

TRENDS AND DEVELOPMENTS

Alaska

HEARING ON COMMERCIAL FISHERY REGULATIONS FOR 1960:

The first public hearing on commercial fishery regulations was held by the new State of Alaska when the Fish and Game Commission met at Juneau, November 18, 1959. Comments on proposals for management of the fisheries for 1960 were heard.

This will be the only hearing on 1960 regulations. It is expected that early promulgation of final regulations will follow the hearings so that they may take effect January 1, 1960, which is the date the State assumes management responsibility from the U. S. Bureau of Commercial Fisheries.

If the proposals for 1960 are adopted, these changes will occur: (1) any seiner over 50 feet cannot operate in the State's waters, and the rule extends the limit to include vessels operating west of False Pass; (2) trawling for king crab is banned, and this means fishing for king crabs will be limited to pot fishing; (3) drum seining (banned by the U. S. Fish and Wildlife Service in previous years) will be illegal in 1960; (4) preseason registration, similar to State of Washington regulations, will be required by April 15 and transfer of gear will be allowed only by the approval of the Commissioner.



American Samoa

TUNA LANDINGS, JANUARY-OCTOBER 1959:

During October 1959 tuna landings by Japanese and South Korean vessels fishing for the tuna cannery in American Samoa amounted to about 2.3 million

pounds. This amount was 27.4 percent or 885,000 pounds under the landings for

Species	October		Jan.-Oct.	
	1959	1958	1959	1958
	(1,000 Lbs.)			
Albacore . . .	2,075	2,637	17,359	18,087
Yellowfin . . .	187	500	3,618	4,685
Big-eyed . . .	78	91	826	965
Skipjack . . .	3	-	7	-
Total . . .	2,343	3,228	21,810	23,737

Note: Most of these tuna were landed by Japanese vessels; a small amount by South Korean vessels.

October 1958. The ten-months 1959 tuna landings of 21.8 million pounds were down 8.1 percent from the 23.7 million pounds landed in the same period of 1958.



California

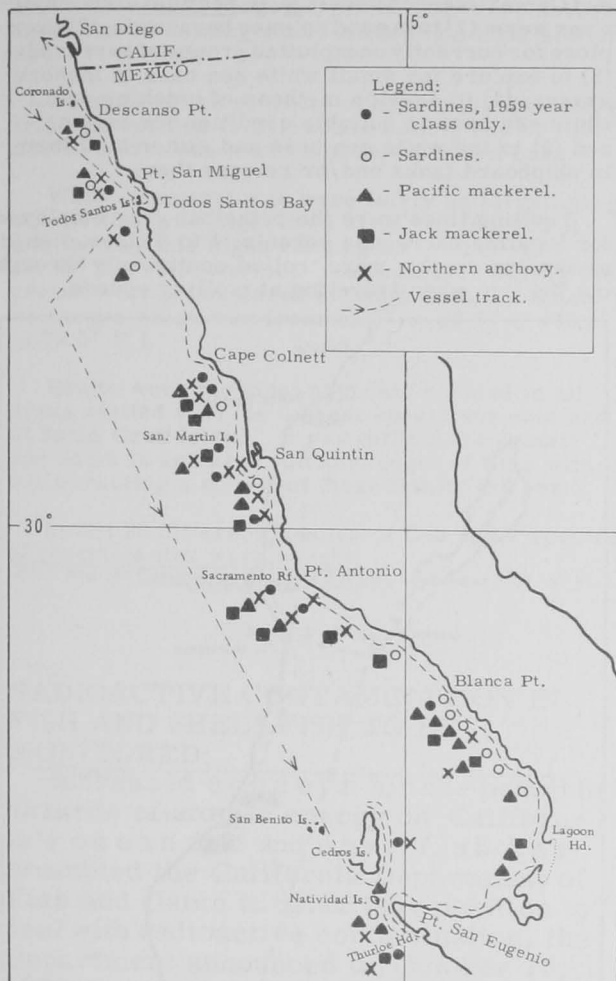
PELAGIC FISH POPULATION SURVEY OFF COAST OF SOUTHERN AND CENTRAL CALIFORNIA CONTINUED:

M/V "Alaska" Cruise 59A7-Pelagic Fish: The coastal waters off Baja California from Turtle Bay northward to Punta San Miguel were surveyed (August 22-September 9, 1959) by the California Department of Fish and Game research vessel *Alaska* to sample young sardines for determining the relative abundance and distribution of fish resulting from the 1959 spawning. Other objectives were to sample adult sardines, Pacific mackerel, jack mackerel, and anchovies; to collect live sardines for the genetic studies conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory at La Jolla; to tag barracuda; to collect specimens as requested by other investigations; and to troll for albacore while en route to Turtle Bay.

A total of 63 night light stations was occupied. Sardines were collected at 24, Pacific mackerel at 21, anchovies at 18, and jack mackerel at 15.

Sardines were sampled throughout the survey area and were not confined to definitive areas as in previous surveys this year. Of the 24 sardine samples 12 contained 1959 year-class fish and most ranged in size from 80 to 115 mm. standard length. Two samples of young sardine, one collected in Turtle Bay and one in Todos Santos Bay, consisted of smaller fish ranging in standard length from 34 to 70 mm.

A total of 205 miles was scouted between stations at night and 68 schools were sighted. Of this total 11 were identified as anchovy, 5 as sardines,



M/V Alaska Cruise 59-A-7 Pelagic Fish (August 22-September 9, 1959).

and 52 unidentified. Visual scouting conditions were poor with choppy seas prevalent during the first portion of the cruise and adverse bioluminescence prevailed throughout the survey area.

A total of 119 California barracuda was tagged with type "G" spaghetti tags--50 fish were caught at San Martin Island and 69 were captured in the Cape Colnett-Punta San Telmo area. All fish were released in the Cape Colnett-Punta San Telmo area. Two tagged barracuda were recaptured at San Martin Island after being at liberty 108 and 112 days, respectively. Initially the two fish were tagged off Cape Colnett, approximately 30 nautical miles north of the recapture area.

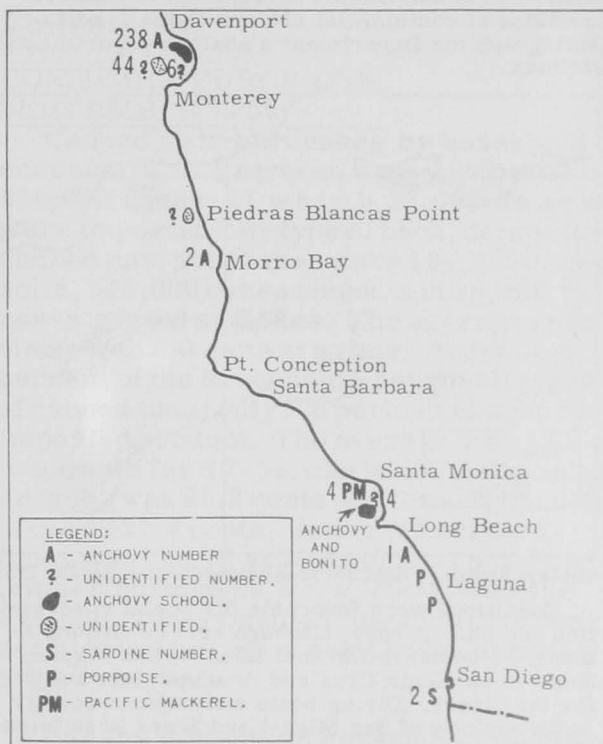
No albacore were taken on the offshore trolling track while en route to Turtle Bay.

Airplane Spotting Flight 59-15-Pelagic Fish:

The inshore area from the Mexican border to Davenport was surveyed from the air (September 15-17, 1959) by the Department's Cessna 170 (1359D) to determine the distribution and abundance of pelagic fish schools.

Poor visibility hampered observations between Point Dume and Morro Bay and the first storm of the central California season made observation north of Monterey Bay impossible.

In general, pelagic fish schools were scarce in the region surveyed, Monterey Bay, Santa Monica Bay, and the area off Sierra Nevada Point being the only places where school groups were observed. As had been the case during the two previous surveys, a moderate concentration of anchovies was seen in the northern portion of Monterey Bay. This group consisted of 238 typically thin, spread out, shallow-water schools, extending from the Pajaro River to the town of Santa Cruz and seaward to approximately the 20-fathom curve. The water in this portion of Monterey Bay was quite dirty, ranging in color from gray-brown to brick-red. In addition, 50 large, deep, unidentified schools were seen due west of Moss Landing; 6 were four miles offshore and 44 were 10 miles off at the outer limit of the bay.



Airplane Spotting Flight 59-15 (September 15-17, 1959).

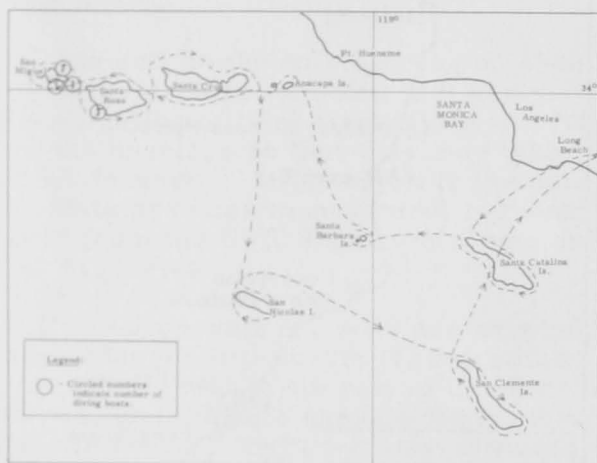
A small group of "breeding" schools was encountered two miles off Sierra Nevada Point. No accurate count or species identification was possible.

On the morning of September 15, near Rocky Point in Santa Monica Bay, it was possible to observe a large number of bonito feeding on a concentration of small anchovies. The anchovy schools had broken up into many very small, tight balls and the area seemed to be completely underlaid with bonito, which could be seen flashing below and through the small anchovy spots. It was apparent that in only a matter of time the anchovies would be completely decimated. Many of the spots became noticeably smaller during the time the airplane was overhead. The erratic and frantic behavior of both the anchovy schools and the bonito made it impossible to estimate the magnitude of

either group although the activity was going on within an area approximately one-half mile square. The Department's research vessel *Dolphin* was in the area at the time and personnel aboard were able to make positive identification of the species and describe the phenomenon as seen from the surface.

