mesh. The pond flood gates were opened on February 12, 1962, and allowed to remain open until March 30 for natural stocking of postlarval brown shrimp. On April 16, 1962, this pond was also treated with rotenone in order to remove fish. On June 26, 1962, the pond was drained and harvested. Seventeen pounds of brown shrimp were collected. The presence of large numbers of fish in the pond was surprising, and it is felt that a complete kill was not obtained by the rotenone treatment in April.

A similar experiment comparing the pumping method of stocking with the flowing method was made last summer during the season when white shrimp were present. The purpose of this recent experiment was to further evaluate the different methods. In this case, the pumping method was equally as productive as the flowing method. In last year's experiment the natural flowing method was about 2.5 times more effective. However, in that case less water was pumped. The results of the two experiments are really not comparable nor conclusive. They do show that stocking shrimp by means of a pump is possible. However, in both cases the natural flowing method seems to be more feasible when viewed from a cost basis. Pumping is expensive.

Note: See *Commercial Fisheries Review*, May 1962 p. 29.

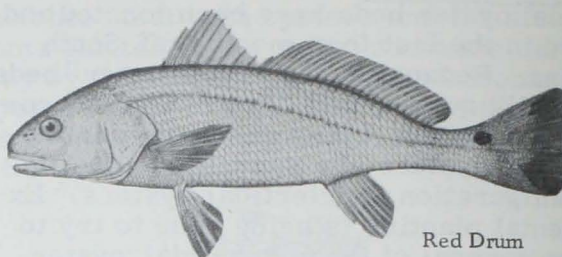


Sport Fishing

TROPICAL PACIFIC GAME FISH SCHOOLING AND FEEDING BEHAVIOR STUDY:

A three-year study of the schooling and feeding behavior of several Pacific game fish was begun in July 1962. The U. S. Bureau of Sport Fisheries and Wildlife has employed a graduate student at the University of California at Los Angeles to make the study. The study will provide information on the roosterfish, scad, grouper, yellowtail, barracuda, and sand bass. Field observations will be conducted in the lower Gulf of California. Underwater observations by camera and tape recorder will be emphasized.

This is the third graduate study supported by the Bureau of Sport Fisheries and Wildlife in its marine program. Two others, now



Red Drum

in progress at the University of Miami, concern the bluefish and red drum. The studies are designed to furnish life history information on important game fish, and to encourage promising students to make a career in fishery biology.



Shrimp

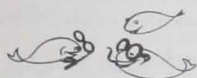
UNITED STATES SHRIMP SUPPLY INDICATORS, JULY 1962:

Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs. Heads Off)					
Total Landings, So. At. & Gulf States:					
September ...	-	9,691	18,832	18,331	15,847
August	-	10,944	20,441	18,595	14,173
July	14,000	10,500	21,746	17,493	13,457
Jan.-June	32,100	31,030	36,775	35,511	36,098
Jan.-Dec.	-	91,395	141,035	130,660	116,552
Quantity canned, Gulf States 1/:					
September ...	-	785	2,236	2,108	2,825
August	-	1,206	5,041	2,427	2,809
July	3,800	3,042	6,319	3,085	4,805
Jan.-June	8,000	5,405	9,840	10,938	7,109
Jan.-Dec. ...	-	15,760	28,594	24,679	26,404
Frozen inventories (as of each mo.) 2/:					
September 30 .	-	13,361	26,119	18,079	16,896
August 31	-	12,728	20,171	23,780	15,274
July 31	4/	14,849	17,397	22,357	12,351
June 30	13,796	19,416	15,338	19,283	10,664
May 31	13,904	24,696	17,540	21,137	11,013
January 31 ...	-	31,842	34,332	30,858	17,963
Imports 3/:					
September ...	-	8,190	7,541	7,620	7,471
August	-	6,743	6,407	5,107	6,628
July	4/	6,635	7,319	7,861	6,340
June	9,397	8,065	8,932	8,300	6,018
Jan.-May	54,604	49,103	42,433	41,526	26,260
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.					

Tuna

BLACKFIN TUNA STUDIED TO DETERMINE FEDERAL SPECIFICATION REQUIREMENTS:

Six small blackfin tuna from the Gulf of Mexico were canned by the U. S. Bureau of Commercial Fisheries technological laboratory at Pascagoula, Miss., during early summer. The objective was to determine if blackfin tuna from the Gulf would meet Federal specification requirements for canned tuna. The first examination revealed that blackfin tuna should easily meet the U. S. Food and Drug Administration mandatory standard of identity for light meat tuna. The quality of the product was good and also should meet the Federal Purchasing Specifications.



United States Fisheries

COMMERCIAL FISHERY LANDINGS, JANUARY-JUNE 1962:

Total Landings: Landings of fish and shellfish in the United States during the first 6 months of 1962 amounted to about 8 million pounds more than during the comparable period of 1961. Production of edible fish was about 35 million pounds less than in the first half of 1961, while landings of nonedible species, principally menhaden, were up 43 million pounds.

