

TRENDS AND DEVELOPMENTS

Boston Fishing Fleet

AVERAGE AGE OF VESSELS IN TRAWLER FLEET EXCEEDS 20 YEARS: The number of otter trawlers landing regularly at the Boston Fish Pier has been declining steadily in recent years and the average age of the vessels is increasing due to the slow rate of replacement. As of September 1, 1958, the fleet of large, medium, and small otter trawlers fishing out of Boston totaled 72 vessels and the average age was 20.8 years. The fleet of large and small trawlers has declined steadily since the end of World War II, but the fleet of medium vessels has increased slightly in recent years, according to a study by the Boston Market News Service.

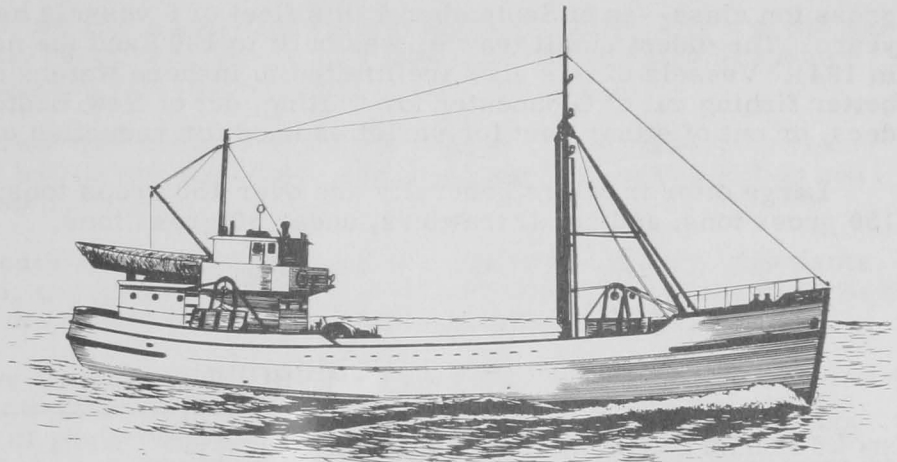


Fig. 1 - Typical Maine-built medium-size otter trawler.

At the beginning of World War II many fishing vessels were requisitioned by the Armed Forces for use as small patrol boats, subchasers, and small transports. As the war progressed, shipyards were able to meet the needs of the Armed Forces and due to the shortage of protein foods materials were made available for fishing-vessel construction. During this 1942-45 period, 9 large and 15 medium otter trawlers were added to the Boston fleet of trawlers. During the 13-year period, 1946-58, only 7 large and 7 medium otter trawlers were added to the Boston fleet.



Fig. 2 - Unloading catch from a large otter trawler at Boston Fish Pier.

since 1953. Only two vessels have been added since 1950.

The large otter trawlers fishing out of Boston as of September 1, 1958, consisted of 28 vessels with an average age of 18 years. The oldest (three) vessels were built in 1928 and the newest (one vessel) was added in 1952. No new large otter trawlers have been added to the Boston fleet

The fleet of 36 medium trawlers fishing out of Boston with an average age of 19 years in 1958 increased from 33 vessels in 1957 to 36 vessels in 1958. Many trawlers of this size claim Gloucester and New Bedford as a home port, but land regularly at the Boston Fish Pier. Some observers predict that the Boston Fish Pier in the future will be dependent on these medium trawlers for fish supplies. Vessels of this size group (1) are cheaper to build; (2) have crews of 10-12 men as compared to 15-17 on large trawlers; and (3) are more economical to operate because of the limited catches per boat on the fishing grounds within a practical range (about 600 miles). The oldest medium trawler was built in 1900 and the last addition was made in 1957. The increase in the number of medium trawlers has not been due to new construction, as only seven vessels were added between 1946 and 1958. The increase merely indicates that a number of trawlers have left the Gloucester ocean perch fishery and the New Bedford flatfish or scallop fishery for the haddock fishery out of Boston.

The oldest trawlers in the present fleet at Boston are the small or under 50-gross ton class--as of September 1 this fleet of 8 vessels had an average age of 39 years. The oldest small trawler was built in 1890 and the newest addition was made in 1944. Vessels of this size are limited to inshore waters and, as a rule, will fare better fishing out of Gloucester for whiting, out of New Bedford for yellowtail flounders, or out of either port for varieties used for reduction or animal feeding.

Large otter trawlers generally are over 150 gross tons; medium trawlers, 50-150 gross tons; and small trawlers, under 50 gross tons.



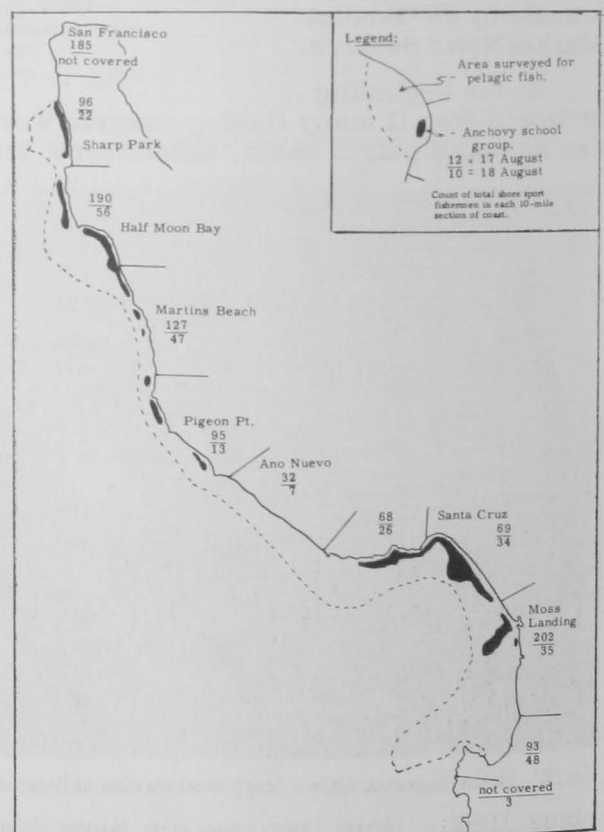
California

AERIAL CENSUS OF COMMERCIAL AND SPORT FISHING CONTINUED (Airplane Spotting Flight 58-15): The inshore area between Carmel and Trinidad Head was surveyed (August 17-19) from the air by the California Department of Fish and Game Cessna 3632C to determine the number of pelagic fish schools, sport fishermen, and commercial salmon trollers in the area surveyed. Fog hampered scouting more during this flight than on any previous flight this year. The area from Monterey to San Francisco and from Trinidad to Usal were adequately surveyed but only half of the area between San Francisco and Usal could be surveyed.

Pelagic Fish: Anchovy school groups were located in the same areas of the coast as on the last flight with the largest concentrations occurring in Monterey and Half Moon Bays.

The schools were much larger than on previous flights; in fact, some schools in Monterey Bay were of such large size and irregular shapes that a count of schools was impractical. Some schools up to $\frac{3}{4}$ mile in length would have equaled the abundance of hundreds of schools as they appeared in early spring. Since area (sq. ft.) determinations were not made, a subjective estimation of the abundance of anchovies would indicate a similar number as on the previous flight, except inside Humboldt Bay where schools were observed for the first time this year.

Fog prevented scouting the offshore section of Monterey Bay where schools of sardines were re-



Airplane Spotting Flight 58-15 (August 17 and 18, 1958).

ported by commercial fishermen. No sardine or mackerel schools were observed on this flight.

Commercial Salmon Trollers: Only two commercial trollers were observed in Monterey Bay and fog prevented an adequate census of the area from Fort Bragg to Cape Mendocino where most of the fleet was operating.

Sport Fishermen: The striped bass run was continuing along the beaches from San Francisco to Monterey. Greater catches were reported from the more southern area of the run from Half Moon Bay to Monterey. Aerial counts of surf fishermen on this flight demonstrated a relatively greater surf-fishing intensity in this area, especially in Monterey Bay.

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ARTIFICIAL REEFS ESTABLISHED: Half a dozen old street cars, heavily ballasted to prevent their movement on the ocean floor during storms, were dumped in 60 feet of water off the California Redondo-Palos Verdes coastline during September 1958 to form the third artificial fishing reef experimentally established by the California Department of Fish and Game in its Ocean Fish Habitat Development Project started in June 1958.

The old street cars, weighing about six tons each, were donated by a metal salvage company. A tug and barge from the Long Beach Naval Shipyard transported them from Terminal Island to the dumping site.

The new artificial reef was created in an area where diving surveys by biologists of the Department had shown the ocean floor to be almost barren of fish and plant life or other shelter for fish.

The sunken street cars are intended to attract many of the marine organisms on which game fish feed, and in turn to provide food and shelter for game fish. Kelp will be transplanted on the new reef to further enhance the area's fish habitat.

Diving surveys have shown that 20 old auto bodies dumped earlier this summer in an area of barren ocean floor off Paradise Cove, near Malibu, are already attracting large numbers of game fish including kelp bass, sheep-head, and several species of perch. Another such artificial reef was created by dumping large artificial rocks in an area off Huntington Beach.

The Department's Ocean Fish Habitat Development Project, being carried out with Dingell-Johnson Act Federal Aid funds, will be continued for at least three years. The program's future will depend on the results produced by the pilot projects.

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EXPERIMENT PLANNED WITH KOREAN FISH: The Associate Professor of Fisheries at Humboldt State College, Calif., has been given a permit by the California Fish and Game Commission to import and experiment with the eggs of a small salmonlike fish from Korea called the "ayu."

The Professor told the Commission he will use the State College fish hatchery for experiments in culture of ayu eggs to be sent to him from a colleague in Korea. If the experiments are successful, he said he will request authority to attempt establishing this species in one or more of Northern California's coastal rivers.

The Commission recommended approval of the request after learning that the ayu will not compete with native species. The ayu is primarily a plant feeder and will not become a predator in California waters.

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SAN DIEGO CONDUCTS BIOLOGICAL STUDY OF EFFECT OF MUNICIPAL WASTE DISCHARGES ON HABITAT OF ITS OFFSHORE WATERS:

Taking its cue from long-range ocean research now being conducted by the California State Water Pollution Control Board, the City of San Diego has launched an impressive study of its own. A team of scientists is scouring the ocean surface, waters, bottom, and shoreline in a 135-square-mile area extending from the Mexico-United States border to the mouth of the San Diego River. From their probings will be developed the most complete combined physical and biological descriptions of this portion of the Pacific Ocean ever made.

Arrangements for the study began after discussions between the city and State Water Pollution Control Board people. San Diego is now in the final phases of solving one of its major problems, the pollution of San Diego Bay.

For a number of years, engineering reports have recommended removal of all municipal waste discharges from the Bay as the only practical method of meeting in-bay waste discharge requirements.

Design of a system to divert treated effluent out into deep ocean water is now being pressed forward and it is anticipated effluent will be dispersed at some point within the ocean study area beginning in 1962 or 1963.

Aware of the enormous recreational and economic value of its offshore waters, San Diego is also aware that life and other conditions are now rather poorly cataloged. What type of small animals inhabit the ocean floor throughout the zone being investigated? How do their numbers and health vary with location, depth, temperature, salinity, season? Just how abundant is plant life, from the giant kelp to the algae clinging to rocks in the tidal pools? How much do we know or can we find out about the variety and number of free-swimming forms, from the fishes to the tiny plankton? Is the bottom clear sand or rock, or are portions of it covered with mucky decayed vegetation, similar to sewage solids?

The answers to these questions and many more, presented in a report which relates each to the total picture, are essential if the effects of a future discharge are to be assessed with any degree of accuracy.

Research being carried on off the entire Southern California coast for the State Water Pollution

Control Board will, in a few years, provide some of the answers. Because of the range of the State study--from the border to Point Concepcion--the resulting data will not be published in final form until 1962.

San Diego will follow this survey closely as it progresses. At the same time, the city desires a report on its ocean waters much sooner and, understandably, wishes to supplement the State program with much more intensive sampling. The two ventures will dovetail, rather than duplicate each other.

Besides the chemical and physical characteristics so important to a healthy and favorable marine habitat, the actual ocean flora and fauna will receive very close attention. Again, the purpose will be to describe conditions as they exist before the ocean discharge of treated sewage is initiated.

Equally important, however, is the need to compare the abundance and type of marine life present to the physical and chemical condition of the ocean and, if possible, to relate changes which are constantly taking place in the dynamic organization of life in the sea to naturally changing conditions of the ocean's waters.

In addition to amassing facts on the complex physical-chemical-biological organization which contributes to support of fish life, San Diego will include in the picture a record of fish caught off the metropolitan area. State Department of Fish and Game fish catch statistics for the study period will be entered in the report. Recognizing that a myriad of factors other than waste discharge may vary the availability of fish at any particular time, the city is asking the scientists to relate fish caught per unit effort to conditions bearing upon the catch, if possible.