Aside from the aforementioned schools, the following were observed during the flight: 2 small sardine schools off the Coronado Strand; 2 large porpoise schools (several hundred individuals) 2 to 3 miles off Laguna Beach and Newport Beach; 1 large anchovy school near the Huntington Beach pier; 4 unidentified schools near the Redondo Beach pier; 4 thin Pacific mackerel schools south of the Abu pier; and 2 small anchovy schools just north of Morro Rock.

Airplane Spotting Flight 59-16-Abalone: The Channel Islands area was surveyed from the air on September 20, 1959, by the California Department of Fish and Game's *Beechcraft* to observe locations of commercial abalone fishing and to photograph the Department's abalone experimental stations.



Airplane Spotting Flight 59-16-Abalone (September 20, 1959).

Conditions were favorable for aerial observation and photography, although surf conditions among the northern Channel Islands, San Miguel, Santa Rosa, Santa Cruz and Anacapa were rough for the divers. Diving boats were observed only in the vicinity of San Miguel and Santa Rosa Islands and only 1 of 8 observed was active and had a diver on the bottom. No boats were observed among the southern Channel Islands (San Clemente, Santa Catalina, Santa Barbara and San Nicolas).

Kelp growth appeared to be good around the islands compared to conditions observed in March 1959, although in some areas along the landward side at Santa Catalina and San Clemente, kelp growth was sparse.

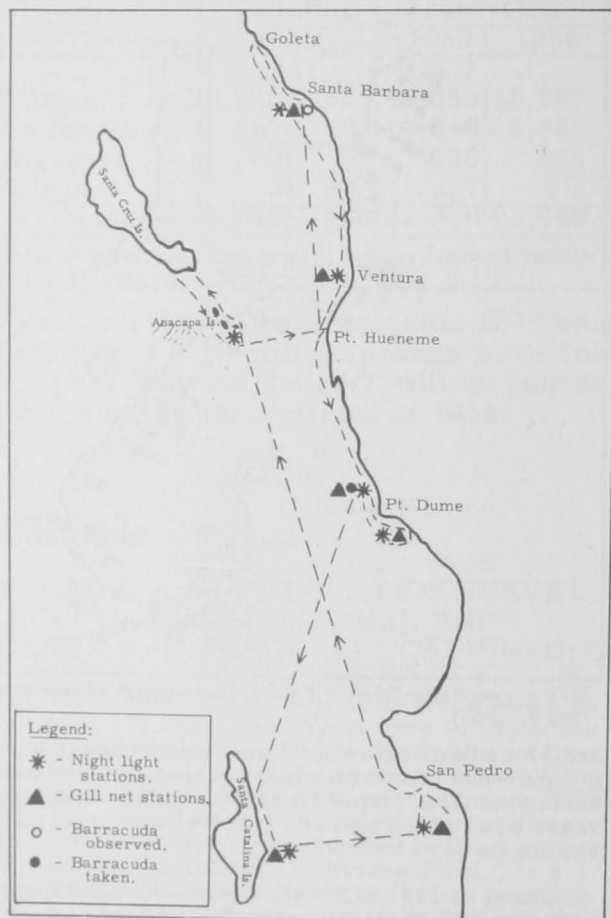
Note: Also see *Commercial Fisheries Review* September 1959 pp. 20 and 22, and December 1959 p. 39.

BARRACUDA AND WHITE SEA BASS SURVEY OFF SOUTHERN CALIFORNIA COAST CONTINUED:

M/V "N. B. Scofield" Cruise 59S6-Barracuda-White Sea Bass: The southern California waters, from

Goleta south to the Horseshoe Kelp off Long Beach and certain offshore islands were surveyed (September 15-23, 1959) by the California Department of Fish and Game research vessel *N. B. Scofield*. The objectives were: (1) to tag and release barracuda; (2) to explore for currently unexploited groups of barracuda; (3) to explore for small white sea bass in inshore waters; (4) to develop methods of catching small white sea bass in suitable condition for tagging; and (5) to tag white sea bass and either hold them in shipboard tanks and/or release them.

Trolling lines were the principal gear employed for locating barracuda schools: 4 to 8 lines, fished at varying depths, were trolled continuously throughout the trip when traveling at trolling speeds.



M/V *Scofield* Cruise 59S6 Barracuda-White Sea Bass (September 14-23, 1959).

When at anchor for the night gill nets were used, conditions permitting. A floating gill net of variable mesh was fished from the stern of the vessel while an anchored net of 3-inch mesh was fished independently of the vessel.

Other fishing methods included rod and reel employing live bait or artificial lures; a 1,500-watt night light suspended over the water at the stern of the vessel; dip-netting and brailing.

California barracuda were taken at only one station during the trip, a spot 3.8 miles north of Point Dume. The barracuda were captured in a 3-inch cotton gill net, set at right angles to a kelp bed, in approximately 45 feet of water. All but

one of the fish were taken within 18 inches of the lead line. One other barracuda was hooked on live bait at this location but was not landed. The only other barracuda observed on the trip were several fish seen swimming about at the night light station at Santa Barbara.

Because of the scarcity of barracuda the entire trip was devoted to barracuda fishing and no concerted effort was made to take white sea bass.

Water temperatures were fairly uniform throughout the trip with night lows of 18° C. (64.4° F.), and the daytime highs ranging up to 21.6° C. (70.9° F.). The warmest temperatures during the cruise were encountered at Santa Catalina Island, where the range was from 21.3° to 22.5° C. (70.3° to 72.5° F.).

Bonito were the most abundant species in all areas visited with the largest specimens obtained at Santa Cruz Island. It was difficult to remain and chum in any area for any length of time without attracting a school of these fish to the boat.

In all, 20 different species of fish and 2 species of invertebrates were caught.

Note: Also see *Commercial Fisheries Review*, September 1959 p. 21.

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RADIOACTIVE CONTAMINATION IN FISH AND SHELLFISH TO BE MONITORED:

Increased concern for the possible hazards of atomic energy on California's ocean fish and shellfish has prompted the California Department of Fish and Game to establish a position to deal with radioactive contamination, the Department announced on October 16, 1959

The new position, supervisor of radioactive monitoring and surveillance, will be filled by an expert in biochemistry, chemistry, and game and marine invertebrate zoology.

"The increased activity in the radioactive field in California makes it necessary that the Department determine what is happening to the fish and game resources," the Department stated. "The fact that aquatic and marine organisms have a unique property of concentrating radio-active materials makes this area one of very great concern."

Several areas of concern have already made themselves apparent, he noted. Certain shellfish off northern California are reported to have radio-

active levels many times over the background level of their environment. Some mollusks of southern California likewise are reported to have "warmed up."

The Department will work with other State agencies, particularly the Departments of Public Health, Water Resources Agriculture, and Industrial Welfare. Analytical work will be carried out in cooperation with the California State Disaster Office. The Department's program will be under the Marine Resources Branch in Sacramento.



Canned Fish

CONSUMER PURCHASES, SEPTEMBER 1959:

Canned tuna purchases by household consumers in September 1959 were 956,000 cases, of which 58,000 cases were imported. By type of pack, domestic-packed tuna purchases were 187,000 cases solid, 615,000 cases chunk, and 96,000 cases grated or flakes. The average purchase was 2.0 cans at a time. About 30.8 percent of the households bought all types of canned tuna; only 1.8 percent bought the imported product. The average retail price paid for a 7-oz. can of domestic solid or fancy was 35.3 cents and for a 6½ oz. can of chunk 27.7 cents. Imported solid or fancy was bought at 29.4 cents a can. September purchases were lower than the 966,000 cases bought in August by 1.0 percent; retail prices in most cases were slightly higher.

During September household consumer purchases of California sardines were 35,000 cases; and 32,000 cases imported sardines. The average purchase was 1.6 cans at a time for California sardines and 1.9 cans for imported. Only 1.4 percent of the households bought canned California sardines and 2.3 percent imported. The average retail price paid for a 1-lb. can of California sardines was 24.0 cents, and for a 4-oz. can of imported 25.0 cents. Retail prices were lower for both California and imported canned sardines. September purchases of California sardines were higher than the 34,000 cases bought in August by 2.9 percent.

Canned salmon purchases in September 1959 were 198,000 standard cases, of which 103,000 cases were pinks and 44,000 cases reds. The average purchase was 1.2 cans at a time. About 14.2 percent of the households bought all types of canned salmon; 7.0 percent bought pinks. The average retail price paid for a 1-lb. can of pink was 58.5 cents and for red 89.0 cents. September purchases were down about 1.5 percent from the 201,000 cases bought in August.



Cans--Shipments for

Fishery Products, January-August 1959

Total shipments of metal cans for fishery products during January-August 1959 amounted to 79,870 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 78,679



tons in the first eight months of 1958. Canning of fishery products in August 1959 included tuna, Maine sardines, salmon, shrimp, and jack and Pacific mackerel. Shipments of metal cans rose 2.8 percent from July to August 1959, but dropped 15.8 percent from August 1958 to August 1959.

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.



Central Pacific Fishery Investigations

SKIPJACK TUNA BEHAVIOR STUDIES OFF HAWAII CONTINUED:

M/V "Charles H. Gilbert" Cruise 46:
The study of the behavior of tuna in Hawaiian waters was continued (September 15-October 18, 1959) by the fishery

research vessel Charles H. Gilbert of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu.

Tuna Behavior Studies: Four skipjack schools were fished for experimental purposes and also to obtain live fish for use in pond studies. Observations were made on tuna behavior during the alternate use of various bait species (moio mixture, mullet, nehu, tilapia), and when the tuna encountered squid, a natural food. Three 6-pound skipjack were inoculated with thorazine and 11 others were confined without drugs. Two drugged fish and 5 controls were transferred to the Kewalo pond where maximum survival was 41 hours. The single dolphin captured died at sea.

California Current Extention Survey: Bathythermograph casts were made at 3-hour intervals throughout the survey and with each cast water samples were collected for salinity determinations. The salinities were determined aboard ship. The results were used to define the general track in the western area. In addition, five water samples were frozen for inorganic phosphate analyses.