Menhaden: During the first 6 months of 1962, landings amounted to 833 million pounds--up 51 million pounds over 1961.

Tuna: Landings in California (including transshipments of United States-caught fish from South America) totaled 151 million pounds to July 14, 1962--down about 24 million pounds compared with the same period in 1961. Purse-seine landings in California dropped 9 million pounds, clipper-fleet landings were down about 10 million pounds, and transshipments declined 5 million pounds.



Fig. 1 - Shrimp trawlers tied up at a dock in Thunderbolt, Ga.

Salmon: On the basis of the reported pack of canned salmon, it was estimated that the Alaska catch to July 15, 1962, totaled almost 80 million pounds--a decline of about 40.5 million pounds or 34 percent compared with the same period of 1961.

Mackerel: At mid-year, 1962 landings of jack mackerel (38.3 million pounds) exceeded those in the previous year by 12 million pounds; while the catch of Pacific mackerel (16 million pounds) declined slightly during the same period.

United States Commercial Fishery Landings of Certain Species for Periods Shown, 1962 and 1961

Species	Period	1/1962	1961	Total 1961
..... (1,000 Lbs.)				
Anchovies, Calif. . .	6 mos.	1,100	2,074	6,500
Cod:				
Maine	5 mos.	1,100	1,069	2,507
Boston	6 "	12,300	11,309	18,837
Gloucester	6 "	1,700	1,411	3,358
Total cod		15,100	13,789	24,702
Haddock:				
Maine	5 mos.	700	1,114	2,940
Boston	6 "	45,800	45,239	84,093
Gloucester	6 "	9,700	8,320	15,025
Total haddock		56,200	54,673	102,058
Halibut^{2/}:				
Alaska	6 mos.	14,200	12,530	25,077
Wash. & Oreg.	6 "	7,200	8,693	14,947
Total halibut		21,400	21,223	40,024
Herring:				
Maine	5 mos.	3,800	40	54,463
Alaska	6 "	6,700	15,200	48,600
Industrial Fish,^{3/}				
Me., & Mass.	6 mos.	10,800	11,211	41,851
Mackerel:				
Jack	6 mos.	38,300	25,910	98,900
Pacific	6 "	16,100	17,274	39,100
Menhaden	6 mos.	833,300	782,114	2,308,000
Ocean perch:				
Maine	5 mos.	28,000	30,126	77,350
Boston	6 "	300	267	701
Gloucester	6 "	32,300	29,328	53,991
Total ocean perch		60,600	59,721	132,042
Salmon, Alaska . . .	to July 15	79,700	120,200	264,800
Scallops, sea, New Bedford (meats) . . .	6 mos.	10,000	9,744	20,648
Shrimp (heads-on):				
So. Atl. & Gulf	6 mos.	53,100	52,134	153,400
Washington	6 "	600	607	1,459
Squid, Calif.	6 mos.	5,700	882	5,400
Tuna, Calif.	to July 14	151,300	175,460	307,263
Whiting:				
Maine	5 mos.	3	-	14,147
Boston	6 "	70	45	144
Gloucester	6 "	8,300	6,760	51,598
Total whiting		8,373	6,805	65,889
Total all above items		1,372,173	1,369,061	3,715,099
Other^{4/}		306,327	301,425	1,439,901
Grand Total		1,678,500	1,670,486	5,155,000

^{1/}Preliminary.
^{2/}Dressed weight.
^{3/}Excludes menhaden.
^{4/}Includes landings for species not listed.
 Note: Finfish generally converted to round weight, crustaceans to weight in the shell, and mollusks reported in meats only.



Fig. 2 - Boxes of iced fish on a truck, Weems, Va.

Scallops: New Bedford landings through June 1962 totaled about 10 million pounds--256,000 pounds more than in the previous year. Landings of scallops during 1961 were the largest on record.

Shrimp: Landings in the South Atlantic and Gulf States during the first 6 months of 1962 amounted to 53 million pounds--about 1 million pounds more than in 1961.

* * * * *

FISH STICKS AND PORTIONS PRODUCTION, APRIL-JUNE 1962:

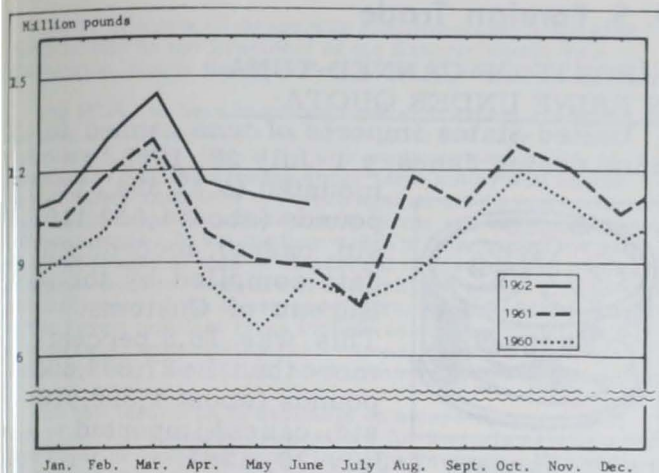
United States production of fish sticks amounted to 16.1 million pounds and that of fish portions was 18.2 million pounds during the second quarter of 1962, according to preliminary data. This was a gain of 3 percent in fish sticks and 47 percent in portions as compared with the same quarter of 1961. The increase in portions was mainly due to greater production of raw breaded portions (up 4.3 million pounds).