After the first year of the study has been completed, its scope and details will be broadened or restricted. Whether the project will become larger or smaller depends upon what is determined during the year's work, recommendations of the city's consulting engineers, recommendations of the Board of Consultants of the State Water Pollution Control Board, and the ocean waste discharge requirements, yet to be established by the regional board.

Three firms of oceanographic scientists, all of La Jolla, have pooled their talents to carry out the survey. A \$133,000 contract for the first year was announced by the city in May.

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SARDINE POPULATION SURVEY OFF COAST OF BAJA CALIFORNIA (M/V Alaska Cruise 58-A-4): The coast of Baja California from San Juanico Bay to Cape Colnett was surveyed by the California Department of Fish and Game's research vessel Alaska on August 4-21, 1958. The objectives were:

(1) to sample the population of sardines from the summer spawning group in Sebastian Viscaïno Bay in order to determine its age and length composition and to attempt to distinguish differences between fish that spawn at different seasons in this area;

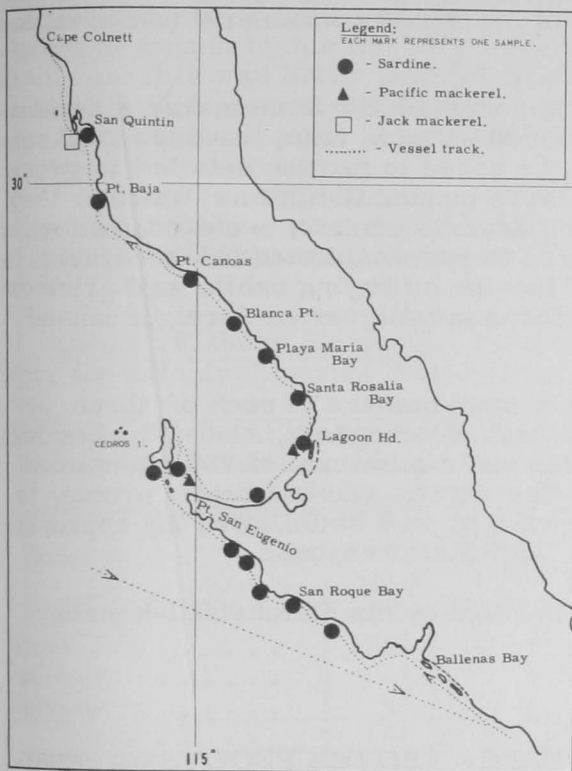
(2) to assess the relative abundance of sardines resulting from the February-March 1958 spawning in central Baja California; and

(3) to collect live sardines for genetic studies being conducted by the U. S. Bureau of Commercial Fisheries.

Of the 49 light stations which were occupied, 15 yielded sardines, 2 Pacific mackerel, and 1 jack mackerel.

Sardines were most abundant in the areas between San Hipolito and San Cristobal Bays and from

Playa Maria Bay to Punta Baja. Most of the fish samples were over 150 mm. standard length (5.9 inches). There were very few sexually-maturing fish; however, all stages of maturity were repre-



M/V Alaska Cruise 58-A-4 (August 4-22, 1958).

sent in the samples taken. Young fish spawned in the spring of 1958, from 90 to 120 mm. in length (3.5 to 4.7 inches), were scarce throughout the survey area. Larval and postlarval fish from the summer spawning group were dip-netted at Cedros Island.

A total of 394 miles was scouted during which time 110 schools of sardines and 20 unidentified schools were counted. A large number of school groups was present in a small area near Bluff Point. Other species of pelagic fish were scarce and no schools of mackerel or anchovies were positively identified. Except for one lampara net haul, all samples of sardines were collected with the blanket net. Sardines were readily attracted to light and tended to remain near the surface calmly milling in a compact group. Over two-thirds of the blanket net sets made on sardines produced 50 or more fish. Some catches up to 3,000 fish a haul were made.

Approximately 6,500 live sardines were delivered to the U. S. Bureau of Commercial Fisheries at San Diego. A total of 968 sardines was preserved for studies ashore. Several specimens of barracuda and black sea bass were collected for other investigations.

A limited amount of effort was expended on colored-light experiments. A red 150-watt surface floodlamp was used in conjunction with a white 1,500-watt lamp. After attraction with the white light, it was turned off and the red light turned on. Sardines came closer to the surface or disappeared when the red light was turned on. It was apparent that the red light was not of sufficient intensity to hold the fish; therefore, this phase of the experiment was terminated. A more favorable reaction was observed when a Diesel fuel torch was used in the same manner as the red light. The net was not as visible as under the white light. Several sizable catches of sardines were made by setting the net under the torch.

Sea-surface temperatures ranged from 60.4° F. at Punta Baja to 79.0° F. at San Juanico Bay. Temperatures from 68° to 72° F. prevailed over most of the areas covered. Bathythermograph and reversing thermometer casts were made on stations where depths were greater than 10 fathoms.



Cans--Shipments for Fishery Products, January-July 1958



Total shipments of metal cans during January-July 1958, amounted to 62,978 short tons of steel (based on the amount of steel consumed 'in the manufacture of cans) as compared with 73,968 tons in the same period a year ago. Canning of fishery products in January-July this year was confined largely to tuna, salmon, and Maine sardines. Packs were below average for shrimp, mackerel, and sardines during the first seven months of 1958.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.



Consumer Studies

MOTIVATION SURVEY OF CANNED FISH PREFERENCES: The U. S. Bureau of Commercial Fisheries has awarded a contract to a Philadelphia firm to conduct a motivation survey covering special aspects of household consumers' preferences for canned fish and shellfish.

The basic objectives of the study will be to ascertain the homemaker's decision-making processes affecting the purchase of canned salmon, tuna, sardines, and other canned fishery products. Respondents will be asked to furnish detailed answers to inquiries about why they buy or do not buy these canned fish items; whether they buy on impulse; how shoppers are motivated by advertisements; preferences for size of can, type of package, and kind of oil used in certain canned fish products. The survey will also examine the influence of income on buying habits and price or other motivating factors affecting preference for domestic versus foreign canned fish.

The study involves personal interviewing of homemakers in each of three urbanized areas: Boston, Mass., Detroit, Mich., and Birmingham, Ala. The contract calls for a probability sample of 875 households and a minimum of 700 completed interviews in each of these urbanized areas. The survey will use depth probing to elicit useful answers. Questions of the open-end type will be followed by appropriate nondirectional probing questions to obtain the fullest response.

The project is being financed by funds provided by the Saltonstall-Kennedy Act of 1954.

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STUDY OF INSTITUTIONAL CONSUMPTION OF FROZEN PROCESSED FISHERY PRODUCTS INITIATED: A study of frozen processed fish and shellfish consumption in institutions and public eating places in 10 selected cities has been initiated by the U. S. Bureau of Commercial Fisheries.

A contract for \$57,000 has been awarded by the U. S. Bureau of Commercial Fisheries, to Crossley, S-D Surveys, Inc., of New York City. The survey will be financed from funds provided by the Saltonstall-Kennedy Act of 1954 to increase production and markets in the domestic fishing industry.

Since the mass feeding industry is among the best of all potential markets for frozen fishery products, the Bureau proposes to obtain information through this study which will benefit the fishing industry in finding ways to diversify and increase the use of fish and shellfish in these establishments.

The cities involved in the survey are Atlanta, Ga., Chicago, Ill., Cleveland, Ohio, Denver, Colo., Houston, Tex., Los Angeles, Calif., New York City, Omaha, Nebr., Portland, Ore., and Springfield, Mass. They have been selected because they are fairly well distributed geographically and account for a good proportion of the consumption of frozen fish and shellfish by mass-feeding establishments.

"Mass-feeding" establishments include: (1) restaurants, cafeterias, and eating places in hotels, (2) eating places in schools, dormitories, industrial plants, and office buildings, (3) hospitals, prisons, and other similar public and private institutions, and (4) department stores or drugstores serving food, lunchrooms, etc.

The survey is scheduled for completion within 10 months.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-AUGUST 1958: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 1.6 million pounds of fresh and frozen fishery products were purchased in August by the Military Subsistence Market Centers. This was lower than the quantity purchased in July by 45.8 percent and 23.6 percent less than the amount purchased in the same month a year ago.

For the first eight months of 1958 purchases totaled 16.2 million pounds, a decrease of 5.3 percent in quantity as compared with the same period of 1957.

Canned Fishery Products: Tuna and sardines were the principal canned fishery products purchased

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, August 1958 with Comparisons

QUANTITY			
August		Jan.-Aug.	
1958	1957	1958	1957
..... (1000 Lbs.)			
1,617	2,117	16,196	17,105

Table 2 - Canned Fishery Products Purchased by Military Subsistence Centers, August 1957 with Comparisons

Species	QUANTITY			
	August		Jan.-Aug.	
	1958	1957	1958	1957
 (1,000 Lbs.)			
Tuna	908	26	3,470	1,476
Salmon	1	8	1,401	1,009
Sardine	41	2	93	108
Total	950	36	4,964	2,593

Note: Some local purchases are not included in the data given. Actual total purchases are higher than indicated, but it is not possible to obtain local purchases.

for the use of the Armed Forces during August 1958. For the first eight months of 1958 canned fish purchases were close to 5.0 million pounds--an increase of 91.4 percent in quantity as compared with the first eight months of 1957. The higher purchases for the January-August 1958 period over a similar period of 1957 were due primarily to a sharp rise in the purchases of canned tuna.



Fisheries Loan Fund

LOANS THROUGH SEPTEMBER 8, 1958: As of September 8, 1958, a total of 476 applications for fisheries loans totaling \$17,090,490 had been received since the inception of the Fisheries Loan Program. Of these, 252 (\$6,476,791) have been approved, 151 (\$4,481,670) have been declined, 31 (\$1,446,589) have been withdrawn, and 42 (\$3,857,519) are pending. As several of the pending cases have been deferred indefinitely at the request of the applicants and collections have been increasing, sufficient funds have been available to process all other applications. Congress recently increased the loan fund authorization from \$10 million to \$20 million but has not yet appropriated the additional \$10 million.

The following loans have been approved between July 14, 1958, and September 8, 1958:

New England Area: Margaret E. Sinagra, Gloucester, Mass., \$3,666; Aadland Fishing Corp., New Bedford, Mass., \$43,463; Boat Laura A, Inc. New Bedford, Mass., \$58,400.

South Atlantic and Gulf Area: Landon J. Alario, Golden Meadow, La., \$18,250; Wendell H. McGill, Naples, Fla., \$32,000.

California: Larry Fitzpatrick, Eureka, \$12,500.

Pacific Northwest: Roy Furfiord, Westport, Wash., \$30,000.

Alaska: Hans E. Jacobsen, Juneau, \$4,300.



Fur Seals

ALASKA FUR-SEAL MEAL PRICE HIGHER: Bids for the purchase of the fur-seal meal produced by the U. S. Bureau of Commercial Fisheries during the summer of 1958 on the Pribilof Islands, Alaska, were opened on September 26. The accepted bid, offered by a New York City firm, specified a unit price of \$1.67 per protein unit.

Although the offering of about 323 tons of meal was smaller than the 374 tons sold in 1957, the return to the Government from this year's sale will exceed the revenue obtained for last year's production. This year's sale totaled about \$35,000 as compared with \$30,780 for 1957 when a unit bid of \$1.25 per protein unit was accepted.



Georges Bank

DIVERS ATTEMPT TO SOLVE RIDDLE OF MIGRATING SAND RIDGES: During a special oceanographic research project, which got under way when the survey ship Hydrographer sailed from Boston on August 4, 1958, oceanographers of the Coast and Geodetic Survey, U. S. Department of Commerce, attempted to unravel the mystery of the apparent migration of underwater sand ridges on Georges Shoal about 120 miles off Cape Cod. The project also included measurements of the currents at the edge of the continental shelf 600 feet beneath the surface.

Recent surveys of Georges Shoal revealed a change in position for the elongated underwater sand ridges that cross the crest of this offshore bank. This apparent movement may be the result of more accurate surveying methods, adopted since the last survey 26 years ago, but Bureau oceanographers are confronted with other information which suggests actual movement of the ridges, some of which are 4 miles long, up to 40 feet high, and rise to within 20 feet of the surface.

Although the strong currents existing in the area (nearly 3 knots) uphold this theory, systematic sampling and visual observations have never been possible. During the survey, two scientists who are experienced aqua-lung divers, will attempt to solve this mystery.

Armed with movie cameras and colored dyes the divers, working in 40 feet of water, planned to inject the colored dye into the submerged ridges and photograph the movement on color film for future study in the office. Their underwater activities also include sediment samplings from specific parts of the ridges.

This research in the shadow of Texas Tower No. 2, is of obvious importance to the Coast and Geodetic Survey which is charged with charting the bottom topography of our coastal waters.