The salinity distribution indicated that the northern type water (salinity greater than 35.0 ‰) had penetrated into the waters surrounding the major islands of the Hawaiian chain. The islands in the southeastern portion of the archipelago were completely encompassed by this northern type water, whereas in the northwestern sector high salinity water was located only on the northern side of the islands. The California Current Extension was relatively narrow and pronounced south of the island of Hawaii becoming wide and diffuse to the west.

A total of 29 bird flocks was sighted during the current survey. At least 10 of these flocks were not actively feeding and were observed flying high above the water surface. Live-bait fishing with tilapia as chum was attempted on 1 yellowfin tuna, 1 mahimahi, and 3 skipjack tuna schools. Only one of the skipjack schools responded to the chum and was successfully fished with a catch of 142 fish. Fifty-four were tagged with the Floy dart tag and released. The

skipjack ranged in size from 10-18 pounds.

Long-line gear was fished at 3 locations. The catches were considered poor, both in terms of numbers and species caught. The total catch consisted of 1 yellowfin, 2 big-eyed, and 1 skipjack tuna, 1 striped marlin, 2 sailfish, 4 white-tip sharks, 4 great blue sharks, 4 mahimahi, and 1 Alepisauris.

Temperature Discontinuity Studies:

Five 1/2-hour surface plankton hauls with a 1-meter net were made across a temperature discontinuity encountered south of the island of Molokai. The temperature gradient consisted of a 1-degree (80.0° F. to 81.0° F.) change in surface temperature which occurred within 5 minutes of traveling at 8-9 knots. Additional data collected were subsurface temperatures at close intervals with the bathythermograph and water samples for both inorganic phosphate and salinity determinations.

Sampling for Serological Studies:

Twenty-four 0-60 meter plankton samples, from which tuna larvae will be

separated, were preserved and frozen in 10-percent formalin, 70-percent methanol, and sea water.

Whole blood samples from eight skipjack were preserved and frozen in a glycerol-citrate solution.

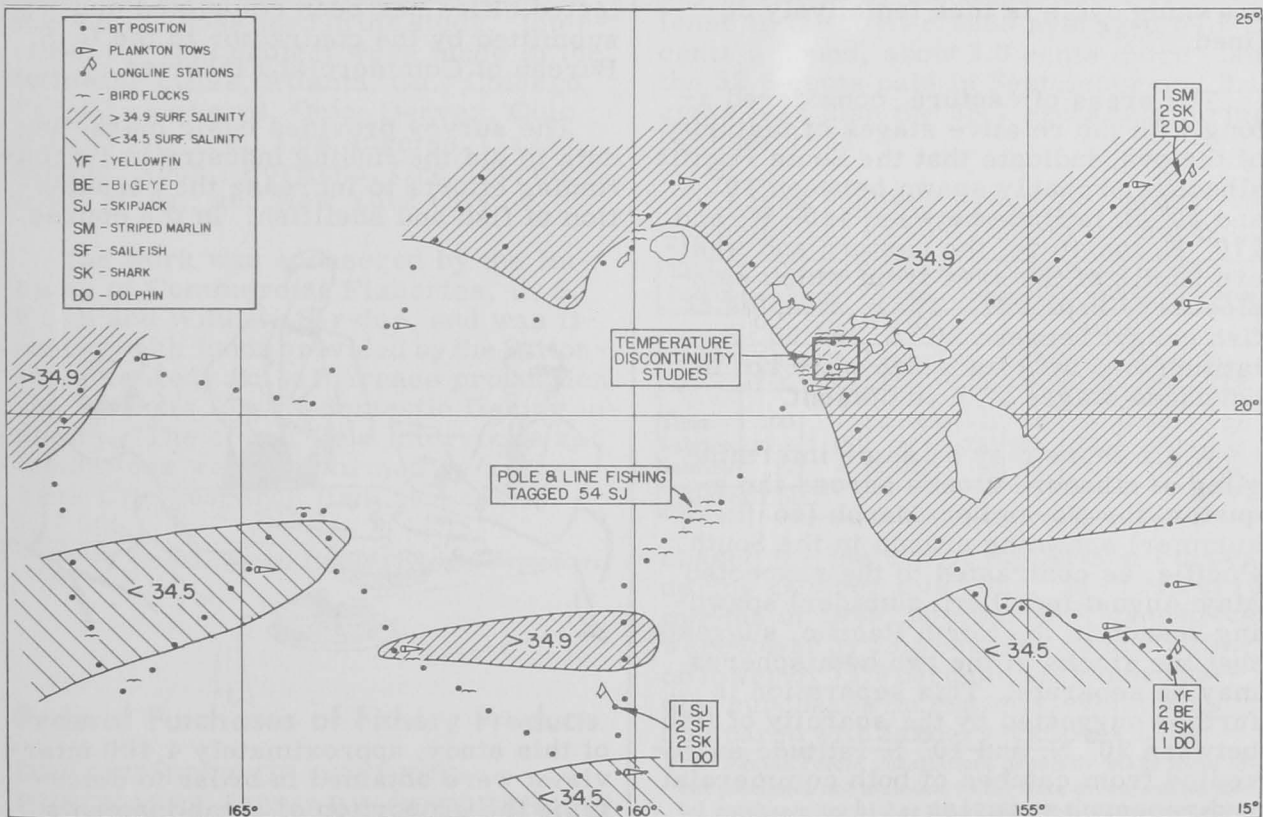
Meat samples from 10 skipjack were frozen and returned to the laboratory.

Note: Also see Commercial Fisheries Review, September 1959 p. 27, and November p. 30.

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STUDIES SHOW SEPARATE STOCKS OF ALBACORE TUNA NORTH AND SOUTH OF THE EQUATOR IN CENTRAL PACIFIC OCEAN:

A study of the sexual maturity and the time and area of spawning of albacore tuna in the central South Pacific Ocean indicates that the stocks north and south of the equator are separate. This study by the Honolulu Fisheries Biological Laboratory of the U. S. Bureau of Commercial Fisheries is based on the examination of gonads collected from albacore landed in American Samoa.



M/V Charles H. Gilbert Cruise 46 (September 15-October 18, 1959).

Albacore are landed in American Samoa throughout the year. A continuous series of samples could thus be obtained for the study of seasonal variation in gonad development. In July 1957, arrangements were made to obtain gonad samples from seven randomly-selected albacore from each landing. Gonads from both sexes were collected to assure complete randomness in sampling. A total of 1,772 pairs were collected during the period July 1957 to September 1958.

At the laboratory the gonads were weighed. No further work was done with the testes. The ovaries were sectioned, examined by microscope, and the stage of development recorded. A sample of 25 of the largest ova were measured.

The relative stages of maturity of the ova were examined with respect to the time of capture. The proportion of ovaries in the "late development" stage increased from July 1957 to a maximum in December-January and declined to a minimum in May 1958. The proportion increased in June 1958. The annual spawning cycle is thus tentatively defined.

The areas of capture, considered along with the relative stages of maturity of the ova, indicate that the South Pacific albacore probably spawn between 10° S. and 20° S. latitude between 140° W. and 170° E. longitude, the eastern and western limits of the area from which samples were received. Those samples of fish caught between 20° S. and 30° S. latitude had ovaries which were not in advanced stages of development.

While there may be some intermingling of albacore stocks across the equator, the November-March (southern summer) spawning season in the South Pacific, as contrasted to the suspected May-August (northern summer) spawning season in the North Pacific, suggests that the stocks in the two hemispheres may be separate. This separation is further suggested by the scarcity of fish between 20° N. and 10° S. latitude as revealed from catches of both commercial and research vessels.

In addition, tagging experiments have shown Pacific-wide albacore movements in the Northern Hemisphere, but no tagged albacore released in the North Pacific have been recaptured in the South Pacific.

The results of the albacore gonad sampling in the South Pacific and studies of the distribution and size composition of albacore in both hemispheres, along with data available from other research activities and from commercial fisheries, all support the hypothesis that there are separate albacore stocks in the two hemispheres and that their distribution approximates a mirror image.



Consumption

SURVEY OF FISH CONSUMPTION IN PUBLIC EATING PLACES COMPLETED:

A survey of the consumption of frozen processed fish and shellfish in institutions and public eating places in ten selected cities has been completed and submitted by the contractor to the U. S. Bureau of Commercial Fisheries.

The survey provides basic marketing data to aid the fishing industry in its continuing efforts to increase the consumption of fish and shellfish. In the course



of this study, approximately 4,400 interviews were obtained in order to determine the proportion of establishments

using frozen processed fish, shellfish, and fish portions; quantities purchased according to species; sources of supplies; attitude as to the quality and condition of the merchandise received from the suppliers; ideas on packaging and profitability of serving frozen processed fishery products; methods of cooking; awareness and usage of government-inspected fishery products; reasons for not using frozen processed fishery products; and other information which might be developed during the interview.

Four classes of establishments were defined for this study and included: establishments primarily engaged in serving foods to the general public (restaurants, cafeterias, etc.); establishments serving food to limited groups of people (schools, industrial plants, commercial enterprises); establishments serving foods to captive groups of people (hospitals, prisons, etc.); and miscellaneous establishments (drug stores, lunch counters, clubs).

The results of the survey will be published in 11 sections, one for each of the cities and a Technical Appendix describing the methods used in the study. Interviews for this project were made in the following cities, Atlanta, Ga.; Chicago, Ill.; Cleveland, Ohio; Denver, Colo.; Houston, Tex.; Los Angeles, Calif.; Omaha, Nebr.; Portland, Ore.; Springfield, Mass.; and New York City.

The work was sponsored by the Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, and was financed with funds provided by the Saltonstall-Kennedy Act to increase production and markets for the domestic fishing industry. The actual field interviews and tabulations were performed by a New York City research firm at a cost of \$57,000.