Month	Cooked	Raw	Total
..... (1,000 Lbs.)			
April	5,028	452	5,480
May	5,152	457	5,609
June	4,669	389	5,058
Total 2nd Qtr. 1962 1/	14,849	1,298	16,147
Total 2nd Qtr. 1961 .	14,589	1,067	15,656
Tot. 1st 6 mos. 1962 1/	34,380	2,436	36,816
Tot. 1st 6 mos. 1961 .	33,722	2,350	36,072
Tot. Jan.-Dec. 1961 .	65,006	4,813	69,819
1/Preliminary.			

Area	1/1962		2/1961	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	23	13,229	22	13,421
Inland & Gulf States .	4	1,892	6	1,232
Pacific Coast States .	7	1,026	10	1,003
Total	34	16,147	38	15,656
1/Preliminary. 2/Revised.				

Month	1/1962	2/1961	1960	1959	1958
..... (1,000 Lbs.)					
January	6,104	6,091	5,511	6,277	5,471
February	6,859	7,092	6,542	6,352	5,925
March	7,706	7,233	7,844	5,604	5,526
April	5,480	5,599	4,871	4,717	4,855
May	5,609	5,129	3,707	4,407	4,229
June	5,058	4,928	4,369	4,583	4,702
July	-	3,585	3,691	3,790	4,574
August	-	6,937	5,013	3,879	4,358
September	-	5,216	5,424	5,353	5,328
October	-	6,143	6,560	5,842	5,485
November	-	6,298	6,281	4,831	5,091
December	-	5,628	5,329	4,743	5,467
Total	-	69,903	65,142	60,378	61,011
1/Preliminary. 2/Revised.					

Month	Breaded			Unbreaded	Total
	Cooked	Raw	Total		
..... (1,000 Lbs.)					
April	1,427	4,773	6,200	149	6,350
May	1,135	4,471	5,606	144	5,749
June	1,043	4,864	5,907	175	6,082
Tot. 2nd Qtr. 1962 1/ ..	3,605	14,108	17,713	468	18,181
Tot. 2nd Qtr. 1961	2,116	9,835	11,951	451	12,402
Tot. 1st 6 mos. 1962 1/ ..	6,537	29,009	35,546	1,042	36,588
Tot. 1st 6 mos. 1961	4,888	21,586	26,474	964	27,438
Tot. Jan.-Dec. 1961	11,003	46,783	57,786	2,061	59,847
1/Preliminary.					



U. S. production of fish sticks and portions, 1960-1962.

Table 5 - U. S. Production of Fish Portions by Areas, April-June 1962 and 1961

Area	1/1962		2/1961	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States . . .	23	9,937	24	6,484
Inland & Gulf States . . .	7	7,623	12	5,488
Pacific Coast States . . .	8	621	6	430
Total	38	18,181	42	12,402

1/ Preliminary. 2/ Revised.

Table 6 - U. S. Production of Fish Portions by Months, 1958-1962

Month	1/1962	2/1961	1960	1959	1958
(1,000 Lbs.).....				
January	5,102	4,303	3,632	2,692	1,973
February	6,374	4,902	3,502	3,025	1,254
March	6,931	5,831	4,706	3,225	1,471
April	6,350	4,484	3,492	2,634	2,268
May	5,749	3,879	3,253	2,684	1,478
June	6,082	4,039	3,995	3,247	1,504
July	-	3,986	4,088	2,227	2,161
August	-	4,987	3,558	2,796	1,516
September	-	5,769	4,631	3,558	1,566
October	-	6,783	5,275	4,314	2,560
November	-	5,813	4,790	3,483	1,979
December	-	5,215	4,459	3,262	2,060
Total	-	60,061	49,381	37,147	21,790

1/ Preliminary. 2/ Revised.

Cooked fish sticks made up 92 percent of the fish stick total. The remaining 8 percent consisted of raw fish sticks. Total of 17.7 million pounds of breaded fish portions (of which 14.1 million pounds were raw) and 468,000 pounds of breaded portions were processed during the second quarter of 1962.

Plants on the Atlantic Coast produced the bulk of the fish sticks and portions--23.2 million pounds. The remaining 1.1 million pounds of sticks and portions were produced in the inland, and Pacific Coast plants.

During the first 6 months of 1962, fish stick production of 36.8 million pounds was up 2 percent and the fish portions production of 36.6 million pounds was up 33 percent compared with the first half of 1961.

□□□□□□□□

U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, JULY 1962:

During July 1962, a total of 33 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 50 in July 1961. There were 23 documents cancelled for fishing vessels in July 1962 as compared with 24 in July 1961.