During the second week of the project the 165-foot Hydrographer moved to a position at the edge of the continental shelf (approximately 41°00' N., 66°28' W.) where instruments, suspended from two buoys placed ten

miles apart, were to be used to check the currents on the ocean floor near the edge of the shelf.

There is speculation among oceanographic authorities that currents along the outer edge of this underwater plateau should be stronger than those closer inshore, but actual measurements are lacking. Besides answering an academic question, these ocean bottom current measurements will provide data on an important technical problem now facing this country, the role of bottom currents in transporting and dispersing any atomic contaminants that might find their way into the sea.

Three torpedo-shaped current meters were to be suspended from each buoy. The meters were to be near the surface (15-foot depth), mid-depth, and as close to the bottom as practicable. They were to measure the direction and velocity of the currents' movement at the three levels for both stations. This information is automatically radioed to the Hydrographer which will be standing by between the two stations.

Georges Shoal is the shallow crest of the more extensive Georges Bank whose inshore edge is only 60 miles east of Cape Cod and Nantucket. The bank extends eastward to the edge of the continental shelf where the bottom slopes to a depth of 1,000 fathoms (6,000 feet) in a distance of only 7 miles. It covers an area of about 15,000 square miles inside the line, which is referred to in nautical terminology, as the 100-fathom curve. Georges Bank, which includes about 5,000 square miles of water, shallower than 30 fathoms (180 feet), has become famous as a fishing ground for vessels out of Boston and other New England ports.

The shape of the sand ridge formations, which are the subject of this research, was first determined during a survey of the banks in 1931-32, but their presence was overshadowed by the discovery of several submarine canyons, 900 to 2,600 feet deep, along the eastern fringe of Georges Bank.

The ship Hydrographer is no newcomer to the Georges Bank area since it took part in the 1931-32 survey and in 1957 it began a resurvey of the area.



Great Lakes Fishery Investigations

LAKE SUPERIOR FISHERY SURVEY CONTINUED (M/V Siscowet Cruise 5): Studies were conducted in the Isle Royale area of Lake Superior by the U. S. Bureau of Commercial Fisheries research vessel Siscowet during Cruise 5, between August 18-27, 1958. Stations were established at (1) Rainbow Cove, (2) north of Thompson's Island, (3) Siskiwit Bay, (4) southeast of Menagerie Island, (5) south of Mott Island, (6) northeast of Gull Island, and (7) in Amygdaloid Channel.

Gill nets with graded mesh sizes from 1 to 6 inches were set at each station. Water temperature, bottom, and plankton samples were also taken. Because of rocky and uneven bottom, trawling was attempted only in Siskiwit Bay and Amygdaloid Channel.

One 15-minute trawl tow in Siskiwit Bay took about 150 pygmy whitefish in 100-115 feet of water. The only other fish caught were 12 slimy muddlers. Two 15-minute tows made in Amygdaloid Channel took only 6 slimy muddlers.

Catches in the gill nets varied within the location and depth of the set. The set made in Rainbow Cove 2-6 fathoms of water took 66 menominee whitefish, 47 longnose suckers, 4 lake trout, 7 herring, and 3 burbot. Three nets set north of Thompson's Island took 45 lake trout, 14 herring, and 6 chubs. Four nets in Siskiwit Bay at depths of 43-45 fathoms yielded 146 chubs and 17 lake trout. Four nets off Menagerie Island in 62-86 fathoms of water took 104 chubs and 3 siscowets (Salvelinus namaycush siscowet). With a large sample of chubs it was possible to make positive identification of the three species--Leucichthys hoyi, L. kiyi, and L. zenithicus. Hoyi were taken at depths from 25-70 fathoms. Kiyi were taken at depths greater than 42 fathoms. They were most abundant in the deepest net set at 78 fathoms. Zenithicus were taken from depths of 26-78 fathoms but were most common in the deeper nets.

Nine gill nets set south of Mott Island took 431 chubs (262 L. zenithicus, 105 L. kiyi, and 64 L. hoyi) and 3 lake trout. A gang of 10 nets set northeast of Gull Island were on an extremely uneven bottom. Depths varied in the set from 7-42 fathoms, with one net covering a depth range of 17 fathoms. This gang took 77 lake trout, 39 chubs (35 L. hoyi, 4 L. kiyi), 11 herring, and 7 burbot. Three nets set in Amygdaloid Channel and left two nights because of high winds took 141 herring, 16 longnose suckers, 14 lake trout, and 9 burbot. An additional set was made north of Thompson's Island for chubs. Lake trout made up the larger percentage of the catch.

Bathythermograph casts were made from the Apostle Islands to Isle Royale. The surface temperature 10 miles northeast of Outer Island was 61.2° F. and from there it dropped continuously over the entire distance to Isle Royale where it reached 54.7° F. Temperatures below 30 feet were consistently 39°-40° F.

Commercial fishermen in the Isle Royale area reported schools of herring near the surface throughout the summer whereas this situation has not occurred in waters adjacent to the Apostle Islands. The fact that surface temperatures are higher in the Apostle Island region may account for the lack of surface schools of herring during the summer.

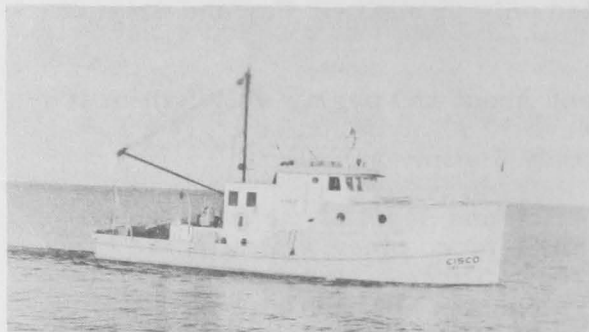
Bottom samples in the Isle Royale area showed mainly bed rock or silty bottom types. Few bottom organisms were found.

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SURVEY OF FISH POPULATIONS IN WESTERN BASIN OF LAKE ERIE CONTINUED (M/V Cisco Cruise 9): Otter trawling in 9 areas in the western basin of Lake Erie and one area in the central basin off Lorain, Ohio, was continued by the U. S. Bureau of Commercial Fisheries research

vessel Cisco from September 9-22, 1958. Adult yellow perch and sheepshead continued to predominate among the larger fish in the catches. Young-of-the-year of yellow perch, alewife, gizzard shad, sheepshead, and white bass were common to abundant in most of the catches. The young fish had at-

tained the following approximate average total lengths in western Lake Erie: yellow perch, 3.7"; alewife, 3.9"; gizzard shad, 4.0"; sheepshead, 3.8"; white bass, 3.2". The latter two species, however, had wide length ranges. Smelt fry averaged about 2.6". Other species taken commonly were carp, emerald shiner, spottail shiner, and troutperch. Caught only occasionally were mooneye (only 1), adult smelt, white sucker, goldfish, silver chub, channel catfish (one large catch near South Bass Island), brown bullhead, stonecat, burbot, white bass adults, yellow pike (walleye), logperch, and fry of white crappie and black crappie.



M/V *Cisco*, research vessel of the Service's Great Lakes Fisheries Investigation.

Of special interest were changes in fish stocks and environmental conditions at the station off Lorain, Ohio, in the central basin. During the previous several cruises there has been a sharp thermocline just off the 10-fathom bottom with a scarcity of oxygen below the thermocline. Fish catches have been extremely small, consisting only of a few smelt, yellow perch, and sheepshead. When the station was visited during this cruise, however, the thermocline was not present, oxygen was plentiful at the bottom, and perch and fry of white bass and alewives were taken in very large numbers. Several other species were also taken in less quantity.

In a special study to obtain information regarding time of feeding of yellow perch, sheepshead, spottail shiners, and troutperch, trawl hauls were made east of South Bass Island at 8:30 a.m., 12:00 noon, 3:30 p.m., and 10:00 p.m. The spottail shiners and troutperch were preserved for future examination, but the yellow perch and sheepshead stomachs were examined aboard the *Cisco*. The percentage of stomachs of yellow perch older than yearlings containing food at the various times were as follows: 8:30 a.m., 47 percent; 12:00 noon, 68 percent; 3:30 p.m., 54 percent; 10:00 p.m., 39 percent. Thus the indications are that during the study period the yellow perch feed mostly during the morning. The same was true of yearling yellow perch, but to a lesser degree. Most all young-of-the-year yellow perch had full stomachs in all collections. No definite changes were noted in the sheepshead stomachs.

Nylon gill nets of several mesh sizes were set southeast of Kelly's Island in 6½ fathoms, southwest of the Detroit River Light in 3 fathoms, and just north of the Monroe entrance channel in 3 fathoms. All nets were set so that their float lines were 6 feet below the surface. The catch off Kelly's Island was largely gizzard shad (61 weighing 50 pounds in 300 feet of 2½-inch mesh). Three yellow pike and little else were taken off the Detroit River Light. The set off Monroe, which contained 600 feet each of 2½- and 3½-inch mesh, caught 80 perch, 17 yellow pike, 31 carp, 22 gizzard shad, and a few sheepshead, alewives, goldfish, and channel catfish.

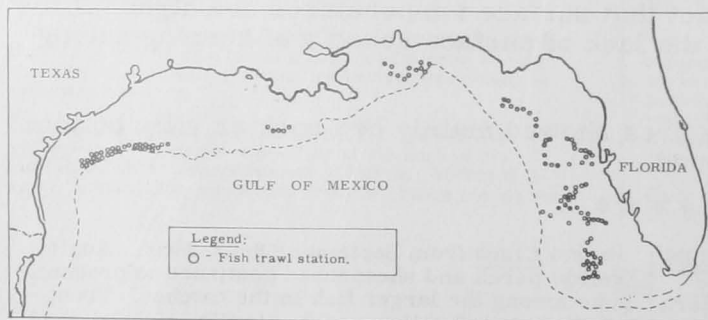
Shore seining operations were carried out in one area near Sandusky, Ohio, and two areas near Monroe, Mich. Catches consisted mostly of young of the year of several species.

The water in Lake Erie continued to cool very slowly. Surface temperatures ranged from 18.4° to 21.3° C. (65.1° to 70.3° F.). There was no thermal stratification at any location visited.



Gulf Exploratory Fishery Program

DISTRIBUTION AND AVAILABILITY OF BOTTOM FISH INSIDE 100-FATHOM CURVE OF NORTHERN GULF OF MEXICO RESURVEYED (M/V Silver Bay Cruise 11): To gain further information on the distribution and availability of bottom fish (primarily snapper and grouper) to modified otter-trawl gear was the principal objective of a 28-day exploratory bottom-trawling trip of the M/V *Silver Bay*. This vessel, chartered by the U. S. Bureau of Commercial Fisheries for exploratory



M/V *Silver Bay* Cruise 11 (Aug. 30-Sept. 28, 1958).

work, returned to Pascagoula, Miss., on September 29, 1958. Fishing was conducted on the Continental Shelf of the northern Gulf of Mexico.

A total of 136 trawling stations were made between the Dry Tortugas and Freeport, Tex., in depths ranging from 8 to 90 fathoms, using a 4½" mesh nylon fish trawl equipped with 70 feet of rollers and standard V-D rig.

The first half of the trip (August 30-September 13) was directed toward exploration of the Continental Shelf adjacent to the Florida west coast between Cape San Blas and the Dry Tortugas. In this area 78 trawling stations were made at depths of 8 to 90 fathoms. Catches of snapper, grouper, etc., were generally poor with individual catches of 0 to 200 pounds of snapper and 0 to 400 pounds of grouper per one-hour tow. The total catch for this area was 1,697 pounds of grouper (five species), and 1,298 pounds of snapper (seven species). Moderate catches of noncommercial fish (predominantly pinfish and grunts) resulted from all tows within the 50-fathom curve with a pronounced reduction in catch of all species beyond 50 fathoms. No difficulty was experienced in trawling over bottom which had previously been considered untrawlable due to prevalence of loggerhead sponge and coral formations.

Surface schools of unidentified tuna and sardine-like fish were observed daily throughout this period.

The primary objective of the second half of the cruise (September 14-September 19) was to obtain additional information on the seasonal availability of snappers in the north and northwest Gulf.

A total of 58 tows were made between Cape San Blas and Freeport, Tex., in depths ranging from 20 to 56 fathoms. Individual catches ranged from 0 to 175 pounds of red snapper. Total catch for this area was 1,699 pounds of red snapper. Best fishing was again confined to the 40-50 fathom depth range south of Galveston, Tex., where the fish were noticeably larger, averaging 17 pounds each.

Catches from the second phase of the trip were generally poorer than those obtained from previous cruises, in other seasons, on these same grounds.

Moderate amounts of noncommercial fish, primarily porgies and small butterfish, were caught in all tows. Numerous subsurface schools were observed daily on the vessel's fish finder, and were tentatively identified as chub mackerel, scad, and round herring.