Note: Also see Commercial Fisheries Review, September 1958 p. 37.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE
PURCHASES, JANUARY-OCTOBER 1959:

Fresh and Frozen Fishery Products
For the use of the Armed Forces under

the Department of Defense, 1.9 million pounds (value \$1.1 million) of fresh and frozen fishery products were purchased in October 1959 by the Military Subsistence Supply Agency. This exceeded the

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, October 1959 with Comparisons

QUANTITY				VALUE			
October		Jan.-Oct.		October		Jan.-Oct.	
1959	1958	1959	1958	1959	1958	1959	1958
. (1,000 Lbs.) (\$1,000)			
1,945	1,507	19,433	19,382	1,062	855	10,035	11,059

quantity purchased in September by 10.6 percent and was 29.1 percent higher than the amount purchased in October 1958. The value of the purchases in October 1959 was up by 14.9 percent as compared with September and 24.2 percent more than for October 1958.

During the first ten months of 1959 purchases totaled 19.4 million pounds (valued at \$10.0 million)--an increase of 0.3 percent in quantity but lower by 9.3 percent in value as compared with the similar period of 1958.

Prices paid for fresh and frozen fishery products by the Department of Defense in October 1959 averaged 54.6 cents a pound, about 2.0 cents more than the 52.6 cents paid in September and 2.1 cents less than the 56.7 cents paid during October 1958.

Canned Fishery Products: Salmon was the principal canned fishery product pur-

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, October 1959 with Comparisons

Product	QUANTITY				VALUE			
	October		Jan.-Oct.		October		Jan.-Oct.	
	1959	1958	1959	1958	1959	1958	1959	1958
 (1,000 Lbs.) (\$1,000)			
Tuna	100	-	2,602	3,931	44	-	1,203	1/
Salmon	653	1,381	671	2,783	456	761	470	1/
Sardine	51	-	1,025	93	21	-	165	1/

1/Unavailable.

chased for the use of the Armed Forces during October this year. In the first 10 months of 1959, purchases of canned tuna were lower by 33.8 percent, canned salmon lower by 75.9 percent, but canned sardine purchases increased elevenfold as compared with January-October 1958.

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

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Federal Aid Funds for Sport Fish and Wildlife Restoration Allotted to States for Fiscal Year 1960

Federal Aid funds totaling \$20.6 million, which includes the last of the five Pittman-Robertson "backlog" allotments of almost \$2.7 million each, have been apportioned to the states for their fish and game restoration programs for the year ending June 30, 1960, the Secretary of the Interior announced on November 18, 1959. Fish restoration funds for fiscal year 1960 amount to \$5.3 million; game restoration, \$15.3 million. The program is administered by Bureau of Sport Fisheries and Wildlife of the U. S. Fish and Wildlife Service.

Apportionments of Federal Aid Funds to States for Sport Fish and Wildlife Restoration, Fiscal Year 1960		
States	Sport Fishing	Wildlife
Alabama	\$100,569.39	\$278,169.87
Alaska	263,500.00	790,000.00
Arizona	94,220.77	334,814.01
Arkansas	15,962.61	244,807.77
California	263,500.00	715,651.11
Colorado ^{1/}	117,618.54	351,939.01
Connecticut	52,700.00	79,000.00
Delaware	52,700.00	79,000.00
Florida	106,843.39	222,612.58
Georgia	100,499.30	256,548.51
Hawaii	52,700.00	79,000.00
Idaho	83,269.54	296,603.43
Illinois	154,089.16	394,056.93
Indiana	139,962.69	417,762.83
Iowa	89,789.30	310,712.66
Kansas	83,751.76	300,296.72
Kentucky	82,924.33	249,518.82
Louisiana	57,324.44	261,916.05
Maine	52,700.00	170,568.56
Maryland	52,700.00	105,732.40
Massachusetts	52,700.00	82,929.89
Michigan ^{1/}	214,605.89	487,518.57
Minnesota ^{1/}	263,500.00	368,367.80
Mississippi	58,432.52	221,896.64
Missouri ^{1/}	136,064.65	347,067.67
Montana ^{1/}	123,173.59	473,192.84
Nebraska	74,045.23	274,876.58
Nevada	72,928.50	296,096.40
New Hampshire	52,700.00	79,000.00
New Jersey	52,700.00	99,289.38
New Mexico	88,700.54	350,799.04
New York	148,425.26	608,667.74
North Carolina	87,252.12	312,438.10
North Dakota	52,700.00	231,876.75
Ohio	154,402.37	444,084.00
Oklahoma	110,363.30	266,308.45
Oregon	111,651.99	380,558.49
Pennsylvania	119,178.89	590,597.68
Rhode Island	52,700.00	79,000.00
South Carolina	54,638.58	159,295.84
South Dakota	63,679.06	270,605.28
Tennessee	127,556.15	308,364.23
Texas	263,500.00	790,000.00
Utah	70,748.64	288,185.17
Vermont	52,700.00	79,000.00
Virginia	81,724.27	300,999.00
Washington	98,507.82	308,869.39
West Virginia	52,700.00	194,397.31
Wisconsin ^{1/}	197,180.32	331,460.62
Wyoming	83,515.09	312,323.89

^{1/}Portion of funds in the aggregate sum of \$523,221.99 temporarily withheld pending receipt of acceptable certification of paid hunting license holders.

These funds are derived from Federal excise taxes collected from the manufacturers--an 11-percent tax on sporting guns and ammunition for the restoration of game (Pittman-Robertson Act, approved September 2, 1937) and a 10-percent tax on fishing rods, reels, creels, and artificial lures, baits and flies (Dingell-Johnson Act, approved August 9, 1950). Both taxes apply on the manufacturer's price.

Guam, which became eligible for Federal Aid in 1958, Puerto Rico, and the Virgin Islands each receive \$12,000 a year for game restoration programs and \$10,000 each for fish restoration.

Federal Aid money is matched by state money on the basis of \$3 Federal Aid to \$1 state funds, although in actual practice the states carry out all projects with their own funds, and are reimbursed for up to 75 percent of project costs.

To obtain the benefits of the Federal grants, the states submit project proposals to the Bureau of Sport Fisheries and Wildlife. When Federal Aid projects are approved by the Bureau, the states fish and game departments proceed to carry out the plans, spending their own funds. The states then submit reimbursement claims for 75 percent of the costs of the project, either periodically or at the completion of the work. All equipment, lands, and structures become the property of the states. All project workers are hired by the states and are state employees.

Notes: Also see Commercial Fisheries Review, December 1958, p. 34.



Fish Flour

POTENTIAL COMMERCIAL VALUE:

Edible fish flour might well be our most nutritionally-important, economically-valuable, and politically-significant fishery product of the future.

At the fall 1959 meeting of the American Fisheries Advisory Committee in Newport News, Va., the members, their wives, and guests were served chocolate chip cookies made with an ordinary package mix to which 2 tablespoonsful of whole menhaden edible fish flour were added.

None of those present were aware of the addition of fish flour until the concluding speaker told them about it, because the U. S. Bureau of Commercial Fisheries' home economists had made certain that the cookies with fish flour looked, tasted, and crumbled exactly the same as cookies any homemaker might make with the same packaged mix. The

nutritional difference, however, was tremendous.

"If you ate the same number of cookies as I did," the speaker told them, "amazingly enough we got nearly one-fifth of our daily requirement of animal protein."

The fish flour is made tasteless, nearly white, and odorless by removing the last trace of fish oils. The flour will keep nearly indefinitely as samples have been stored at room temperature for more than a year without spoiling.

Fish flour, which is more than 80 percent high-quality protein, can benefit both the fishing industry and the consumer. Industry could prepare fish flour during times when raw fish are in abundant supply for future use when supplies are short. Fish flour, properly dried and defatted, can be shipped and stored easily and inexpensively. In addition, it provides a low-cost additive to other food preparations. The consumer would benefit because nearly two-thirds of the world's population have a need for more animal protein.

Feeding overpopulated nations apparently is not a problem that must be faced only by certain countries. In the future this may be a world-wide problem. The products of the sea apparently hold the answer. It has been estimated that the potential of our oceans is 500 million tons of food annually. A problem remaining after harvesting this potential is one of processing to insure that the harvest is suitable, readily available, and given optimum utilization for food. A satisfactory fish flour offers a solution to this problem.



Fishways

PROBLEMS OF PASSAGE OF FISH OVER OXBOW DAM DISCUSSED AT CONFERENCE:

During the late summer and fall 1959 months, the Idaho Power Company and Federal and State fishery agencies have been considering what temporary or permanent facilities should be used in

passing anadromous fish at the Hells Canyon and Oxbow Dams.

The fishery agencies had contemplated releasing adult fish in the forebay of the Hells Canyon Dam so that they can swim upstream to Oxbow Dam. This would permit the two tributaries just below Oxbow Dam to continue producing anadromous fish runs and reduce excessive hauling of adult fish. The remaining fish bound for spawning areas above would then be collected at the permanent upstream migrant facilities at Oxbow Dam and hauled above Brownlee Dam to proceed to their ancestral spawning area.

It was agreed at a conference held at Washington, D. C., on June 11, 1959, that the Idaho Power Company and the fishery agencies would consider a proposal of the Company to modify an existing order of the Federal Power Commission. The Company proposes passing fish from Hells Canyon Dam directly to the Brownlee Reservoir, thus eliminating from production the tributary streams entering the Snake River below the Oxbow Dam. The principal reason for making this proposal is to cut the cost of fish handling. Several alternative methods of passing fish have been under consideration since the meeting.

The Company, however, has informed the Federal Power Commission by letter of September 4, 1959, that the cost of facilities proposed by the fishery agencies exceeds their proposed method of handling the fish by about \$1,700,000 for original construction cost and exceeds the annual operating cost by \$200,000. The Company has requested a final determination by the Commission in the matter and has requested that a hearing be set at the earliest possible date.



Great Lakes

LAKE SUPERIOR ADVISORY COMMITTEE REPORTS ON FISHERY TRENDS:

The Lake Superior Advisory Committee met about mid-November in Baraga, Mich., to "advise the Great Lakes Fisheries Commission on matters pertaining to sea lamprey control, lake trout rehabilitation, and other related matters." Representatives were present from Minnesota, Wisconsin, Michigan, the Great Lakes Fisheries Commis-

sion, U. S. Bureau of Commercial Fisheries, and U. S. Bureau of Sport Fisheries and Wildlife. It was reported that progress in the control of the sea lamprey has been effected by three methods--mechanical barriers, electrical barriers, and the newer chemical treatment. Much of the control work centered in Michigan and Wisconsin streams and significant reductions have been made in some areas.