Table 1 - U. S. Fishing Vessels^{1/}--Documentations Issued and Cancelled, by Areas, July 1962 with Comparisons

Area (Home Port)	July		Jan.-July		Total 1961
	1962	1961	1962	1961	
.....(Number).....					
Issued first documents^{2/}:					
New England	5	4	20	21	33
Middle Atlantic	-	1	2	5	12
Chesapeake	2	5	23	41	75
South Atlantic	4	5	21	29	47
Gulf	9	12	62	73	100
Pacific	13	22	100	124	149
Great Lakes	-	1	1	9	12
Puerto Rico	-	-	-	2	2
Total	33	50	229	304	430
Removed from documentation^{3/}:					
New England	1	3	12	11	20
Middle Atlantic	-	1	26	18	34
Chesapeake	5	3	13	21	28
South Atlantic	4	3	22	18	30
Gulf	10	4	69	60	103
Pacific	3	7	72	60	112
Great Lakes	-	3	12	8	14
Hawaii	-	-	3	-	-
Puerto Rico	-	-	1	-	-
Total	23	24	230	196	341

1/ For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels^{1/}--Documents Issued and Cancelled, by Tonnage Groups, July 1962

Gross Tonnage	Issued ^{2/}	Cancelled ^{3/}
.....(Number).....		
5-9	5	6
10-19	16	8
20-29	3	1
30-39	1	1
40-49	2	1
50-59	-	1
60-69	2	2
70-79	2	-
90-99	-	1
110-119	-	1
120-129	-	1
220-229	1	-
550-559	1	-
Total	33	23

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: 24 in 1962, 2 in 1961, 1 in 1960, 1 in 1951, 5 prior to 1951. 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.

DOCUMENTATIONS ISSUED AND CANCELLED, JUNE 1962:

During June 1962, a total of 52 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 64 in June 1961. There were 34 documents cancelled for fishing vessels in June 1962 as compared with 26 in June 1961.

Area (Home Port)	June		Jan.-June		Total 1961
	1962	1961	1962	1961	
.....(Number).....					
Issued first documents 2/:					
New England	2	2	15	17	33
Middle Atlantic	-	2	2	4	12
Chesapeake	5	11	21	36	75
South Atlantic	4	6	17	24	47
Gulf	15	9	53	61	100
Pacific	25	31	87	102	149
Great Lakes	1	3	1	8	12
Puerto Rico	-	-	-	2	2
Total	52	64	196	254	430
Removed from documentation 3/:					
New England	-	2	11	8	20
Middle Atlantic	2	-	26	17	34
Chesapeake	2	-	8	18	28
South Atlantic	2	3	18	15	30
Gulf	13	12	59	56	103
Pacific	10	9	69	53	112
Great Lakes	4	-	12	5	14
Hawaii	-	-	3	-	-
Puerto Rico	1	-	1	-	-
Total	34	26	207	172	341

1/For explanation of footnotes, see table 2.

Gross Tonnage	Issued 2/	Cancelled 3/
(Number).....	
5-9	2	4
10-19	24	15
20-29	5	3
30-39	6	2
40-49	1	2
50-59	3	2
60-69	-	2
70-79	8	1
110-119	1	-
130-139	1	-
250-259	-	1
370-379	-	1
490-499	1	-
530-539	-	1
Total	52	34

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: 38 in 1962, 2 in 1961, 1 in 1953, 8 prior to 1951, and 3 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.

U. S. Foreign Trade

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-July 28, 1962, amounted to 32,594,317 pounds (about 1,552,110 std. cases), according to data compiled by the Bureau of Customs. This was 16.8 percent more than the 27,898,898 pounds (about 1,328,519 std. cases) imported during January 1-July 29, 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.

FISHERY PRODUCTS IMPORTS FROM U.S.S.R.:

United States imports of fishery products from the U.S.S.R. in 1961 amounted to only 59,000 pounds.

Commodity	Quantity	Value
	Pounds	US\$
Antipasto in oil, canned	362	385
Fish in oil, n.e.s., canned	12,639	8,027
Salmon, canned	10,848	8,336
Crab meat, canned	871	705
Fish paste, canned	260	133
Sturgeon roe, salted	32,732	152,862
Sturgeon roe, boiled in air-tight containers	1,592	23,751
Total	59,304	194,199

INSURANCE ON UNITED STATES EXPORTS EXTENDED TO LONGER-TERM POLICIES:

Insurance covering credit and political risks in overseas sales made on terms of up to 5 years is now available to United States exporters. The newly-available medium-term policies can be obtained from the Foreign Credit Insurance Association (FCIA), which operates in cooperation with the Export-Import Bank of Washington.

This is the first time the United States has provided such medium-term assistance for its exporters on an extensive basis, through private business facilities which include ready availability of policy application from insurance agents and brokers.

The FCIA's new coverage was simultaneously announced early in July by the President of the Export-Import Bank in Washington, and by the President of the FCIA in New York.