Samples of various species of food and trash fish were collected for laboratory study by the Bureau's Technological Section.

Note: Also see Commercial Fisheries Review, April 1958, p. 27, and June 1958, p. 30.

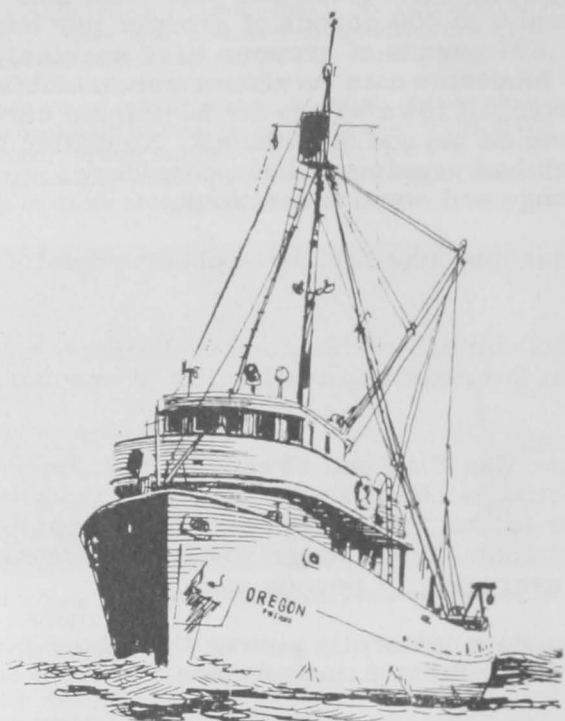
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EXPLORATORY SHRIMP FISHING OFF NORTHEAST COAST OF SOUTH AMERICA (M/V Oregon Cruise 53): Large pink shrimp were found over extensive stretches of the northeast coast of South America by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon during a cruise from August 15-October 14, 1958. But catches of brown shrimp in the same area were spotty.

The cruise was planned to obtain more detailed fishing information on pink shrimp (Penaeus duorarum) and brown shrimp (P. braziliensis), which were observed over wide areas off the Guianas during cruise 47 in November 1957. A total of 178 40-foot trawl drags were made between the north coast of Trinidad and off Cayenne, French Guiana, chiefly in depths of 20 to 40 fathoms.

Shrimp catches of commercial interest were located in three general areas (see chart). Area "A," centered off Chandler Point, British Guiana, yielded night-time catches up to 500 pounds of whole shrimp, consisting of 65 percent 26-30 count (headless) brown shrimp, 31 percent 16-20 count, and 9 percent 50-60 count (headless) pink shrimp, using a twin 40-foot trawling rig. This trawling area appeared to be quite extensive, and the exploratory coverage was not sufficient to either delineate the best grounds or provide good potential production estimates. In 30-35

fathoms, the catches were 98 percent pink shrimp and 2 percent brown shrimp. In 29 fathoms, the two species were present in equal quantities. In 28 fathoms, the catches were exclusively browns.



Service's exploratory fishing vessel, M/V Oregon.

All catches contained less than 10 pounds of heads-on shrimp.

One drag, made in 185-200 fathoms off northern Trinidad, caught 75 pounds of 15-count (headless) royal-red shrimp (Hy-menopenaeus robustus), 150 pounds of 50-count Penaeus megalops, 40 pounds of 30-40 count striped shrimp (Plesionika), and 5 pounds of large red Plesiopenaeus edwardsianus.

Good signs of red and lane snapper were observed in 20-50 fathoms east of the Orinoco River. Several catches contained from 15 to 25 snappers, averaging $\frac{1}{2}$ to 1 pound each. Occasionally, individual red snappers of 15-20 pounds were caught. Other drags caught large individuals of white sea trout, croakers, porgies, cobia, bluefish, and grouper.

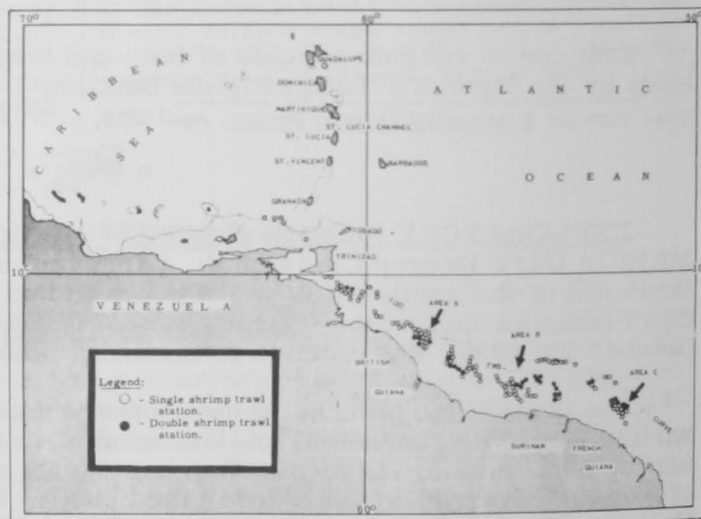
Surface schools were, for the most part, Spanish mackerel, which appeared quite commonly off eastern British Guiana. Several, weighing 1 to 2.5 pounds each, were caught in the shrimp trawls in the 35-fathom range. One individual was in ripe spawning condition.

Area "B" provided the best catches of the trip. One night of twin-trawling in 29-31 fathoms yielded 488 pounds, and one night of twin trawling in 27-29 fathoms yielded 576 pounds of 16-20 count (headless) pink shrimp. Trawling in the 14-25 fathoms range yielded nightly catches of 171 to 303 pounds (headless) of mixed pink and brown shrimp and sea bobs (Xiphopenaeus).

Trawling in Area "C" yielded individual catches of 15-count (headless) pink shrimp of up to 100 pounds (110-minute tow), with a 40-foot trawl, but a 4- to 5-knot current rendered many drags ineffective.

Bottom conditions were found quite suitable for shrimp trawling in all three areas. Although minor tear-ups were not infrequent, no gear was lost due to bad bottom anywhere east of Trinidad.

Several drags were made in 100-150 fathoms, off Surinam and French Guiana, in an attempt to locate concentrations of a reddish-brown shrimp (Solenocera vioscai).



M/V Oregon Cruise No. 53 (Aug. 15 to Oct. 4, 1958).



National Fish Week

FISH COOKERY STRESSED DURING FISH 'N' SEAFOOD WEEK: During the annual fall Fish 'n' Seafood Week, which was held from October 6 to 12, 1958, the proper method of cooking fish and shellfish was stressed. Properly prepared fish and shellfish are delicious, nutritious, and add variety to the menu.

The home economists of the U. S. Bureau of Commercial Fisheries gave 34 fish-cookery demonstrations for TV and 2 for the First Annual Food-O-Rama in Miami, Fla. In these demonstrations, 1 to 6 recipes, depending on the time, were prepared for the viewers or audiences. These recipes featured local fishery products, whenever possible, including fresh or frozen fish, fresh or frozen shellfish, and canned fishery products.

The recipes prepared in all of these demonstrations are included in the special Fish 'n' Seafood Week publication Tips on Cooking Fish and Shellfish, copies of which are made available to the audiences and TV viewers upon request.

In addition to the above activities for Fish 'n' Seafood Week, the home economists participated in the September meeting of the Washington Restaurant Association where "Standards, Inspection, and Certification of Fishery Products" were discussed. Also they appeared on six radio programs and one home economist attended a special promotional dinner for food editors in Boston, Mass., on October 2, 1958.

In all the home economists had Fish 'n' Seafood Week activities scheduled in 19 States and the District of Columbia.

* * * * *

RADIO AND TELEVISION FEATURED "FISH 'N' SEAFOOD PARADE" ON PUBLIC SERVICE PROGRAMS: The U. S. Bureau of Commercial Fisheries arranged many public-service appearances of staff Home Economists and Fishery Marketing Specialists as part of its participation in the 1958 "Fish 'n' Seafood Parade." Industry members appeared on many of the programs with Bureau personnel.



North Atlantic Fisheries Exploration and Gear Research

SURF-CLAM EXPLORATION IN NANTUCKET SOUND AREA BY M/V "SUNAPEE": A survey of hard-shell and surf-clam resources in Nantucket Sound and adjacent areas was begun by the U. S. Bureau of Commercial Fisheries chartered vessel Sunapee on June 2, 1958. The surf-clam, *Mactra solidissima*, phase of the Bureau's jet-dredging exploratory survey was initiated on August 4, 1958, in the waters south of Martha's Vineyard. Depths from 38-53 feet, in the area from longitude 70°39' W., east to Muskeget Channel, were first explored by the Sunapee. Commercial concentrations were not found in this area due to hard sand, rocks, and clay bottom.

Dredging operations were then moved to the area longitude 70°03' W., south of Nantucket Island, west to longitude 70°15' W., in depths of from 34-78 feet. Surf clams in this area were not found in commercial quantities. Considerable dead shells were present, and the bottom was found to be of hard sand.

The most encouraging area for commercial production of surf clams was found from longitude 70°15' W., west to Muskeget Channel in depths from 43-54 feet, hav-

ing a bottom of brown sand and some gravel. The best tows were within the following Loran Station 1H-4 and 1H-5 coordinates: 1H4-6330, 1H4-6321, and 1H5-1222, 1H5-1228.



Fig. 1 - Dredging equipment being hauled in aboard the U. S. Bureau of Commercial Fisheries chartered vessel Sunapee.

resulting swells, made fishing operations very difficult, due to the exposed position of the fishing grounds.

Some changes in the gear were made to allow for the difference in fishing conditions in Nantucket Sound for hard clams, Venus mercenaria, versus offshore for surf clams: (1) the cutting blade was lowered to 8 inches from the $5\frac{1}{2}$ inches previously used in the Nantucket Sound hard-shell clam survey; (2) an additional 50 feet of 5-inch hose was added because of the increase in water depth; (3) the towing line was lengthened; and (4) water pressures on the jet manifold were adjusted to the range from 75-90 pounds with 80 pounds giving the best results.

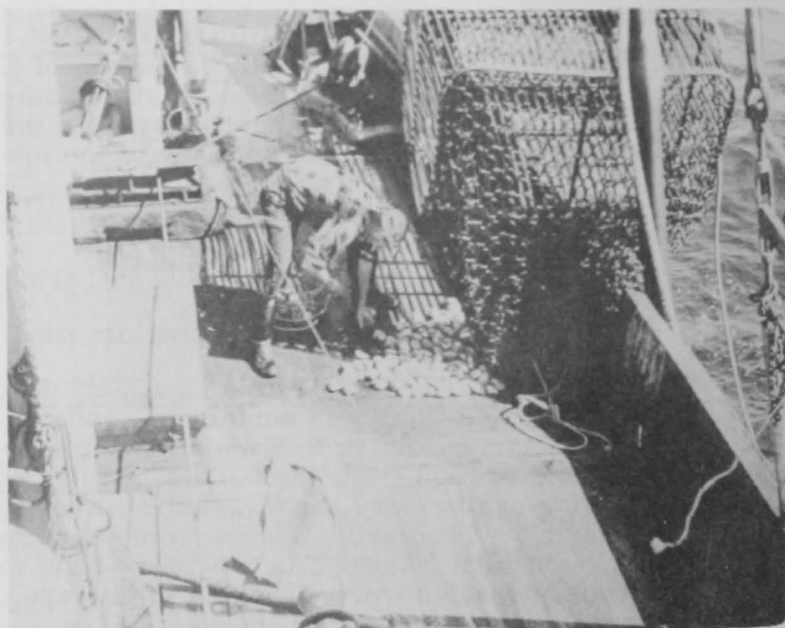


Fig. 2 - Sorting clams dredged by the M/V Sunapee.

Bottom water temperatures ranged from a high of 71° F. to a low of 60° F., and surface temperatures ranged from a high of 71° F. to a low of 64° F.

Bottom types were found to consist mainly of sand with some mud, with the exception of the area west of longitude 70°39' W., which has a mixture of sand, rocks, and clay.

Tows of 10-15 minute duration were made in a SSW direction and produced from 9-16 bushels of surf clams, having an average size of 160 millimeters (6.3 inches), indicating a very good commercial potential.

Some mahogany quahogs, Artica islandica, were found on both sides of Muskeget Channel in depths of 41-48 feet, on a mixture of mud and sand.

Weather conditions and the state of the sea south of Nantucket Sound were found to be very important factors in the jet-dredging operation. Any amount of wind from the east, south or west, and the

The survey was concluded on August 31, 1958, with the termination of the charter contract, and the vessel Sunapee was returned to its owner at New Bedford, Mass.



North Atlantic Fisheries Investigations

SELECTIVITY OF SCALLOP DREDGES AND LIFE HISTORY STUDIES CONTINUED (M/V Dartmouth Cruise 1): A three-day cruise (September 9-16, 1958) of the U. S. Bureau of Commercial Fisheries research vessel Dartmouth was conducted on Georges Bank to compare selectivity of scallop dredges made of 3, 3½, and 4-inch rings (inside diameter) with a dredge made up of 2-inch rings; census scallop stocks; test metered roller; and make spawning observations. The metered roller was used to measure the distance the dredge travels over the ocean bottom.