Because of the rapid progress in the development and application of methods to control the lamprey, the Commission is actively engaged in means of rehabilitating the lake trout.

The lake trout commercial fishery in the Isle Royal and Minnesota areas was smaller for 1959, the poundage of large trout was less, and the total catch was down, according to a representative from Minnesota. The small one-pound trout was down but the two- and three-pound trout seemed to be plentiful.

Even though there were some encouraging reports of trout in Lake Superior, experts warned not to view the future with optimism. The Superior lake trout production of about 1.5 million pounds in 1958 was 69 percent less than the 1950 production, and 38 percent less than the 1956 catch.

To assist in the rehabilitation program, the U. S. Bureau of Commercial Fisheries is operating two research vessels in Lake Superior. The vessels are experimentally fishing with mesh gill nets and especially designed trawls. This will give information on the younger age-classes of trout, some of which already indicates a severe shortage of young age trout. Fishing over the known spawning grounds gives information on the extent of fall spawning.

In past years eggs have been obtained from Lake Superior for use in the hatcheries, but native fish are now so hard to find, other sources are being sought. In some hatcheries brood stocks are being developed and collections from various inland lakes have been started by Federal and state agencies.

Minnesota will attempt to carry out spawn-taking operations in three inland lakes along the Gunflint Trail area. The lakes are Musquash, Daniels, and Saganaga. Trap and gill nets are used. In addition, the research section planned to use an electrical shocking device to capture mature trout on the spawning grounds. The work will be carried out at night.



Great Lakes Fisheries

Exploration and Gear Research

LAKE ERIE EXPLORATORY SMELT FISHING:

The Great Lakes Exploratory Fishing and Gear Research program of the U. S. Bureau of Commercial Fisheries is assisting the commercial industry of the Great Lakes by trying to find new fishery resources. Also included are ways of fishing the resources found by the introduction and development of suitable gear.

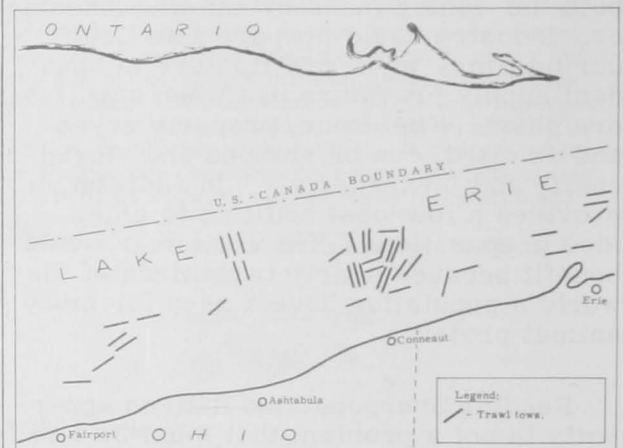
A major project, undertaken in cooperation with the Ohio Division of Wildlife, has involved ways and means of profitably catching commercial quantities of smelt in Lake Erie. Using the Bureau-chartered M/V Active, experiments have been conducted with Gulf of Mexico-type trawls and with the adaption of trawling gear to existing Great Lakes fishing vessels.

These efforts have been successful. During the fall of 1959, 7 tons of smelt were landed in one day which shows that trawling for that species in Lake Erie has commercial possibilities.

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EXPERIMENTAL TRAWLING FOR SMELT IN LAKE ERIE YIELDS COMMERCIAL QUANTITIES:

M/V "Active" Cruise 6; Commercial quantities of smelt were taken throughout the deeper waters of east central Lake Erie, between Fairport Harbor, Ohio, and Erie, Pa., during a 17-day cruise (September 22-October 8, 1959) of the U. S. Bureau of Commercial Fisheries chartered vessel Active. The purpose of the cruise was to gather additional information on the smelt fishery potential and to attempt commercial-scale production.



M/V Active Cruise 6 (September 22-October 8, 1959).

Forty-one trawl tows with a 50-foot two-seam balloon trawl, fitted with a one-inch mesh cod-end, produced over 52,000 pounds of smelt and small amounts of burbot, yellow perch, and herring. The best fishing results were obtained in 11-, to 13-fathom depths from Ashtabula to Conneaut, Ohio, where catch rates of smelt (8 to 20 to the pound) ranged from 2,200-5,000 pounds an hour, the best day's fishing yielded 14,000 pounds of marketable smelt. Smaller concentrations of smelt found northwest of Erie, Pa., produced trawl catches up to 1,500 pounds an hour. Gear damage was light.

Four days fishing were lost due to bad weather and winds up to 40 miles an hour. The adverse weather had little observed effect upon the smelt concentrations. Surface schools of emerald shiners were observed in the Conneaut and Erie areas. No seine sets were attempted.

Surface water temperatures were observed to be considerably cooler than during cruise 5 with a range of 66° F. to 68.5° F. Bottom temperatures ranged from 48° F. to 58° F.

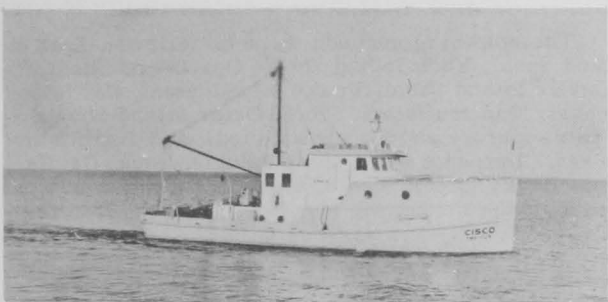
Note: Also see Commercial Fisheries Review, December 1959 p. 49.

Great Lakes Fishery Investigations

SURVEY OF EASTERN LAKE SUPERIOR CONTINUED:

M/V "Cisco" Cruise 7: During the cruise the Cisco operated in southeastern Lake Superior from Marquette to Batchawana Bay, as in cruises 1, 3, and 5.

Standard gangs of gill nets were set at 20 fathoms off Marquette; 15 fathoms in Shelter Bay; 35 fathoms in Munising Bay (2 gangs); 25, 50, 75, and 100 fathoms off Grand Marais; and 25, 35, 50, and 70 fathoms in Whitefish Bay. In addition, a standard gang minus the larger mesh sizes (4 to 6 inches) was set at 5 fathoms in Munising Bay.



Research vessel of the Service's Great Lakes Fishery Investigations.

The gill nets set off Marquette took only 5 lake trout, 5 burbot, 8 smelt, and 4 lake herring. The nets in Shelter Bay caught an unusually large number of longnose sucker (255), and little else (3 lake trout, a few whitefish, smelt, herring, a single burbot). The catch in the shallow set in Munising Bay was dominated by yellow perch (95) and round whitefish (56). Small numbers of whitefish, longnose sucker, white sucker, smelt, and one rainbow trout were also taken. The catch from the deeper sets in Munising Bay consisted mostly of Leucichthys hoyi (average 150 per set) and whitefish (30 per set), plus a few smelt and 3 lake trout.

A total of 25 lake trout was taken in gill nets at 25 fathoms and one at 50 fathoms off Grand Marais. One of these trout bore a fin-clip indicating it was stocked. Chub catches off Grand Marais were light at 25, 50, and 100 fathoms (45, 75, and 100 chubs, respectively) and moderate at 75 fathoms (141). Catches were mostly L. hoyi at 25 fathoms, L. reighardi at 50 fathoms, and L. kiyi in the deeper sets. A few L. nigripinnis and lake herring were taken at all depths. The only other species taken off Grand Marais were burbot (4 at 25 fathoms) and smelt (2 at 25 fathoms).

No lake trout were caught in gill nets set in Whitefish Bay. Chub catches were light at 25 and 35 fathoms (36 and 80, respectively), heavy at 50 fathoms (364) and moderate at 70 fathoms (129). L. hoyi made up 86, 80, and 65 percent of the catches at 25, 50, and 70 fathoms, respectively, but was slightly less numerous than L. reighardi at 35 fathoms. L. kiyi, L. nigripinnis, and L. zenithicus were caught in only small numbers. Other species were smelt (92 at 25 fathoms), alewife (only one), and an occasional burbot, white sucker, perch, and pygmy whitefish.

Trawling operations were carried out at depths ranging from 3 to 10 fathoms off Marquette, 15 to 25 fathoms in Shelter Bay, and 10 to 20 fathoms off Grand Marais. No age-group 0 lake trout were netted. Catches were mostly ninespine sticklebacks (more than 1,500 per 10-minute tow off Grand Marais) and slimy sculpins, plus a few smelt fry, trout-perch, and age-group 0 alewives. The alewives were taken from a sandy bottom about 3 miles southeast of Marquette and are believed to be the first young alewives taken from Lake Superior.

Surface water temperature averaged about 14^o C. (57.2^o F.) at the beginning of the cruise and 13^o C. (55.4^o F.) at the end. Extremes were 15.6^o C. (60.0^o F.) and 12.8^o C. (55.0^o F.). The metalimnion for the most part continues to be well defined in deep-water areas.

Cruise 8: Activities of the U. S. Bureau of Commercial Fisheries research vessel Cisco during October 13-29, 1959, were severely restricted due to extremely bad weather. The primary objective of this cruise was to ascertain the general status of the spawning stock of lake trout in the Marquette, Mich., area of Lake Superior, by setting gill nets on known spawning reefs. Four lifts, each of about 4,500 feet of large-mesh (4- to 6-inch) gill net, were made. Only two lake trout, both ripe males, were caught on the reefs. These meager data, of course, suggest a very small spawning stock. Nets set in this area in 1952 and 1953 took 157 and 65 pounds of spawning lake trout per 1,000 feet of gill net, respectively, while nets set this cruise took 0.5 pounds of spawning lake trout per 1,000 feet of net.

Moderate numbers of longnose suckers, and a few burbot and whitefish (the largest 9 pounds) were also caught in the large-mesh nets. Small amounts of 1 $\frac{1}{4}$ - and 2-inch mesh attached to the large mesh took round whitefish (up to 35 per lift), smelt, and longnose dace (Rhinichthys cataractae). The stomachs of all species but the dace were examined for lake trout eggs, and none were found.