The FCIA has been issuing short-term export credit insurance (for transactions on terms up to 180 days) since February 5, 1962. Use of the new medium-term policy in conjunction with the existing short-term policy will enable United States exporters to insure against credit and political risks in transactions whose credit terms are anywhere within a 5-year range. In the medium-term policy, exporters will be covered against loss of 85 percent of the financed portion of transactions for both credit and political risks. Credit risks are insolvency of the buyer and protracted default of payment by the buyer; political risks include such government actions as currency convertibility restrictions, export and import restrictions, war, revolution, civil commotion and expropriation.

The new insurance is available on a case-by-case basis. The FCIA will consider applications for a single sale to a foreign buyer or revolving sales to a foreign buyer. Exporters may cover as many or as few of their buyers as they choose during the policy year, since there is no flat "whole-turnover" requirement in the medium-term program. But should an exporter wish to insure on a "whole-turnover" basis, he may do so at a reduced premium and increase the political risk coverage to 90 percent.

As in the short-term policies, a contract form endorsement may be attached to the medium-term policy to extend the coverage during the period of fabrication or manufacture of the product.

Premium rates for the medium-term policy vary according to terms of payment and the buyer's country. Both FCIA and the Export-Import Bank indicate that the premiums and fees for medium-term insurance in the United States compare favorably with those charged by the leading credit insurance systems in other nations. In fact, in some instances, FCIA rates are lower than those charged by foreign insurers.

The FCIA was formed by private insurance companies late in 1961 at the suggestion of the United States Government through the Export-Import Bank. It is an unincorporated association whose membership now numbers 71 companies. Membership is open to all qualified and responsible insurance companies. Both the medium-term export credit insurance policy and the short-term policy are offered to exporters through agents of member companies and general insurance brokers throughout the United States.

Announcement of the FCIA's new medium-term policy rounds out the Association's basic program. The two policies are designed to help United States exporters meet increasing competition from foreign exporters who, for the most part, have the benefit of export credit insurance plans abroad.

Two salient benefits will be provided to United States exporters who use FCIA policies.

1. The exporters themselves will be in better position to extend credit to overseas customers, because the substantial portion of risks in the transactions are covered by the insurance.

2. Exporters will be able to obtain financing more readily from commercial banks and other financial institutions when their foreign accounts receivable are so insured.

In addition, commercial banks in the United States should find FCIA policies attractive in connection with the financing of overseas sales, since proceeds of the policies are assignable to banks.



Vessels

FRENCH FISHERY RESEARCH VESSEL VISITS WOODS HOLE, MASS.:

The French fishery research vessel *Thalassa* docked at the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass., July 24-26, 1962. The vessel visited the Laboratory prior to a cruise to Georges Bank and northern Atlantic fishing areas. The chief of the vessel's scientific party explained that the purpose of their trip was to investigate stocks of groundfish, especially those which may now be underexploited. The Bureau's Woods Hole scientists had the opportunity to meet the scientists aboard the vessel, learn something of their work, and examine their equipment. Scien-

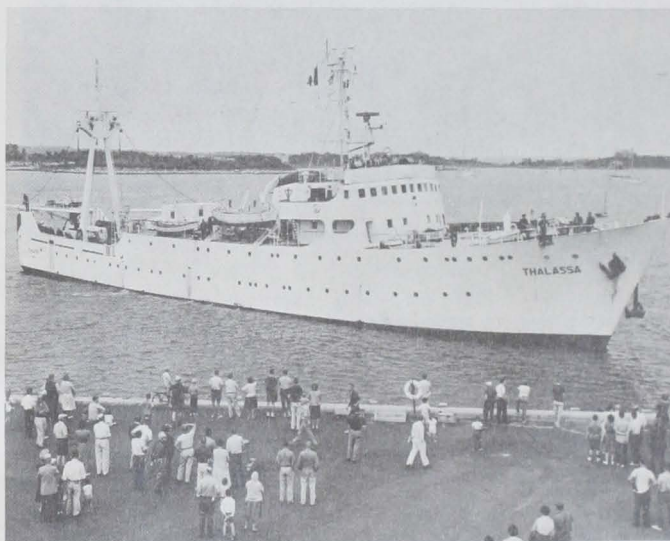


Fig. 1 - French fishery research vessel *Thalassa* arriving at the U. S. Bureau of Commercial Fisheries dock in Woods Hole, Mass.

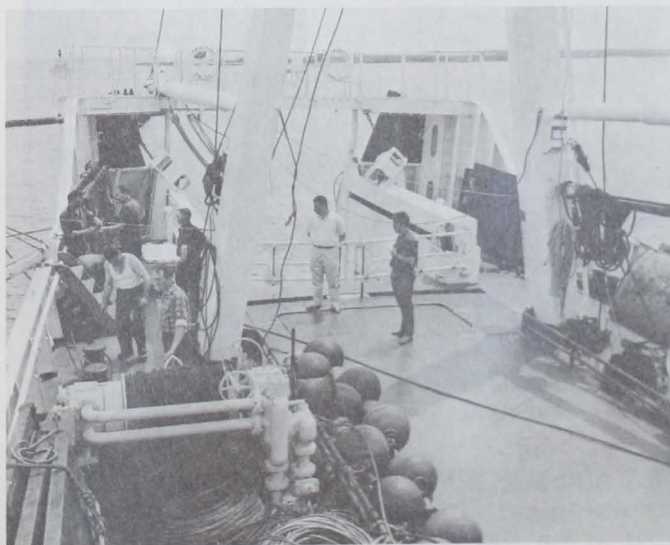


Fig. 2 - Afterdeck of the French vessel *Thalassa*.

tists on the vessel spent some time ashore conferring with the Bureau's biologists on overlapping studies and problems. A Woods Hole biologist accompanied the vessel on the first leg of her cruise, and he left the vessel at a Nova Scotia port.