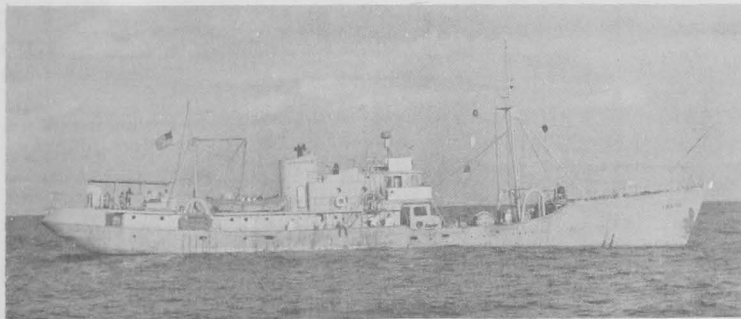
Forty-six tows were made, of which 18 were with a metered roller. Scallops obtained in each tow were measured. Spawning and hydrographic observations were made in each work area. Drift bottles were released periodically. Tows were made in the area in which scallops were tagged and released on a previous cruise.

Six tagged scallops were recovered. Length-frequency data totaling 32,400 scallops were collected from 4 important fishing localities. The data obtained from the metered roller are to be checked for accuracy.

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VERTICAL DISTRIBUTION OF OCEAN PERCH STUDIED ON GEORGES BANK AND IN GULF OF MAINE (M/V Albatross III Cruise 117): This cruise of the U. S. Bureau of Commercial Fisheries research vessel Albatross III (completed September 16, 1958) was made to investigate the vertical distribution of ocean perch on the southern edge of Georges Bank and in the Southwestern Gulf of Maine; and run an International Geophysical Year hydrographic section across Georges Bank.

Six tows of the No. 41 trawl and 9 tows of the Isaacs-Kidd midwater trawl were made in 200 fathoms of water near Corsair Canyon.



Service's research vessel Albatross III.

A section of 19 hydrographic stations were occupied from off Cape Sable, Nova Scotia, southwesterly across Georges Bank to the edge of the Continental Shelf. Twenty-two tows of the Isaacs-Kidd midwater trawl were made at 4 stations in the southwest part of the Gulf of Maine.

A sample of large 35-42 centimeter (13.8-16.5 inches) ocean perch was collected near Corsair Canyon. Twenty baby haddock were taken from the bottom in 200 fathoms of water. The hydrographic section was run without trouble. Twenty-nine bathythermograph casts were made and 136 water samples collected. Small numbers of ocean perch and haddock and large numbers of postlarval whiting were collected in midwater at each of the 4 stations fished in the Southwest Gulf of Maine.



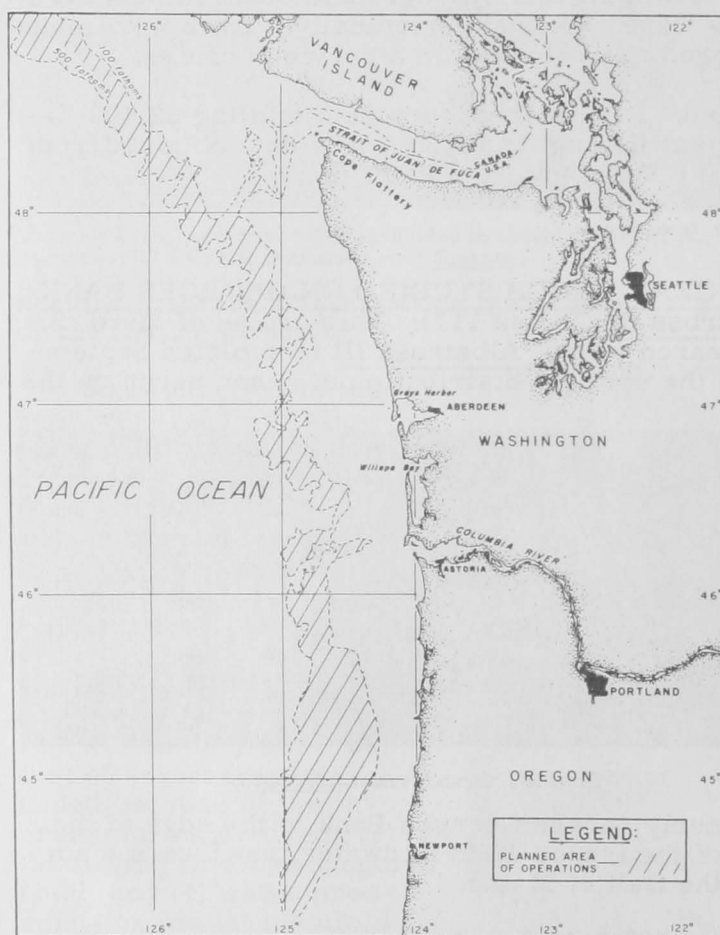
North Atlantic Herring Research

HERRING LARVAE SURVEY SCHEDULED FOR GEORGES BANK AND GULF OF MAINE: The U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware was scheduled to depart from East Boston, Mass., on October 6, 1958, to conduct a two-week offshore plankton survey in cooperation with the Bureau's North Atlantic Herring Investigations.

Objective of the operation is to measure the abundance and distribution of herring larvae in the Gulf of Maine and Georges Bank areas. Also, the temperature and general circulation pattern of water in the Gulf of Maine and Georges Bank will be investigated.



North Pacific Exploratory Fishery Program



M/V John N. Cobb Cruise 40 (Oct. -Nov. 1958), planned area of operations.

SHRIMP SURVEY IN DEEP WATER OFF WASHINGTON-OREGON COASTS PLANNED (M/V John N. Cobb Cruise 40): Exploratory shrimp fishing off the coasts of Oregon and Washington was planned for the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb from October 6 to November 7, 1958.

Exploratory fishing operations were to be confined to the offshore waters between Yaquina Bay, Oreg., and Cape Flattery, Wash., at depths between 100 and 500 fathoms--600 to 3,000 feet.

The objectives of this cruise were to determine the distribution, varieties, and abundance of shrimp in deep water, and assess whether commercial quantities are available at these depths. Oceanographic data were to be collected to evaluate physical and chemical factors which may influence shrimp distribution.

Standard commercial Gulf-of-Mexico-type flat shrimp trawls were to be used to conduct the fishing activities.

Oregon

AGREEMENT REACHED ON BROWNLEE DAM FISH PROBLEMS: Agreement by representatives of Federal and State fishery agencies and the Idaho Power Company on matters pertaining to fishery facilities at Brownlee and Oxbow Dams on the Snake River, Ore., was announced on September 19, 1958, by the U. S. Department of the Interior.

The announcement was made after an informal meeting in Washington, D. C., among representatives of the U. S. Fish and Wildlife Service, the Oregon Fish Commission, the Oregon Water Resources Board, the Idaho Power Company, and staff members of the Federal Power Commission (FPC).

A synopsis of the matters agreed upon follows:

The fishery agencies commended the Idaho Power Company for its efforts in handling emergencies which arose as the result of erosion damage to the fish passage facilities at the Oxbow Dam site, downriver from Brownlee. The Power Company has in operation emergency facilities designed to handle the fall run of chinook salmon now proceeding up the Snake River. Special entrapment facilities have been installed, and the fish are being transported by trucks to the waters above Brownlee Dam to continue their annual migrations.

The Idaho Power Company stated that it is assuming responsibility for the operation and maintenance of the fish passage and fish handling facilities at the project.

The Company agreed to make an immediate payment of approximately \$75,000 in a lump sum to the Secretary of the Interior for use by the Fish and Wildlife Service and the State Fishery Agencies in the conduct of fish and wildlife studies in accordance with the project license. The Company has already advanced \$175,000 for this purpose. Differences of opinion had arisen about whether certain items of company expense could be considered as part of the \$250,000 to be made available under the license. Clarification of this matter resulted in the agreement on the amount still due for the studies.

The Company agreed to make divers available under the direction of the fishery agencies for the inspection of the Brownlee forebay fishery net and other fishery protective facilities.

All parties agreed that the Idaho Power Company should be permitted to continue operation of its first turbine at Brownlee Dam until October 1, and announcement was made that the FPC has transmitted the necessary order. The original FPC orders relative to the turbines stated that the fish protective facilities should be in operation before the starting of the turbine. Because of labor difficulties these protective facilities were not ready on scheduled time, and the Company has been operating one turbine on agreement with the fishery agencies and under special orders from the FPC. It was agreed that the Company would have the right to test a second turbine before October 1.

The Company announced that it had been informed by the contractors that the protective facilities at Brownlee Dam would be in place September 26, and would be inspected and operating by September 30. The Company also reported that the contractor had informed it that repair of the fish facilities at Oxbow Dam would be completed by September 30.

It was also agreed that the effectiveness of the fish passage facilities would be fully evaluated and that some continuing program in this connection would be neces-

sary. It was not determined whether the Company would carry on the program itself or would furnish the Fishery Agencies the funds for this work.

The Fishery Agencies stated that the \$250,000 made available by the Company through the FPC for research on fishery problems might not be sufficient to complete the task.

The States of Washington, Oregon, and Idaho and the U. S. Fish and Wildlife Service are directly concerned with Columbia River Basin fishery problems. The Service is the coordinating agency.

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BROWNLEE DAM FISH BARRIER INSPECTED BY DIVERS: SCUBA divers were due to dive 120 feet below the surface of the lake behind Brownlee Dam on September 23, 1958, to give final inspection to the fish-net barrier recently placed in operation by a power company, the Director of the Oregon Fish Commission announced on September 22.

Checking of the barrier net by divers will be under the direction of a fishery engineer of Everett, Wash., who serves as consultant to the Commission and other fishery agencies. On inspecting the net before it was lowered into place, the fishery engineer found numerous small defects. The final testing by divers will determine whether these have been satisfactorily repaired.

The "skimmer" net is one-half mile long and 120 feet deep, riding on floats in the forebay waters of Brownlee Dam. It is made of wire and saran mesh with holes small enough to prevent the passage of downstream migrant fingerling salmon and steelhead. They are induced into traps behind the barrier where they are to be siphoned into tank trucks which haul them below Brownlee and Oxbow Dams so they may proceed downriver to the Pacific Ocean.

"Everyone is watching the operation with the greatest of interest," said the Director. "The Snake River runs of adult salmon and steelhead depend on the success of the salvage operations at the damaged Oxbow fish trap. The 'skimmer' device at Brownlee Dam is just as important for the fingerlings as the Oxbow trap is for the spawners. Both must function well to accommodate one of the finest fall king salmon runs in recent times," he said.

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BIOLOGISTS OBSERVE SALMON SALVAGE OPERATIONS AT THE OXBOW DAMSITE: The Oregon State Fisheries Director, revealed on October 2, 1958, that Oregon Fish Commission biologists continued to observe operations and advise the power company on biological aspects of fish-salvage operations at the Oxbow dam-site on the Snake River until passage problems were resolved.

Diversion of the river back through the tunnel above the now-repaired fish trap was scheduled about October 6, 1958. This was expected to influence the fish moving upstream and those which were already present in the Oxbow area.

Biologists were hoping that the thousands of fish then in the area below the Oxbow cofferdam would retreat with the water downstream around the Oxbow to the repaired trap as the attraction water is cut off from the main channel and sent through the diversion tunnel.

If the early-run chinook salmon remained in the pools below the cofferdam, they would have to be trapped and lifted by temporary and makeshift devices to tank trucks waiting to release them into the river above Brownlee Dam.

* * * * *

STATE HATCHERY PROGRAM TO BE EVALUATED: In keeping with the present stepped-up interest in halting the general decline of Pacific Coast salmon runs, the Oregon Fish Commission announced on July 30, 1958, that it will launch a comprehensive evaluation of past and present Commission hatchery activities. The State Fisheries Director said a significant feature of the new program will be a historical review of the Commission's hatchery program, dating back to 1887.

He stated, "In order that the project move as rapidly as possible, the present Director of Fish Culture will be appointed to the newly-created position of consulting analyst, effective August 1. This new assignment will permit the consulting analyst to devote full attention to a topic with which he is thoroughly familiar." The new appointee has been actively employed in all phases of salmon hatchery operations for more than 36 years. He has been in charge of the Fish Commission's hatchery program since 1945.

"Artificial propagation of salmon is the largest single activity in which the Oregon Fish Commission is now engaged," the State Fishery Director pointed out. Almost two-thirds of the Commission's \$5 million biennial budget is directed towards hatchery construction and operation.