Standard gangs of gill nets were set at 25, 50, 75, and 100 fathoms off Marquette. The 25- and 50-fathom sets were for 1 night, but the deeper sets were out for 6 nights before they could be lifted. Four lake trout were taken at 25 fathoms, 3 at 50 fathoms, 3 (1 siscowet) at 75 fathoms, and 1 (a siscowet) at 100 fathoms. None of these lake trout were in spawning condition. There were no chubs taken at 25 fathoms, but the chub catch was moderately large (194) at 50 fathoms. At 75 and 100 fathoms the chub catches were large (998 and 343, respectively), possibly because the nets were in the water longer. The chubs were mostly Leucichthys reighardi (70 percent) at 50 fathoms, and L. kiyi at 75 and 100 fathoms (82 percent and 87 percent, respectively). Other species were L. hoyi (50 fathoms) and L. nigripinnis (100 fathoms). Also taken in the standard gangs were lake herring (40 each at 75 and at 100 fathoms), burbot (23 at 25 fathoms, 1 at 75 fathoms, and 30 at 100 fathoms), and smelt (30 at 25 fathoms).

Trawls were towed at 20, 25, and 30 fathoms in Shelter Bay. No 0-age class lake trout were caught. Slimy sculpins, ninespine sticklebacks, and trout-perch comprised most of the catches. There were

also a few small smelt and whitefish or related species.

Complete hydrographic data were collected at a regular station in Shelter Bay. Surface water cooled rather rapidly during the cruise, and by the end of the cruise the water became vertically homothermous, or nearly so, in depths less than 30 fathoms. Surface water temperatures ranged from 6.2° C (43.1° F.) to 11.4° C. (52.5° F.)

Note: Also see Commercial Fisheries Review, November 1959 p. 27, and December 1959 p. 52.

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**WESTERN LAKE ERIE
BIOLOGICAL RESEARCH CONTINUED:**

M/V "George L." Cruise 8: Habitat conditions and fish compositions were measured by the U. S. Bureau of Commercial Fisheries research vessel George L. at the 7 "index" stations in western Lake Erie during the first two weeks of October 1959. Scales were taken from samples of commercial landings during the last 2 weeks at several ports on the south shore.

Surface-water temperatures dropped from 70° to 60° F. between October 5 and October 15. Although habitat conditions appeared normal, trawl catches of fish were low. Little food was found in the stomachs of yearling or older yellow perch. This situation was not unusual, however, since a large percentage of perch examined after August 1 had been empty. Catches of young-of-the-year yellow pike were light. Apparently they were becoming too large to be caught efficiently by trawl. Young yellow pike began to appear in trap nets in the Sandusky area in fairly large numbers during October, and by the end of the month they averaged slightly more than 10 inches long.

The samples of yellow pike, sheepshead, yellow perch, and white bass obtained from the commercial catches were adequate, but so few blue pike, cisco, and white fish were caught in October that good samples of these species could not be obtained. The combined catches of "money" fish--blue pike, yellow pike, cisco, and whitefish from Lake Erie in 1959 were the lowest on record.

Note: Also see Commercial Fisheries Review, December 1959 p. 50.

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**WESTERN LAKE SUPERIOR
FISHERY SURVEY CONTINUED:**

M/V "Siscowet" Cruise 8: A study of the abundance and distribution of spawning lake trout in western Lake Superior was conducted by the U. S. Bureau of Commercial Fisheries research vessel Siscowet during October 13-29, 1959. Gangs of large-mesh nets (5- to 6-inch mesh stretched measure) were set over spawning grounds known to have been productive in earlier years. Attached to each gang were two small-mesh nets (1½- and 2½-inch mesh) to learn the abundance of other species on the spawning grounds. Each gang consisted of approximately 3,000 feet of large-mesh nets and 600 feet of small-mesh nets. A total of 44,700 feet of large-mesh and 7,050 feet of small-mesh nets was lifted during the cruise.

The spawning grounds were as follows: Sand Island Shoal, York Island Shoal, Oak Island Shoal, Devils Island Shoal, Rocky Island Shoal, Cat Island Shoal, Manitou Island Shoal, Outer Island Shoals (two separate shoals were fished), and Bad River Reef. Two sets were made each on York, Devils, and Rocky Island Shoals, and one set was made on each of the remaining shoals.

Table 1 lists the number of spawning trout taken from each set and the number and identity of associated species taken in the small-mesh nets. All of the 20 spawning lake trout captured were males 22.6 to 33.5 inches long. Sixteen of them were tagged and released. Stomach samples were collected from the associated species for future examination in the laboratory. Stomachs examined on the vessel contained no lake trout eggs.

Spawn-taking operations on Gull Island Shoal and adjacent areas by the Wisconsin Conservation Department took place concurrently with the Siscowet's operations. A total of 194 trout were taken in this operation, only 30 of which were females; 100 fish were tagged and released by Wisconsin Conservation Department and Bureau personnel.

The water temperature during the cruise varied from 44.7° F. on Sand Island Shoal to 49.5° F. on Manitou Island Shoal.

Table 1 - Lake Trout and Other Species Taken from Gill Nets Set on Various Spawning Shoals During the Lake Trout Spawning Period

Date	Location	Depth	Lake Trout	Burbot	Lake Northern Chubs	Lake Herring	Menominee Whitefish	Smelt	Longnose Suckers
		Fathoms	(Number of Fish)						
Oct. 14	York Isle Shoal	4-7	-	-	5	8	23	-	25
16	Devils Isle Shoal	8-11	1	2	16	1	8	2	146
19	Cat Isle Shoal	4-8	2	-	29	1	16	1	163
19	Rocky Isle Shoal	4-8	-	3	22	2	25	18	79
20	Manitou Isle Shoal	4-29	3	-	-	9	16	13	76
20	Oak Isle Shoal	4-9	-	1	6	6	27	4	111
22	N. Outer Isle Shoal	4-9	2	-	-	59	36	-	75
22	W. Outer Isle Shoal	4-7	-	-	19	16	29	-	95
24	Devils Isle Shoal	8-9	10	-	4	25	29	-	50
24	Rocky Isle Shoal	4-13	2	-	17	18	15	-	253
28	York Isle Shoal	4-8	-	4	-	64	8	2	20
28	Sand Isle Shoal	4-9	-	-	2	42	10	-	92
29	Bad River Reef	8-9	-	10	-	4	2	12	40

Note: Also see Commercial Fisheries Review, December 1959 p. 51.



Gulf of Mexico Gear Research Program

SHRIMP-TRAWL UNDERWATER PERFORMANCE STUDIES CONTINUED:

M/V "George M. Bowers" Cruise 24:
The fifth in a series of cruises planned to study the performance of shrimp trawls was made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers between October 20-30, 1959. Due to overcast, squalls, and rough seas throughout the cruise, only 200 feet of underwater movie film was obtained.



King Crab

UNITED STATES AND JAPAN TO EXPAND KING CRAB RESEARCH IN BERING SEA:

Expansion of research on king crab in the Bering Sea was agreed upon on November 3 by Japan and the United States. The decision was made at a committee meeting of the International North Pacific Fisheries Commission which met in Vancouver, British Columbia.

The expanded research program will focus on crab-trawling in the Eastern Bering Sea. It is expected that the studies will lead to unilateral agreements between Japan and the United States for regulation and conservation of the valuable king crab resource.



Lenten Promotion

"IT'S FISH 'N' SEAFOOD TIME" WILL BE THEME FOR 1960:

The commercial fishing industry is now laying plans for its first annual industry-wide Lenten promotion. The theme for the March 2-April 17, 1960, Lenten promotion will be "It's Fish 'n' Seafood Time." Menu variety will be emphasized in advertising, publicity, and merchandising materials.

The U. S. Bureau of Commercial Fisheries will actively participate in this promotion through its consumer education program, as it has done in previous industry-wide promotions, such as "Fish 'n' Seafood Parade." Bureau materials will stress menu variety, ease of preparation, nutritional value, and other health benefits

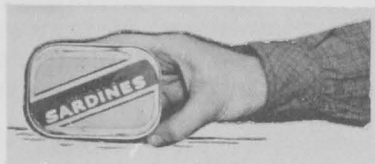
accruing from increased use of fish and shellfish in the diet.



Maine Sardines

SARDINES OFFERED FOR STUDIES ON EFFECT OF CHOLESTEROL BUILDUP AS CAUSE OF HEART ATTACKS:

A suggestion by a nationally-known heart specialist to institute a controlled diet on 10,000 Americans to study the effects of cholesterol buildup in the cause of heart attacks was one step nearer reality by



an offer of the of the Maine Sardine Council on November 5, 1959, to provide enough sardines to make the test possible.

A Cleveland, Ohio, doctor made the dietary study suggestion at a news conference following the close of the 32nd annual meeting of the American Heart Association.

"The only way to resolve whether or not a high cholesterol content in the blood is a contributing factor to 'coronary' heart attacks," stated the doctor, "is to place enough people on a diet specifically designed to keep the blood's concentration of cholesterol down." He indicated that at least 10,000 people would have to take part in the study to have any significance.

In a telegram to the Cleveland doctor, the Chairman of the Council endorsed the proposal and offered the services of the Maine sardine packers in donating cases of sardines to any institution or group which would undertake the study.

The Council's chairman sent this telegram to the Cleveland doctor:

"Your proposal for a controlled diet study to determine the effects of cholesterol as a key factor in atherosclerosis is one to which the Maine Sardine Council would like to lend its full cooperation.

"At present, the Council, which represents all the packers of sardines in the State of Maine, is sponsoring a study at the Massachusetts Institute of Technology to explore this area in the feeding of animals. While it is hoped that animal experiments will bring forth much

vital information on the effects of cholesterol in the blood, certainly a broad scale study such as you suggested would be of infinitely more significance.

"Studies by the University of Minnesota operating under a contract from the U. S. Bureau of Commercial Fisheries and the Massachusetts Institute of Technology and our own laboratory at Bangor, indicate that small herring, commonly referred to as sardines, are an excellent nutritive source of unsaturated fats.

"Certainly any dietary effort to lower or control the cholesterol level in the blood must include an ample amount of such food.

"The Maine Sardine Council will make available to you or any institution or group selected by you to conduct such a scientific study, free cases of Maine Sardines to include in a controlled diet program."