Fig. 3 - Tying net to the head rope of an otter trawl aboard the Thalassa.

The vessel arrived direct from her home port (Brest, France). Also, she planned to explore the commercial stocks of groundfish on the Grand Banks before returning to France some time in September 1962.

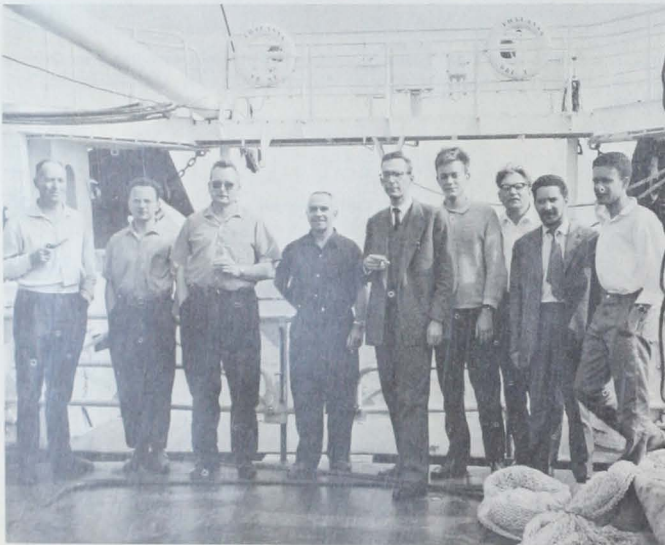


Fig. 4 - Scientists aboard the Thalassa.

A stern trawler with complete biological and chemical facilities, the Thalassa was built at Le Harve in 1960. She is 216 feet

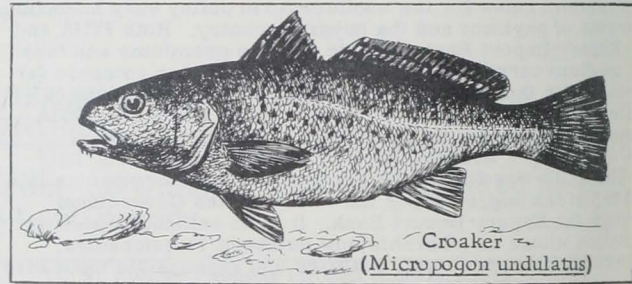
long, 1,481 gross tons and has a maximum range of 12,900 miles. The Thalassa's total complement is a crew of 33 and 22 scientists. On this cruise there were 8 scientists, 2 students, and a visiting Polish fishery biologist aboard.



Virginia

OUTLOOK PROMISING FOR CROAKER POPULATIONS IN CHESAPEAKE BAY SYSTEM:

Improvement in the numbers of croakers inhabiting the Chesapeake Bay system was predicted by marine scientists of the Virginia Institute of Marine Science, Gloucester Point, Va. The prediction made on June 27, 1962, was based on recent winter investigations of the survival of young croakers in upriver areas.



The head of Ichthyology studies at the Institute cited evidence compiled during the past winter indicating a tenfold increase in survival of small croakers over the average of the past five years. He pointed out that these small croakers were spawned in the ocean last fall, and the tiny larvae moved upstream into the brackish-water areas of rivers entering Chesapeake Bay. The supervisor, who is responsible for the Laboratory's young fish sampling program, has been making regular trawl surveys in those upriver areas to determine the abundance of young croakers during fall, winter, and spring, indicating the number of fish arriving, and the number which survive the winter.

The Institute's Ichthyology chief and his co-workers agreed that pinheads (6 to 8 inches in size) would begin to appear in increased numbers late in the summer of 1962 and that the commercial fishery and sport fishery will be considerably improved by 1963. Large croakers from the 1962 spawning season will not appear until 1964.

It was also suggested by the Institute's staff that this does not mean an immediate return to population levels of years prior to the severe cold during the winter of 1957/58. They stated it will take several mild winters in succession and the subsequent successful survival of croaker larvae before a return to high population levels can be expected. They hoped the past 1961/62 mild winter was the first of such a series.

Records kept since about 1880 show the commercial catch of croakers in 1961 was the lowest on record. It was believed the predicted increase should result in a significant improvement.