He also said it is possible that hatcheries may be the only practical means of preserving particular segments of the region's sizable salmon runs if certain fish-power problems cannot be solved. "Changing stream environments brought about largely by dam construction today pose a serious threat to the future of salmon in the Pacific Northwest. Hatcheries may be the only answer in some situations," the Oregon Fisheries Chief explained.

"On the other hand," he continued, "there are several questions relating to salmon propagation in Oregon that the Commission feels must be answered. He said there have been instances where Fish Commission hatcheries apparently have not come up to expectations due to disease, diet, and other technical problems.

"We hope the proposed study will open up new avenues of approach towards improving the efficiency and economy of salmon hatchery operations," he concluded.



Oysters

LONG ISLAND SOUND HAS GOOD OYSTER SET: There has been an exceptionally good oyster set along the Connecticut coast of Long Island Sound from Norwalk to New Haven, reports the Acting Director of the Bureau of Commercial Fisheries' Milford (Conn.) Laboratory. This represents the first good, general setting in this area since 1945. Previous years of successful reproduction were 1930, 1939, 1940, and 1944.

The sudden appearance of ready-to-set oyster larvae in plankton samples, when previous samples in the same area contained no earlier stages, indicates that the larvae that set in the Bridgeport-Milford-New Haven area are not from local parents but are carried in by currents from other areas. Information concerning the circulation pattern in Long Island Sound and the effect of minor storms is necessary to determine (1) the location of the parents of these young oysters, and (2) where spawning beds should be placed to produce a set in a desired area.

The excellent set of oysters this year could restore the Long Island Sound oyster industry if it were not for the fact that starfish resulting from the successful 1957 year-class are still extremely abundant. Attempts by the industry to remove

starfish from seed oyster beds and to prevent further invasion have been only moderately successful. The oystermen are pessimistic about the chances of saving a significant quantity of this excellent set.

The efficiency of starfish control methods now in use by the industry was evaluated by four biologists using diving apparatus. These direct observations disclosed much new information concerning the behavior of starfish which indicates that control of this predator may be even more difficult than previously believed. Paths through an oyster bed which had been cleared of starfish by dredges or mops became reinfested within half an hour. The movement of the starfish was found to be much more rapid than previously believed because of the fact that they are so easily carried or assisted in their movements by water currents.

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STUDY OF STARFISH PREDATOR PROBLEM IN LONG ISLAND SOUND DEVELOPS PERTINENT DATA: The ability of the starfish to move 6-8 inches a minute is one factor which has made the starfish a serious predator of the Long Island Sound, oyster biologists of the Milford, Conn., Laboratory of the U. S. Bureau of Commercial Fisheries report. Another factor, they pointed out, is that the current starfish population on the oyster grounds is as high as 14 per square yard, or about 3 every 2 square feet.

These two factors have combined to render ineffective much of the equipment used by oystermen to protect their resource from this predator. Final word on the effectiveness of other means of predator control awaits completion of a current study.

The Milford Laboratory has several oyster-research projects under way but a summer "special" was ordered on the starfish menace off Long Island. Four of the Bureau's divers equipped with SCUBA (self-contained underwater breathing apparatus) were used in the study. The divers worked in about 30 feet of water and the following conclusions were reported:

1. The mechanical implements used to protect the oyster beds from the starfish--the suction dredge, the oyster dredge, a turtle dredge, and the starfish mops--do not give the desired protection and only serve to reduce the population to some extent.
2. The dredges clean a path around the oyster bed but within half an hour the starfish from the side have moved in and the path is again filled with the predators.
3. The chemical applicators--quicklime spreaders--are still being observed, but they appear to hold more promise for controlling this predator than do the dredges.
4. The starfish is attached to the bottom, apparently, only when feeding.
5. It is buoyant enough to remain just above the floor of the Sound, moving on very short, tubular legs or feet.
6. The starfish moves on its own power 6-8 inches a minute, with a light current, across the current, or against a current.
7. A strong current naturally will affect the speed of the predator.
8. The highest population found was 681 starfish to 50 square yards.

The SCUBA-equipped divers learned that the mops and dredges are only about 50 percent efficient, having the tendency to push about half of the starfish to one side instead of capturing them. This defect can be remedied to a considerable extent now that it is known. But even with the mechanical equipment working at top efficiency the numbers of starfish present and their ability to move results in the quick reinvasion of a cleaned path.

There are several kinds of dredges, some using the vacuum-cleaner principle and others more or less scooping the starfish from the bottom. The mop is a horizontal bar to which is appended several long-strand cotton mops. As the bar moves across the floor of the Sound the fibers tend to extend upward. The starfish, routed from the bottom by the bar, are caught in the fibers.

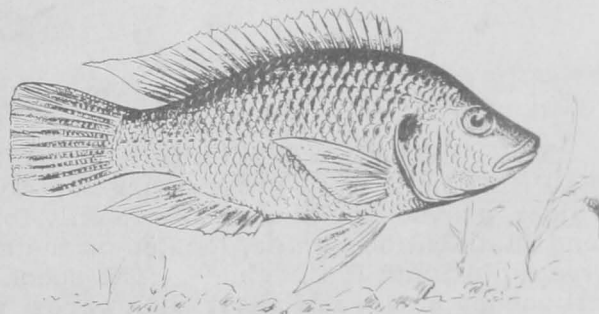
Two types of quicklime spreaders are being observed in action. These operate near the bottom and eject quicklime which reaches the starfish and sets up a condition which destroys the predator.

The reason why starfish periodically "explode" into tremendous populations is not known.



Pacific Oceanic Fishery Investigations

TILAPIA REARING FOR TUNA BAIT SHOWS PROMISE: The experimental tilapia bait-rearing project of the Bureau's Pacific Oceanic Fishery Investigations (POFI) at Paia, Maui, produced some 195,000 fry during August 1958, an amount of fry that when reared to bait size should equal about 195 buckets or scoops of bait. The Maui project was designed to test the economic feasibility of raising tilapia as tuna bait and the production rates to date would indicate that the results of this pilot plant will be favorable. The bait when reared to suitable size is being delivered to commercial tuna vessels fishing from Maui ports, and the results of the utilization of this bait by these vessels are being carefully observed by a POFI scientist.



Tilapia (*Tilapia mossambica*).

While utilization of tilapia bait at sea from this plant has resulted in only a few fishing trips to date, the catches made suggest that this live bait may be converted to tuna at the rate of 50 pounds of tuna to 1 pound of bait. This high conversion rate stems in part from the hardiness of the tilapia, since unlike most wild live bait fishes they will live indefinitely in the wells, permitting the fishermen to use them on schools of their choice. In contrast, wild bait fish, at least the species available in Hawaii, will not live long in a bait well, and fishermen are therefore under pressure to use their bait on any school encountered. If none are found, the bait then dies in a few days. The hardiness of tilapia gives promise of eventual full utilization of mid-ocean tunas as well as freeing fishermen from the vagaries of capturing and holding wild bait-fish species.

* * * * *

TUNA TAGGING PROGRAM PROVIDES INFORMATION ON GROWTH RATES:

There were two albacore tag recoveries reported to the U. S. Bureau of Commercial Fisheries Pacific Oceanic Fishery Investigations Laboratory during August. These were the 13th and 14th recoveries from a total of 1,201 albacore tagged and released

in the North Pacific between January 1954 and July 1958. The recovery rate now stands at 1.2 percent. The 13th recovery was of a fish tagged last summer, July 16, 1957, by the Bureau's M/V Hugh M. Smith at 44°47' N. latitude, 130°04' W. longitude. It was retaken by the M/V Bernard Pedro, a San Diego, Calif., albacore boat, at about 32° N. latitude, 122° W. longitude, on August 22, 1958. This fish grew at the rate of about 8 pounds a year. The 14th recovery, also by a San Diego boat, the M/V Paul C., was made on August 23, 1958, at 32°15' N., 122°30' W. This fish had been tagged by the Bureau's M/V Charles H. Gilbert on November 14, 1956, at 38° N. 128°25' W. This albacore grew at a computed rate of about 11 pounds a year. There have been a sufficient number of tag recoveries to make reasonably accurate estimates possible of albacore growth. These estimates indicate that the albacore probably grows at a less rapid rate than some of the other tunas for which growth rates are known, such as the skipjack and the yellowfin tuna.

The skipjack tagging program conducted in Hawaiian waters has been an outstandingly successful one. During this month some 13 tags were recovered, of which all but 2 were released during the year. The two long-term recoveries were fish released during the first week of September 1957 off Hilo, Hawaii, and were recovered off the Kona coast of Hawaii after 11 and 12 months at liberty. Based on an average weight of 4 pounds at the time of release, these fish had increased in weight 0.9 and 0.7 pounds a month, respectively. Since May 1957 a total of 12,684 skipjack have been tagged, of which 1,226 have been recovered for an over-all recovery rate of 9.7 percent. The longest period between release and recovery has been 1 year, and the greatest distance traveled has been 330 miles from Hawaii to Niihau. The principal value of this tagging program has been in the information it has provided on the growth rate of skipjack since all tags were put on fish in Hawaiian waters and were recovered from fish in Hawaiian waters. Aside from local movements within the Hawaiian archipelago this tagging program has not provided much information on migration of skipjack in the central Pacific.



Philadelphia

NEW WHOLESALE MARKET FOR FISH UNDER CONSTRUCTION IN PHILADELPHIA: With work progressing rapidly on the initial wholesale produce market project, ground was broken late in July for a second section of the market at the new Food Distribution Center, located on the east side of Lawrence Street above Pattison Avenue, in South Philadelphia. The second unit will be the new Seafood Market. It will occupy an area of about eight acres, will cost a little over \$1 million, and will house 25 individual fishery stores which have been leased to the Wholesale Seafood Merchants Association of Philadelphia. The Association has in turn subleased the stores to individual wholesale fishery dealers. This new market will provide up-to-date facilities for receiving, shipping, and wholesaling fishery products in Philadelphia.



Sardines

EARLY SEASON LANDINGS IN CALIFORNIA WATERS BETTER THIS YEAR: Reports that Monterey Bay, Calif., once again is yielding enough sardines to herald a return to "the good old days" are encouraging, but brought a note of caution from the California Department of Fish and Game.

The Marine Resources Chief for the Department said that during August (first month of the open season north of Pt. Arguello) Monterey Bay produced only 500

tons of sardines--better than the almost zero mark of the last decade, but much less than the 37,000 tons in August 1945, the last good year of the California sardine fishery.

Up to September 12, he pointed out, Monterey Bay itself has been yielding little or no tonnage and the processing plants along "Cannery Row" have had to depend on the 200-400 tons a day trucked in from Avila and Morro Bay. By contrast, in 1945 the September tonnage from Monterey waters alone reached a peak of 49,000 tons--then dropped off to the vanishing point in later years.

This year's August tonnage handled by Monterey canners totaled 4,200 tons, with Morro Bay and San Simeon waters producing most of it. This figure, the Marine Resources Chief explained, was little more than a one-day catch when sardines were plentiful in Central California.

"In former years, too," he said, "canners would not accept the small fish they're glad to get now. This year's sardine catch has been averaging a bit over eight inches (mostly year-old fish).

"A normal fish population includes many age groups so that one or two poor spawning years would not greatly harm the fishery." "Now, however," he reported, "the sardines need a chance to rebuild their numbers in Central and Northern California waters without being exploited the moment they show signs of revival.

"There is some concern among informed fishermen and canners," he warned, "that by heavily harvesting the year-old sardines we may be 'killing the goose' before it has a chance to lay its golden egg."



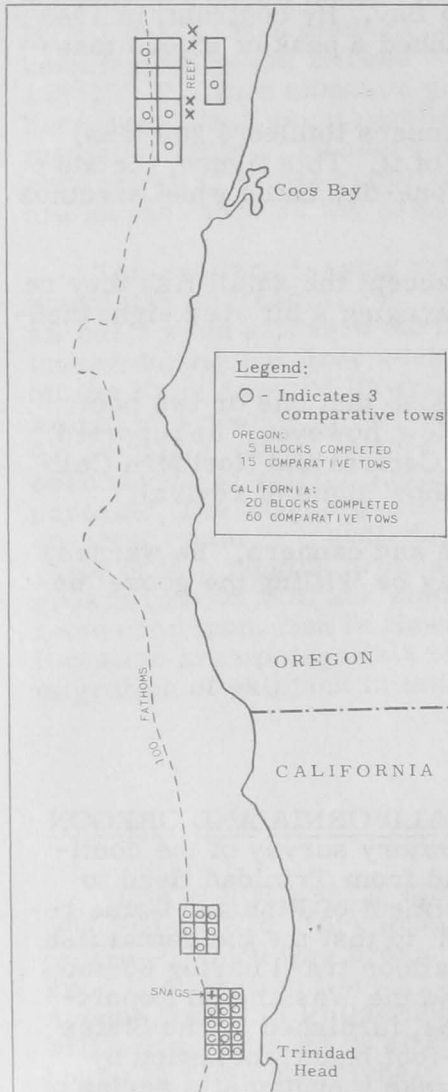
Shrimp

THREE TYPES OF SHRIMP NETS TESTED OFF CALIFORNIA AND OREGON COASTS (M/V N. B. Scofield Cruise 58-S-4): An exploratory survey of the continental shelf from Coos Bay to Winchester Bay, Ore., and from Trinidad Head to Redding Rock, Calif., was made by the California Department of Fish and Game research vessel N. B. Scofield from June 16-July 19, 1958, to test the incidental fish catch made with three types of shrimp nets: (1) semi-balloon trawl having 60-foot head rope, furnished by the Oregon Fish Commission and the Washington Department of Fisheries; (2) flat trawl having 40-foot head rope, furnished by the States of Oregon and Washington; and (3) beam trawl having 20-foot beam, furnished by California. Other objectives of the cruise were: (1) to take a systematic series of bathythermograph casts coincident with trawling; (2) collect live ocean shrimp, Pandalus jordani, for observation and experimentation; and (3) collect specimens as requested by other departmental investigations.