Marketing Surveys to Improve and Expand Markets for Fishery Products

A broad program of market research by contractors under the supervision of the U. S. Bureau of Commercial Fisheries made possible by funds provided by the Saltonstall-Kennedy Act of 1954 includes the following: (1) Motivation Study on Use of Canned Salmon, Tuna, and Sardines by Homemakers; (2) Nationwide Consumer Panel Survey on Canned Fish Consumer Purchases, October 1958-September 1959; and (3) Geographic Distribution of Canned Tuna, Salmon, and Sardines.

Motivation Study on Use or Nonuse of Canned Fish by Homemakers: The promotional problem for canned salmon is not so much one of increasing usage among consumers already using the product, but the persuasion of those who do not use salmon to become users. The problem is the very opposite with canned tuna; the promotional effort must be directed toward increasing consumption among consumers already using tuna,

and particularly among those using the product only occasionally.



These are some of the conclusions contained in a study being completed under a contract with the Bureau. The study directed toward learning what motivates homemakers to use or not to use canned salmon, tuna, and sardines surveyed attitudes in three urban areas, namely, Boston, Mass., Detroit, Mich., and Birmingham, Ala., and in one rural area, Orangeburg County, S. C.

Consumer Panel Survey on Canned Fish Purchases, October 1958-September 1959: Another phase of the Bureau's broad marketing research program directed toward improving and expanding markets for fishery products is a nationwide consumer panel survey of canned fish consumer purchases during the period October 1958 to September 1959.

Report of household consumer purchases of canned tuna, salmon, and sardines have been released to the fishery trade monthly as received from the contractor.

Recently, a report summarizing data on household consumer purchases during the first six months of the study, October 1958-March 1959, was published. This report also covered family characteristics of canned fish consumer purchasers. A full twelve-months report will be made available after completion of this study.

Geographic Distribution of Canned Tuna, Salmon, and Sardines: A first phase report of the U. S. Bureau of Census study of geographic distribution of canned tuna, salmon, and sardines has been received.

This report covers shipments by packers during the six months ending

December 31, 1958. The U. S. Bureau of Census is now preparing a final report covering packer shipments during the twelve months ending June 30, 1959.

This information should be of considerable value to the canned fish segment of the domestic commercial fishing industry in the planning of market operations and to the U. S. Bureau of Commercial Fisheries in planning its consumer education and market development programs.

Note: Also see Commercial Fisheries Review, August 1959 p. 28, June 1959 p. 32, November 1958 p. 34.



National Fish Week

"FISH FOR HEALTH"
MESSAGE BROADCAST
BY ASSISTANT SECRETARY:

Assistant Secretary of the Interior for Fish and Wildlife Ross L. Leffler was interviewed by Don McNeil on his "Breakfast Club Show" before a live



Mr. Leffler being interviewed by Don McNeil on his "Breakfast Club Show."

audience on October 13, 1959. The nationwide broadcast of the transcribed show on October 14 reached some 30 million people through the 436 ABC network affiliates in the United States and Canada and over the Armed Forces Radio Network.

Secretary Leffler's presentation had as its theme "fish for health." This was the first announcement of a major "nu-

tritional breakthrough" which indicates the value of fishery products in lowering cholesterol levels in the blood.

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"FISH 'N' SEA FOOD PARADE" PARTICIPATION BY U. S. BUREAU OF COMMERCIAL FISHERIES:

The fifth annual industry-wide "Fish 'n' Sea Food Parade" promotion, held October 19-25, 1959, is now history. Indications are that this was the most successful such promotion to date.



The U. S. Bureau of Commercial Fisheries again actively participated through its consumer education program, which is designed to promote the greater use of domestically-produced fishery products. As its contribution to this promotional effort, the Bureau distributed 75,000 single-sheet promotional leaflets to public and private schools participating in the National School Lunch Program; 25,000 single-sheet promotional leaflets to restaurants throughout the United States; 20,000 single-sheet promotional leaflets to public and private institutions throughout the country; 15,000 38-page fact sheets to newspaper food editors and other food publicists throughout the United States; 3,800 black-and-white food photographs to food editors; television slides, drop cards, and scripts to virtually every television station in the country; public service radio recordings and scripts to all radio stations in the United States; and 300 each of 60-second, 20-second, and 8-second animated public service television shorts to television stations throughout the country.

In addition, Bureau home economists and marketing specialists appeared on

about 60 radio and television stations throughout the United States during Fish 'n' Seafood Parade. Stressed were the nutritional and health values, ease of preparation, and variety of fishery products. In a number of instances, appearances by industry people on radio and television shows were also arranged.

"Fish 'n' Seafood Parade 1959" is an excellent example of a cooperative industry-Government effort.



North Atlantic Fisheries Exploration and Gear Research

ELECTRICAL TRAWL-FISHING TESTS OBSERVED WITH UNDERWATER TELEVISION:

M/V "Cape May": Tests of electrical trawl-fishing by the commercial research vessel Cape May were observed by U. S. Bureau of Commercial Fisheries gear specialists utilizing Bureau underwater television equipment. The tests were made on the southern part of Stellwagen Bank in 11-15 fathoms from September 21 to October 6, 1959.

The underwater television camera was suspended on a chain bridle from the top square of a modified No. 41 trawl looking forward toward the mouth of the net.

The positive electrode was attached to the headrope of the trawl and was hung directly off the bottom in view of the television camera. The negative electrode was trailed on a cable into the cod end. The electronic apparatus of high-power output aboard the M/V Cape May was connected by a heavy rubber-jacketed two-conductor cable to the two V-shaped copper pipe electrodes. Basically, the electronic system charges and discharges a large bank of capacitors through ignitrons at the desired pulse amplitude, width, and frequency.

Because of limitations of visibility, due to turbid water and the narrow angle of camera view, it was not possible to observe the total area in which the electric field was effective. Only the area

of very strong fields close to the positive electrode was seen. The electronic pulsing unit was switched on when fish appeared on the television monitor screen, and all of the species within the camera's field were stunned immediately. While fishing at standard trawl speeds, observations were made on the reaction of various species of fish, including yellowtail flounder (Limanda ferruginea), skate (Raja sp.), and dogfish (Squalus acanthias). The yellowtail flounder and the skate consistently curled up under the influence of the electrical field; flounder from head to tail, and the skate from wing-tip to wing-tip.

At one period during the operation, fish were not in evidence on the monitor screen. However, when the electronic unit was switched on, stunned fish (hake) were seen drifting by the camera in an inverted position into the mouth of the net. These fish continued to enter the net as long as the electric unit was in operation.

A photographic record of fish behavior was obtained from the television monitor screen.



North Atlantic Fishery Investigations

SURVEY OF STOCKS OF JUVENILE HADDOCK ON GEORGES BANK AND VICINITY COMPLETED:

M/V "Delaware" Cruises 12 and 13: Two cruises were made (September 23-October 27, 1959) by the U. S. Bureau of Commercial Fisheries research and exploratory fishing vessel Delaware to survey young-of-the-year haddock and older haddock populations on Georges Bank, the Gulf of Maine, Browns Bank, and the area between Georges Bank and Southern Long Island, N. Y.

The annual census, made by biologists from the Bureau's Woods Hole Biological Laboratory showed that the 1959 year-class, spawned mostly in February and March this year, does not appear to be a particularly strong one. Juvenile haddock were much less abundant on the eastern part of Georges Bank than they were in 1958, about the same as in 1958 on Browns Bank, but somewhat more abundant in the South Channel area. On

the average the 1959 haddock year-class does not appear to be as strong as the one produced in 1958. Fish of the 1959 year-class will be large enough to be taken by commercial boats with legal, large-mesh nets late in the summer and fall of 1961.



The Service's research vessel Delaware.

The 1958 year-class, due to enter the fishery in the summer and fall of 1960, was found to be abundant during the 1958 census cruises. A reassessment of the strength of this year-class will be made on the basis of the number of one-year old fish in the samples collected in September-October 1959 cruises. When an analysis of samples has been completed an announcement will be made regarding a revised estimate of the strength of the 1958 year-class.

The success of this 1958 year-class is particularly important to the New England groundfish industry, currently finding haddock at its lowest level of abundance in many years. Since about 1948 haddock populations on Georges Bank consisted of strong broods in even-numbered years and weaker ones in odd-numbered years, but this sequence was broken when 1956 turned out to be a poor year for the survival of young fish. Since the intensive fishery depends on frequent successful broods to keep up the supply of fish on the banks, the relatively weak 1955, 1956, and 1957 year-classes have

considerably diminished the number of fish available to the New England trawlers.

Fortunately the abundance of cod has increased somewhat as the abundance of haddock has decreased, and Bureau biologists state that this species should be relatively abundant for another year or longer.