Croakers spawn offshore along the Continental Shelf each fall. After hatching, the larvae move into the Bay and upstream to approach the brackish-water areas of rivers. Those are the nursery grounds of young croakers during their first winter, which is a very critical time of their life cycle. Survivors of the first winter migrate back downstream with the arrival of spring to join regular croaker migrations. By the end of their first summer, they usually grow to pinhead size and reach adult size by the end of their second year. Rarely does a croaker pass an age of 5 or 6 years. Studies by the Institute also show that the annual mortality of croakers is about 70 percent, only 10 percent of which is caused by fishing.

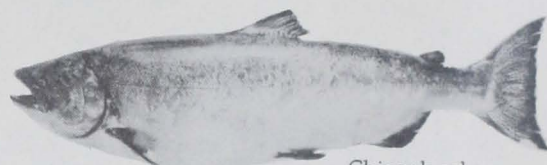
There was some evidence that the extremely cold winter of 1957/58 had a great deal to do with the severe decline of Chesapeake Bay croaker populations over the past few years. The past mild winter, and the subsequent survival in some abundance of croaker spawn, seems to support that evidence.



Washington

CHINOOK SALMON TAGGING:

For a salmon tagging operation off West Beach, Whidbey Island, Wash., Washington State Department of Fisheries biologists used the drum-seine vessel Sykes. Tagging began June 17 and continued until mid-August. The purpose was to gain information about migration routes and timing of runs of chinook salmon that pass through the West Beach area. The Department needs the information in order to determine whether



Chinook salmon

to manage the West Beach chinook salmon fishery as a separate fishery, or as part of the chinook fishery in Skagit Bay, Wash.

Salmon were tagged only on Saturday, Sunday, and Monday, when the commercial fleet was not operating. As of June 27, a total of 141 chinook salmon had been tagged, and recoveries had been made at West Beach, Skagit Bay and Skagit River, and Fraser River. The fish averaged about 20 pounds each.

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SALMON PLANTED IN KLUCKITAT RIVER:

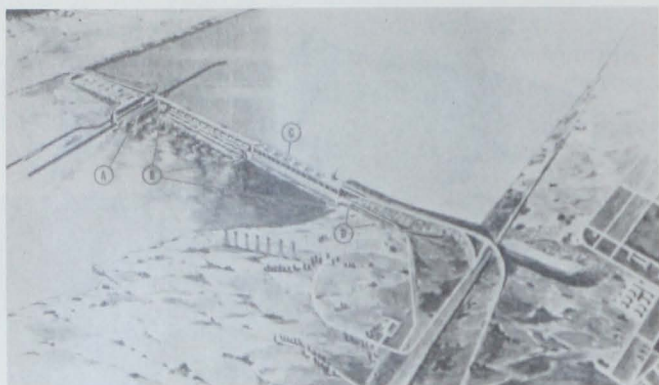
A long-range project to create a run of silver and chinook salmon in the Klickitat River was started in June 1962 by the Washington State Department of Fisheries. Construction of the Castile Falls fishway in 1960 opened up about 30 miles of rich salmon spawning grounds in the upper Klickitat. A plant of 31,300 spring chinook salmon fingerlings was made in the upper Klickitat in August 1961. Additional salmon fingerling plants in the McCormick Meadows area of the river were made on June 21-22, 1962. These consisted of 70,000 large spring chinook salmon from the Wind River; 100,000 silver salmon from the Toutle River; and 50,000 silver salmon from the U. S. Fish and Wildlife Service hatchery at Willard, Wash.

The Washington State Department of Fisheries is carrying out the project with the cooperation of the U. S. Bureau of Indian Affairs, the U. S. Fish and Wildlife Service, and the Yakima Indian tribe. The upper Klickitat is in the Yakima Indian Reservation. The Indian Tribe said they will refrain from fishing in the upper river while runs are established.

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SALMON SPAWNING CHANNEL AT MCNARY DAM ON THE COLUMBIA RIVER:

Fall chinook salmon will spawn naturally in a man-made spawning stream, the eggs



Sketch of McNary Dam on the Columbia River showing fishways for the passage of salmon: A, Washington fish ladder; B, entrances; C, powerhouse; D, Oregon fish ladder.

will hatch, and the young fish will grow and migrate. These facts have been learned in the supplemental spawning channel at McNary Dam on the Columbia River, operated since 1957 by the Washington State Department of Fisheries under a contract from the U. S. Army Corps of Engineers. The contract expired on June 30, 1962. The Washington fisheries agency has proposed a one-year renewal of the contract in order to gain more knowledge on this project. The renewal would also produce a maximum number of seaward chinook salmon migrants from the McNary Dam area.

A number of two-year old jack salmon have returned to the channel's discharge stream during the past two years. The Supervisor of Research for Washington State said that the early returns give promise that enough spawners will return to perpetuate the run to the channel. In the fall of 1961, a total of 63 jack salmon returned to the channel from a 1960 release of 55,850 fingerlings which were marked with a right ventral fin clip. The first large group of chinook salmon released from the channel should return in the fall of 1962 as four-year old spawners. The group includes 39,729 salmon from the channel, of which 20,015 were marked, and 100,000 marked Klickitat Hatchery fish released in the channel.