Areas of Study: Two general study areas were established. The initial area was situated northwest of Coos Bay, Ore. This site was chosen for two reasons: (1) the Coos Bay area approximated the geographical center of distribution of the ocean shrimp (P. jordani); and (2) this region represented a centrally-located working area for the three state agencies of Washington, Oregon, and California participating in the study of the ocean shrimp fishing-gear problem. The second study area was situated off Trinidad Head, Calif.

Each area of study was divided into a series of numbered blocks which were constructed to include an area inshore of the shrimp grounds, the shrimp grounds, and an offshore area.

The Oregon shrimp grounds were divided into a series of 10 blocks, each five nautical miles square. The California shrimp area was divided into 24 blocks, each $2\frac{1}{2}$ nautical miles square. The block plan was designed to facilitate assessment of the most diverse shrimp-fish relationships as possible. It was not anticipated nor intended that shrimp would be captured in every tow.



M/V N. B. Scofield Cruise 58-S-4
(June 16-July 19, 1958).

Gear Operations: For the net tests to be considered comparable the following criteria were used: (1) within each block area the fishing sequence for the three types of shrimp nets was randomly selected; (2) within each block all three units of gear were fished on the same date; (3) the fishing sequence for the blocks within a general study area was determined by random selection; and (4) the course heading, depth, and distance each net traveled was reasonably approximated.

Catch Records: The catch of each tow was segregated by species. Weights were then taken of three general groups--shrimp, fish, and miscellaneous invertebrates. Fish specimens were enumerated and measured. Samples of shrimp were taken for study ashore.

Work Summary: A total of 83 tows was made, 8 of which were considered not comparable; thus, there were 25 comparable tows made with each type of shrimp gear.

Comparative tows were made at depths ranging from 36 to 110 fathoms.

Over 90 miles of ocean bottom was covered in the 83 thirty-minute tows. Over 48,000 individual fish were captured and of this number 23,700 were measured. Of the total number of fish taken, 18,750 were slender sole, *Lyopsetta exilis*, a commercially unimportant species.

Seventy-six of the 83 tows contained shrimp. The calculated catch per hour ranged from zero to 640 pounds. Seventeen sample tows captured shrimp in quantities greater than 100 pounds per 30 minutes of fishing time.

Preliminary examination of the data indicates that the catch composition of the three gear types was similar with the exception of groundfish (rockfish, *Sebastes* sp., hake, *Merluccius productus*, and sablefish, *Anoplopoma fimbria*). The semiballoon trawl captured a higher proportion of these fish than did either of the other two types of gear, probably because the mouth of the semiballoon trawl had a greater fishing height and thus captured more of the fish that lie just above the bottom.

Five of the 10 Coos Bay shrimp area blocks were completed. Twenty of the 24 California blocks were fished.

Failure of the bathythermograph to record prevented completion of the bottom temperature series.

Live shrimp and fish species were delivered to Steinhart Aquarium, Calif. Academy of Sciences.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JULY-SEPTEMBER 1958: Oyster Research: Seed oyster studies were an important part of the activities during this year's third quarter at the Bears Bluff Laboratories, Wadmalaw Island, S. C. The value of different types of cultch as collectors of seed oysters was reconsidered. Longevity of wire netting used in troughs and seed oyster baskets was compared with cotton webbing.

An experimental shipment of finger-nail size young oysters was made to an oyster firm of Long Island, N. Y. These seed were shipped in a truck to New York and despite the mid-July heat plus an unscheduled delay arrived in good condition.

Another experimental shipment of seed was made to St. Thomas in the Virgin Islands. Excellent cooperation of a domestic airline made it possible to send the young oysters in a pressurized cabin. They withstood the shipment in good condition but unfortunately did not long survive predation in West Indian waters from oyster drills. A second shipment of seed sent as air freight in an unpressurized compartment did not survive transportation.

Still other South Carolina seed oysters were shipped to the Chesapeake Biological Laboratory of Maryland where a biologist will recheck his earlier conclusions that South Carolina seed thrive best in northern waters when shipped early in the season.

Under the impetus of the Hughes Foundation Grant, work is continuing on the pond cultivation of oysters. Plantings of seed under control and experimental conditions were carried out. The constant flight to control blue crabs and mud crabs--the most serious deterrent to pond cultivation--is never-ending. A careful survey of various diseases in pond-cultivated oysters was made during a visit to the Laboratories by an outstanding authority on oyster diseases. With his advice and cooperation new experiments in the ponds are being conducted which may shed light on the age-old question as to why oysters in South Carolina, Georgia, and northeastern Florida are almost entirely intertidal.

In August leased and "wild" oyster beds in the Toogoodoo, Leadenwah, and Wadmalaw Rivers were inspected with an oyster biologist from British Columbia. The Canadian biologist, with years of experience in growing and importing seed oysters from Japan to the northwest coast of North America, expressed the opinion that South Carolina had a great potential as a seed-oyster producing State.

Shrimp Research: Offshore exploratory work was limited during the quarter. However, one cruise made in July was very productive of rock shrimp from 2 to 6 inches in length with a modal length of 3.5 inches. Along the 20-fathom curve a series of 4 drags during the night of July 10 and 11 yielded 25 pounds of rock shrimp per 30-minute drag with a 20-foot net. Had full size commercial gear been available and drags made for one

hour or so instead of 30 minutes, it seems likely that 6 or 8 boxes of shrimp could have been taken that night. Unquestionably much of the success of these drags were due to the new deep-water echosounder now in operation on the research vessel T-19.

All regular trawling stations (established in 1953) at sea, in the sounds, and in the rivers were regularly visited again during the quarter. The index of availability of commercially-valuable fish, blue crab, and shrimp taken in experimental tows this year can be compared with those made from 1953 through 1957. Commercial fish such as gray sea trout (weakfish), king whiting, croaker, and spot are about as abundant this year as in previous years. Blue crabs, on the other hand, were almost twice as numerous during this 1958 quarter as they were during similar periods from 1953 through 1957. White shrimp are 4 or 5 times fewer and appeared much later this year. The number of white shrimp found in offshore waters was extremely scarce, and it was not until the latter part of July that tiny white shrimp made their appearance in the inshore waters. These shrimp were first found in water as low as 4 parts per thousand salinity, or about one-eighth sea strength. Brown shrimp were a little late in appearing but were about 3 times more numerous than in previous years. Not only do the Laboratory records indicate this, but shrimp landings in South Carolina as reported by the U. S. Bureau of Commercial Fisheries show that almost a half million pounds more of shrimp were landed in July 1958 than in July of 1957.

Pond Cultivation of Shrimp: In this quarter an inconclusive experiment was made to test the possibility of breeding shrimp in ponds. Seven female and 5 male brown shrimp, *Penaeus aztecus*, were introduced into a quarter-acre experimental pond which had been filled with strained and filtered salt water. Since no larval or post-larval shrimp have been found, it is clear that these shrimp did not successfully spawn in the pond. This is by no means offered as proof that shrimp cannot be bred in ponds, but it suggests that this method of stocking shrimp for cultivation will be quite difficult.

Other pond experiments, some of which are still continuing, were carried out on the mortality of stocked shrimp; growth differences between fed and unfed shrimp; and differences of growth and survival of stocked shrimp in ponds with different substrata. All this adds to the growing collection of information on cultivating shrimp in ponds.

After a visit to Bears Bluff by the Director of Inland Fisheries Research for Indonesia and by the Director of Inland Fisheries for Thailand, certain structural changes suggested by these men are now being made to control ingress of shrimp into one of the Laboratory's larger ponds. Both Directors reaffirmed the fact that in many Oriental countries two crops of shrimp can be produced a year, and that a yield of 500 pounds of shrimp per acre was not impossible. (Progress Report No. 37, July-September 1958, of the Bears Bluff Laboratories.)



Standards

MEETING HELD ON PROPOSED HADDOCK AND HALIBUT STANDARD: Frozen halibut steaks and haddock fillets may soon be added to those fishery products for which voluntary Federal quality standards are promulgated, according to the present plans of the U. S. Bureau of Commercial Fisheries.

Laboratory research by the Bureau on the proposed standards has proceeded to a point permitting preliminary discussions with interested segments of the fishing industry, distributors, and consumers. These discussions were held in four key cities.

Following the preliminary discussions the formal Notice of Proposed Rule Making will be issued. Such notice will provide for a 30-day period to permit further consideration by the industry and others, after which the formal standards and the effective dates will be announced.

The cities in which the discussions were held follow: Boston, frozen haddock fillets, October 7, 1958; New York City, frozen haddock fillets and halibut steaks, October 8; Chicago, frozen haddock fillets and halibut steaks, October 10; Seattle, halibut steaks, October 15.

Promulgation of voluntary quality standards and maintenance of an inspection service were transferred from the U. S. Department of Agriculture to the U. S. Department of the Interior on July 1, 1958. Previously standards had been developed by the Department of the Interior, but promulgation of the standards and the inspection of fishery products had been the legal responsibility of the Department of Agriculture.

Standards already in effect apply to frozen fried fish sticks, frozen raw breaded shrimp, and frozen fish blocks (which are the raw material from which fish sticks are made). Fish sticks and shrimp which have been processed in accordance with these standards may be identified by the consumer as "Grade A" or "Grade B," both of which meet rigid standards of wholesomeness and workmanship and have been processed under sanitary conditions.

There are many fishery products for which standards have not yet been established. These can not be given a "grade" designation, but if they have been processed under continuous inspection they are so marked.

Since this inspection service is something for which the processor must pay, he has the choice of marketing his product with or without the inspection symbol. "Lot inspection" is available should a processor desire only occasional inspection of his product. In such a case the package may bear the following statement: "This package is one of a lot from which samples have been inspected by the United States Department of the Interior."

Up to the present time, the Bureau of Commercial Fisheries reports, 16 large processing plants are operating under continuous inspection, requiring the services of 22 trained inspectors.



Tuna

FROZEN TUNA TRANS-SHIPMENTS FROM PERU TO UNITED STATES: Transshipments of frozen tuna (some caught by United States flag vessels operating out of Peru) from Peru to the United States by specially-built or converted refrigerated carriers are being stepped up with the addition of a new vessel, the German-owned and operated Ingred Hern.

The addition of the Ingrid Hern, a modern 700-ton refrigerated vessel now on its maiden voyage, brings the number of reefer vessels operating to four: the Ice-flower under the Norwegian flag; the Puerto del Sol under the Panamanian flag; and the Beatriz sailing under the Peruvian flag. While not identical in construction, each of these vessels carries approximately 700 tons of refrigerated tuna. They are Diesel-powered, with speeds of 10-11 knots, which enables them to make round trips from Peru to the United States west coast ports of San Pedro or San Diego every 30 days if sufficient fish are available.

These refrigerated reefer vessels pick up tuna from various ports in Peru and Ecuador, where the tuna are held in shoreside freezers. Cargos are made up from tuna landed by Peruvian or Ecuadoran vessels, and tuna landed by American flag vessels based in Peru or Ecuador. These vessels land their catches at the freezers, where they are graded for quality, with the better fish consigned to canners in San Pedro and San Diego, Calif.

From January 1 through August 31, 1958, these vessels delivered 7,680 tons of tuna to California canneries--2,634 tons of which was caught by United States flag vessels and 4,996 tons caught by South American vessels. Cargo vessels with limited refrigeration facilities, on regular runs, also carry frozen tuna, but their capacities are limited and if any volume is to be shipped the regularly-scheduled vessels cannot handle the fish.



United States Fishing Fleet^{1/} Additions

JULY 1958: A total of 78 vessels of 5 net tons and over were issued first documents as fishing craft in July 1958. Compared with the same month of 1957, this was an increase of two vessels. The Gulf States continued to lead with 29 vessels, the Pacific area was second with 18, and the South Atlantic third with 15.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft, by Areas, July 1958

Area	July		January-July		Total 1957
	1958	1957	1958 ^{2/}	1957 ^{2/}	
(Number).....				
New England ..	-	2	10	13	19
Middle Atlantic .	2	5	9	18	23
Chesapeake ...	11	9	55	60	104
South Atlantic ..	15	16	76	71	130
Gulf	29	20	178	81	166
Pacific	18	14	84	78	102
Great Lakes ...	2	-	5	4	8
Alaska	1	9	24	36	48
Puerto Rico ...	-	1	-	1	1
Virgin Islands .	-	-	1	-	-
Total	78	76	442	362	601

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft, by Tonnage, July 1958

Net Tons	Number
5 to 9	30
10 to 19	14
20 to 29	9
30 to 39	13
40 to 49	7
50 to 59	3
60 to 69	1
340 to 349	1
Total	78

Fishing craft that were issued documents as fishing craft during the first 7 months of 1958 totaled 442 vessels--

an increase of 80 vessels as compared with the same period of 1957. Of the vessels documented for fishing, 40 percent were reported from the Gulf States.

^{1/}Includes both commercial and sport fishing craft.

^{2/}Revised.

Note: Vessels assigned to the various sections on the basis of their home ports.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JUNE 1958: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during June 1958 were up 15.0 percent in quantity and 14.3 percent in value as compared with May 1958. Increases in June this year over the preceding month were due primarily to a sharp rise in the

Table 1 - United States Foreign Trade in Edible Fishery Products, June 1958 with Comparisons

Item	Quantity			Value		
	June	Year	June	Year	Year	
	1958	1957	1958	1957	1957	
	(Millions of Lbs.)			. (Millions of \$)		
Imports:						
Fish & shellfish:						
Fresh, frozen, & processed ^{1/} . . .	83.3	58.2	837.0	25.5	19.0	248.4
Exports:						
Fish & shellfish:						
Processed only ^{1/} (excluding fresh & frozen)	1.9	7.0	69.7	0.6	1.3	16.8

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

imports of fresh and frozen tuna (15.3 million as compared with 7.4 million pounds). Seasonal shipments of fresh and frozen salmon from Canada also accounted for 1.7 million pounds of the increase during this period.

As compared with June 1957, the imports this June were higher by 43.2 percent in quantity and 34.2 percent in value. This was due to higher imports for fresh and frozen tuna (up about 8.7 million pounds), canned tuna in brine and oil (up about 2.2 million pounds), canned salmon (up about 2.4 million

pounds), and increases of about 1.0 million pounds each in the imports of groundfish fillets and blocks, frozen shrimp, and lobster tails.

Exports of processed fish and shellfish in June 1958 were up by 34.9 percent in quantity and 100.0 percent in value as compared with May 1958. Compared with the same month in 1957, the exports in June 1958 were down by 72.4 percent in quantity and 53.8 percent in value. The sharp decreases in both quantity and value this June as compared with the same month in 1957 were due primarily to a shortage of canned Pacific and jack mackerel, and California sardines.

* * * * *

GROUND FISH FILLET IMPORTS, SEPTEMBER 1958: Imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets (including blocks) into the United States during September 1958 totaled 11.0 million pounds--an increase of 2.1 million pounds or 24 percent compared with the same month of 1957. Although Canada dropped 1.8 million pounds below August 1958 as supplier, it still ranked first in volume with 8.3 million pounds.

During the first nine months of 1958, imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets (including blocks) amounted to 111.0 million pounds. This was a gain of 5 percent compared with the same period of last year. Imports from Canada accounted for 71 percent of the total followed by Iceland with 15 percent, and Denmark with 8 percent. The remaining 6 percent was comprised of imports from eight other countries.

Note: See Chart 7 in this issue.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA, JANUARY-AUGUST 30, 1958: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1958 at the 12½-percent rate of duty has been established as 44,693,874 pounds. Any imports in excess of this established quota will be dutiable at 25 percent ad valorem.

Imports from January 1-August 30, 1958, amounted to 31,034,647 pounds, according to data compiled by the Bureau of Customs. This leaves a balance of

13,659,227 pounds of the quota which may be reported during the balance of 1958 at the $12\frac{1}{2}$ -percent rate of duty. Last year from January 1-August 31 a total of 27,259,296 pounds had been imported.

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IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY-JULY 1958: Imports: **GROUND FISH FILLETS AND BLOCKS:** Imports for the first seven months of 1958 were 5 percent above those of the similar period of 1957. July 1958 imports of cod fillets were 76 percent higher than in July 1957, whereas imports of haddock, hake, pollock, and cusk fillets were down 41 percent. Imports of ocean-perch fillets showed an 80 percent gain over those of July 1957; shipments from Canada were nearly double those of last year. Seven-month imports of blocks and slabs were higher than during the comparable period of 1957, due mainly to increased receipts from Denmark and Norway.

FISH BITS: Nearly 8 million pounds of this new groundfish product were imported from Iceland during April-July 1958.

FROZEN SALMON: A 46-percent increase in July receipts brought the 1958 seven-month total 29 percent above the comparable 1957 total.

FROZEN TUNA: July 1958 imports of yellowfin and skipjack tuna from Japan were 44 percent above those in July 1957; seven months imports were 38 percent higher than for the comparable 1957 period. Imports of frozen albacore tuna were 11 percent lower during July and 16 percent lower for the seven-month period.

TUNA LOINS AND DISCS: Total imports through July were down 51 percent from the similar 1957 period.

CANNED TUNA: A 56-percent gain in July shipments brought imports for the first seven months 14 percent above the comparable 1957 period. The Japanese tuna industry initiated a canned tuna advertising campaign in the United States on a small scale.

FRESH AND FROZEN LOBSTER: July imports of common lobster from Canada fell 28 percent below those of July 1957; imports of spiny lobster from the Union of South Africa dropped 32 percent. Largely because of the lower July receipts, seven months imports were 3.0 million pounds below those of the comparable 1957 period.

FRESH AND FROZEN SHRIMP: Imports in July were 18 percent higher than in July 1957; the total for the seven months of 1958 was 12 percent higher than for the similar 1957 period.

CANNED SALMON: Imports during the first seven months of 1958 were 179 percent above the corresponding 1957 period.

CANNED SARDINES: July imports of canned sardines not-in-oil were 1.0 million pounds over those of July 1957; shipments from the Union of South Africa were higher. Total receipts during the first seven months were 164 percent above those of the 1957 period. On the other hand, imports of canned sardines in-oil were 1.1 million pounds under July 1957 owing to lower shipments from Norway. Total receipts during the first seven months were 20 percent below the similar 1957 period.

The Union of South Africa declared a closed fishing season in territorial waters between August 31 and December 31 on shoal fish. These include pilchards used in the canned sardine industry. This was the first year that this fishery reached the 250,000-ton catch quota set in 1952. As a result of the favorable fishing season, exports of sardines from South Africa have increased.

CANNED OYSTERS: Increased receipts from Japan raised imports through July 1958 by 99 percent above the corresponding 1957 period.

FISH MEAL: July imports were 88 percent above those of July 1957; imports through July this year were 25 percent above the similar 1957 period.

Peru continued to be the leading source of fish meal imports. Recently, the Peruvian Government initiated an investigation of the effect of the increased intensity of fishing for anchovetas (now used in the production of fish meal) on the guano industry.

Exports: CANNED SARDINES, MACKEREL, AND ANCHOVIES: Exports of these products continued to be much below those of 1957, owing to reduced domestic packs of sardines, mackerel, and anchovies.

CANNED SALMON: Total exports for the seven months were 29 percent below those of the similar 1957 period. The United Kingdom has announced the removal of its restrictions on the importation of canned salmon from all areas except the Soviet Zone.

FISH OIL: Despite an increase in exports during July 1958 over those of July 1957, seven months totals were still 44 percent below exports during the similar 1957 period.



Wholesale Prices, September 1958

The September 1958 edible fish and shellfish (fresh, frozen, and canned) wholesale price index remained about unchanged from the high levels of the two preceding months. At 130.1 percent of the 1947-49 level, the index was 0.2 percent higher than for the preceding month and up by 8.4 percent as compared with September a year ago. Price trends for the four fishery products subgroups in September 1958 were mixed. Increases for some of the whole or drawn fresh finfish and fresh and frozen fillets more than balanced out decreases in wholesale prices for fresh and frozen shrimp and some of the canned items.

Landings of haddock at Boston in September 1958 continued the below-normal trends noted in recent months and good quality Great Lakes whitefish was also scarce. Prices in mid-September 1958 for large drawn haddock were up 33.6 percent from August and fresh whitefish increased 13.1 to 21.5 percent during the same period. These increases in September of this year were partially offset by slight declines in halibut and salmon prices (changes were due primarily to a shift from fresh to frozen prices during the month) and a 21.6-percent drop in fresh-water yellow pike prices. The net result was an increase of 3.5 percent in the index for the drawn, dressed, or whole finfish subgroup from August to September 1958. As compared with September 1957,

the subgroup index this September was up by 12.5 percent due mainly to 55.2 percent higher fresh drawn haddock prices. Both western halibut (down 16.8 percent) and Lake Superior drawn whitefish (down 10.4 percent) were lower this September as compared with the same month a year ago.

The fresh processed fish and shellfish subgroup index for September 1958 was up by only 1.0 percent from August, but was close to 9.3 percent above the same month in 1957. Higher fresh haddock fillet prices (up 20.8 percent) and slightly higher prices for fresh shucked oysters (up 4.4 percent) were just about offset by a seasonal drop in fresh shrimp prices at New York. As compared with September a year ago, prices this September were higher by 36.7 percent for fresh haddock fillets and 14.3 percent for fresh shrimp; oyster prices were unchanged.

The subgroup index for frozen processed fish and shellfish was about unchanged from August to September this year, but increased by 15.2 percent from September 1957 to September 1958. All frozen fillet prices in September this year were higher as compared with the preceding month and the same month in 1958. Frozen haddock fillets were up by 12.8 percent from August and higher by 33.9 percent from September a year ago. Frozen shrimp prices at Chicago

this September were down about 2.8 percent from August, but were higher by 9.5 percent when compared with the same month in 1957.

Canned fishery products subgroup prices were lower by 3.6 percent this September from a month ago and reflected the much better supplies of canned California sardines and Pacific Coast canned salmon available this year. A lighter 1958 season pack of Maine sardines helped to raise the index for this product by 6.3 percent from August to September this year. Wholesale prices for canned tuna were about unchanged during this period. All canned fishery products with the exception of canned pink salmon were priced higher in September 1958 than in September a year ago. The drop

in canned salmon prices (down 8.7 percent) in September of this year marks the first drop in a period of 12 months or longer. However, the higher prices for canned tuna and Maine and California sardines resulted in an increase of 2.3 percent in the index for the whole subgroup from September 1957 to September 1958. As of the end of September this year, prices at the packers' level for Maine sardines were firm and the market for canned salmon was firming due to the removal by the British of the restrictions on the imports of this item. The relatively heavy pack of California sardines after a long period of light production was creating a marketing problem and another record-breaking pack of tuna was tending to depress prices for this product.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, September 1958 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/} (\$)		Indexes (1947-49=100)			
			Sept. 1958	Aug. 1958	Sept. 1958	Aug. 1958	July 1958	Sept. 1957
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					130.1	129.9	131.2	120.0
<u>Fresh & Frozen Fishery Products:</u>					150.0	147.2	150.0	134.3
<u>Drawn, Dressed, or Whole Finfish:</u>					158.1	152.7	151.0	140.5
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.15	.11	151.9	113.7	131.6	97.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.37	.37	113.2	114.5	123.8	136.1
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.78	.80	174.2	178.7	169.1	168.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.65	.54	161.1	132.6	132.6	179.7
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.89	.88	200.2	177.0	126.4	195.1
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.60	.77	140.7	179.4	164.1	146.6
<u>Processed, Fresh (Fish & Shellfish):</u>					143.8	142.4	149.4	131.6
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.47	.39	158.2	131.0	134.4	115.7
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.88	.91	138.2	143.8	156.4	120.9
Oysters, shucked, standards	Norfolk	gal.	6.00	5.75	148.5	142.3	142.3	148.5
<u>Processed, Frozen (Fish & Shellfish):</u>					134.7	133.6	136.3	116.9
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.41	.41	107.3	106.0	103.4	100.8
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.40	.35	124.0	109.9	105.2	92.6
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	116.8	114.8	114.8	108.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.87	.89	133.5	137.3	145.1	121.9
<u>Canned Fishery Products:</u>					101.9	105.7	104.6	99.6
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	21.00	23.00	109.6	120.0	120.0	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.95	11.95	86.2	86.2	84.0	80.8
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.30	5.68	123.7	132.4	131.3	105.0
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.22	7.72	87.5	82.2	82.2	70.1

^{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.