The biologist in charge of the project said the spawning channel has been considerably improved in the light of knowledge and experience gained in the five years of operation. A major addition to the channel in 1961 was the construction of a rearing pond approximately one acre in size. During the 1962 season, the spawning production of salmon

on hatched in the channel will be compared with the young produced at the channel by spawners that were hatched at the Klickitat Hatchery. Live boxes will be used to trap and separate the young produced by each group. When the fish are large enough to handle they will be counted and released into the rearing pond.



Wholesale Prices, July 1962

Stronger market conditions caused by a dip in seasonal landings in New England and a continued good demand for all marine species were responsible for the rise in the July 1962 wholesale price index for edible fishery products to 119.0. From June to July the index rose 0.6 percent, and it was up 14.3 percent from July 1961.

The subgroup index for drawn, dressed, or whole finfish this July rose 7.9 percent from the previous month and was 19.8 percent higher than in July 1961. Compared with June, prices in July were up for all products in this group except Lake Superior whitefish at Chicago. Whitefish prices dropped 13.1 percent from June to July as the supply improved, but they were still 13.1 percent higher than in July 1961. Lake Michigan yellow pike prices at New York City were up 5.6 percent from June to July but dropped 18.1 percent from July 1961. Ex-vessel prices for large haddock at Boston in July were up 65.7 percent from June as a result of lighter landings, and were up 65.2 percent as compared with the same month of 1961. The demand for fresh large haddock was strong because of light landings. From June to July, prices at New York City rose 2.2 percent for fresh western halibut and 1.3 percent for fresh king salmon. Compared with July 1961, prices at New York City this July were 28.5 percent higher for fresh halibut and 12.7 percent higher for fresh king salmon.

From June to July, prices for fresh haddock fillets at Boston were up 23.8 percent despite relatively good landings of small haddock. Fresh shrimp prices at New York City, however, dropped 13.5 percent because of more liberal seasonal supplies from the South Atlantic States. As a result, the processed fresh fish and shellfish index for July dropped 6.0 percent from June, but was up 8.5 percent from July



View of wholesalers' stand on South Street in the salt-water section of Fulton Fish Market.

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

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			July 1962	June 1962	July 1962	June 1962	May 1962	July 1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					119.0	4/118.3	119.4	104.1
Fresh & Frozen Fishery Products:					118.5	4/117.5	118.1	100.4
Drawn, Dressed, or Whole Finfish:					123.3	114.3	119.9	102.9
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.13	.08	98.6	59.5	65.7	59.7
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.45	.44	133.0	130.1	122.2	103.5
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.98	.96	136.2	134.5	139.7	120.8
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.60	.69	89.5	103.0	106.0	79.1
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.48	.45	77.8	73.7	116.3	95.0
Processed, Fresh (Fish & Shellfish):					113.4	5/120.6	119.7	104.5
Fillers, haddock, sml., skins on, 20-lb. tins.	Boston	lb.	.39	.32	94.7	76.5	80.1	70.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.90	1.04	105.5	121.9	119.6	84.9
Oysters, shucked, standards	Norfolk	gal.	7.50	7.50	126.5	126.5	126.5	134.9
Processed, Frozen (Fish & Shellfish):					113.3	112.7	110.2	90.6
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.38	98.9	96.3	100.1	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.34	.33	98.2	96.7	96.7	96.8
Ocean perch, lge., skins on, 1-lb. pkg.	Boston	lb.	.30	.30	103.4	106.1	110.4	98.2
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.03	1.03	122.2	122.2	116.8	84.2
Canned Fishery Products:					120.1	120.1	122.1	110.8
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.	11.31	11.31	145.1	145.1	164.3	115.8

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.
 4/ Revisions were minor and did not affect indexes published for June.
 5/ Index was unavailable in June.

1961. As compared with the same month in 1961, the subgroup index this July was higher because of substantially higher prices for fresh haddock fillets (up 34.5 percent) and fresh shrimp (up 24.3 percent).

The price index for processed frozen fish and shellfish in July 1962 was up 0.5 percent from the previous month and 25.1 percent higher than a year earlier because of the strong frozen shrimp market at Chicago. Frozen shrimp prices in July remained at the same level as in June, but were up 45.1 percent from July 1961. From June to July prices for frozen flounder fillets rose 2.7 percent and for haddock fillets advanced 1.6 percent, but prices for ocean perch fillets dropped 2.5 percent. Compared with July 1961,

prices this July for ocean perch fillets were up 5.3 percent, and flounder and haddock fillets prices also were up slightly.

Canned fishery products prices were unchanged from June to July but the subgroup index this July was 8.4 percent higher than a year earlier. Compared with July 1961, prices this July 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 25.3 percent for Maine sardines. Prices for new-pack Maine sardines remained steady during June-July following the 11.7-percent price drop from May. By the end of July, the canned tuna pack was ahead of the same period last year by 10.8 percent and the canned salmon pack (mostly pinks and chums) was better than expected although still below the 1961 season pack.