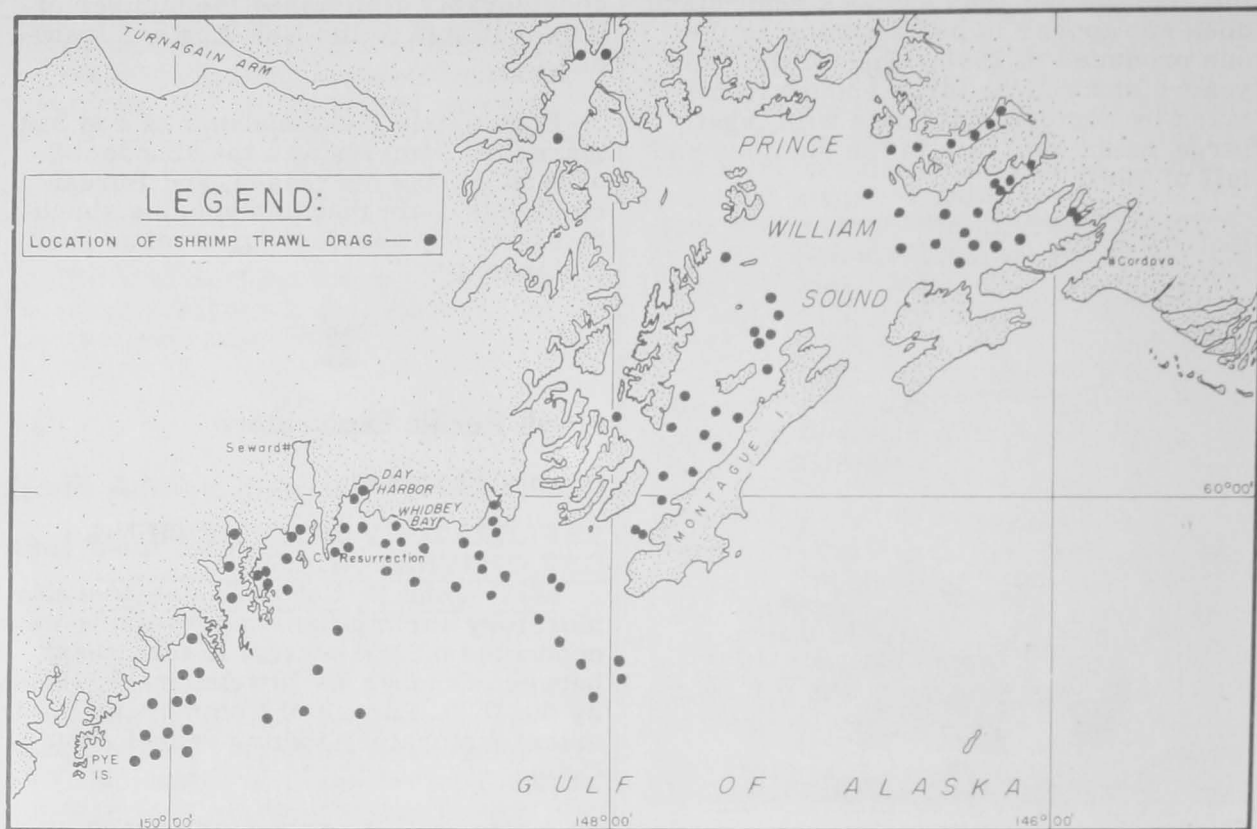
North Pacific Exploratory Fishery Program

EXPLORATORY SHRIMP FISHING OFF CENTRAL ALASKA:

M/V "John N. Cobb" Cruise 44: Exploratory shrimp fishing operations were conducted off the central Alaska coast between October 14-November 13, 1959, by the U. S. Bureau of Commercial Fisheries' exploratory fishing vessel John N. Cobb.

A total of 101 exploratory drags was made in the area from east of the Pyle Islands to and including Prince William Sound at various depths between 20 and 233 fathoms. Except when snags were encountered, drags were of 30 minutes duration. All drags were with a 40-foot, flat, Gulf-of-Mexico-type shrimp trawl on a 5 feet x 2½ feet 150-pound doors using a single warp and a 20-fathom bridle.

Pink shrimp (*Pandalus borealis*) and sidestripe shrimp (*Pandalopsis dispar*) were found in all waters fished at depths deeper than 40 fathoms. The largest catches during the explorations were made during two drags outside of Day Harbor: one drag, 1½ miles north of Resurrection Cape, in 68-84 fathoms, yielded 330 pounds (heads on) of mixed pink and sidestripe shrimp; and another drag, 8 miles south southeast of Whidbey Bay, in 55-59 fathoms, also resulted in a catch of 330 pounds of mixed shrimp. Poor bottom conditions in both areas limited the length of drags. Twelve other drags in various localities produced from 100 to 300 pounds of shrimp each, and the remaining 87 drags yielded less than 100 pounds each.



M/V John N. Cobb Cruise No. 44 (Oct.-Nov. 1959).

A total of 600 pounds of marketable Pacific ocean perch (*Sebastes alutus*) was taken in a drag 16 miles east of the Pye Islands in 90-102 fathoms. The majority of the incidental fish catches, however, were predominantly nonmarketable fish such as turbot, pollock, eulachon, and sculpins, and miscellaneous invertebrates, including various starfish, sea anemones, and tanner crabs. (See map above.)



Oysters

EFFECT OF COPPER BARRIERS ON OYSTER MEATS STUDIED:

The presence of copper in the experimental oyster drill barrier used in Chincoteague Bay, Va., to surround oyster beds poses a problem of possible increased copper in the oyster meats.

Many samples of oysters have been collected by shellfish biologists of the

U. S. Bureau of Commercial Fisheries at graduated distances from the barrier, and the meats examined. No excessive accumulation of the metal, whether they came from inside or directly outside the barrier-enclosed large beds, was revealed. However, in very small enclosures and in laboratory aquaria, the impounded oysters exposed to copper appeared to be greener in color than the controls. Precise analysis of the meats of these latter oysters will be made for copper content to evaluate the visual tests first used to check copper intake.

PRODUCTION ON ATLANTIC COAST IN 1959/60 MAY HIT NEW LOW:

The Atlantic Coast 1959/60 oyster season will probably go into the record as the year of lowest production of oysters. The Atlantic Coast industry, north of Chesapeake Bay, has reached a new low. Practically no oysters will be produced from the entire Delaware Bay system and the Long Island yield will be far

below its 1950/51 level. Even the Chesapeake oysters will be less abundant than they were in 1958/59 and far below five years ago.

A heavy summer death rate in the Lower Chesapeake Bay in Virginia is the major factor in this decline in yield. Coupled with a limited supply of oysters on the public beds in Maryland, the prospects are gloomy indeed.

This scarcity of oysters has resulted in high prices for all shell stock and in rapid price increases for shucked standards, selects, and extra selects. The prices for these grades are the highest on record. Some packers and repackers predict even further increases, although some report buyer resistance.

While this difficult picture characterizes the Atlantic Coast, the Gulf and Pacific Coast oyster growers and packers indicate a somewhat more stable production equal if not in excess of 1958/59.

This could well mean that the total financial return this season will be as high as 1958/59, even though the overall production will drop.

* * * * *

UNITED STATES OYSTER PRODUCTION, 1958 WITH COMPARISONS:

Over a period of nine years (1950-1958), United States production of oysters has declined steadily. Production

State	1958	1957	1954	1950
	(1,000 Lbs.)			
Maine	4	6	6	-
Massachusetts . .	113	152	174	228
Rhode Island . . .	3	3	112	922
Connecticut . . .	156	244	443	3,577
New York	1,057	1,067	1,708	8,787
New Jersey	829	2,720	7,329	7,242
Delaware	2,410	4,194	4,340	2,141
Maryland	12,026	14,144	20,363	14,406
Virginia	25,503	20,090	21,224	15,547
North Carolina . .	1,041	1,086	1,009	1,322
South Carolina . .	1,437	1,845	2,562	1,374
Georgia	143	112	217	308
Florida	825	736	690	903
Alabama	458	1,291	739	2,070
Mississippi	579	863	977	508
Louisiana	8,265	10,490	8,361	8,715
Texas	311	953	699	125
California	1,159	1,359	74	39
Oregon	508	429	436	976
Washington	9,570	9,874	10,459	7,225
Total	66,397	71,658	81,922	76,415

of oysters during the 1950-58 period has been relatively stable in the east coast areas south of Delaware, the Gulf of Mexico area, and on the West Coast, but the drop has been very sharp for the oyster-producing areas located in Delaware Bay; Great South Bay, Long Island, N. Y.; Long Island Sound; Narragansett Bay in Rhode Island; and Buzzards Bay in Massachusetts. Production of oysters in northern California increased sharply following the large-scale planting of Japanese oyster seed in 1955-56.



Salmon

ALASKA'S 1959 SALMON PACK LOW, BUT ESCAPEMENT FAIR:

As of October 11, 1959, Alaska's salmon pack amounted to only 1,770,795 cases (48 1-lb. cans) as compared with a total of 2,989,290 cases packed by October 1, 1958. Alaska's pack of salmon in 1959 was the lowest since 1900. There were slight increases in 1959 in the Alaska pack of sockeye or red salmon and king salmon, but sharp declines in the pack of pink salmon (637,714 cases as compared with 1,583,198 cases) and chum salmon (410,758 cases as compared with 758,891 cases). In Southeastern Alaska there was a slight gain over the cycle year (1957) in pink salmon, but a disastrous decline in the pack of chums. In Central Alaska both the pink and chum salmon packs were down drastically, particularly pink salmon (only 165,681 cases in 1959 as compared to 809,937 cases in 1958).

The severe drop in the pack of pink salmon was not reflected in the escapement. The salmon escapement to the salmon streams although far from excellent, was relatively good as compared with the pack.

* * * * *

BRISTOL BAY RED SALMON RUN PREDICTION FOR 1960:

Representatives of the Alaska Department of Fish and Game, Fisheries Research Institute of the University of Washington, and the U. S. Bureau of Commercial Fisheries met in Juneau

November 11, 1959, to consider the possible size of the red salmon run in Bristol Bay in 1960. Background information which was available to the three agencies and "pooled" for the study included the number and age of red salmon which had spawned in past years, the abundance of young salmon which had migrated to the ocean in recent years, and the abundance of immature red salmon in the ocean in recent years. As a result of the varying indications derived from these data two estimates were made. The first was based on the average relationship between number of spawners and the resulting run, and the second was based on the abundance of young salmon migrating to sea combined with the abundance of immature red salmon in the ocean. The first method resulted in the prediction of a run of 18 million red salmon in Bristol Bay in 1960 and the second method of a run of 35 million red salmon. The actual 1960 run can be expected to deviate considerably from either prediction, although the three agencies believe that the most probable total run will be between these two estimates.

Most of the difference in the two predictions lies in the estimates for the Kvichak River. In 1956 there was an unusually large number of spawning red salmon in this system and the Bristol Bay run in 1960 will depend primarily on the success of this spawning and the proportion that returns in 1960 as 4-year-old fish.

The fisheries agencies emphasized that the estimates will be effected by the size of the Japanese high-seas catch in 1960. The run of red salmon in Bristol Bay will be decreased in proportion to the take of red salmon on the high seas by Japanese fishermen.



South Atlantic Exploratory Fishery Program

EXPLORATORY TRAWLING
SURVEY OFF SOUTH CAROLINA
AND GEORGIA COASTS:

M/V "Silver Bay" Cruise 19: The second in a series of cruises to assess the

commercial fishing potential off the South Atlantic Coast was made by U. S. Bureau of Commercial Fisheries chartered fishing vessel Silver Bay between October 14-29, 1959. During the cruise 70 trawl tows were made in 5-50 fathoms between Little River Inlet, S. C., and Brunswick, Ga.

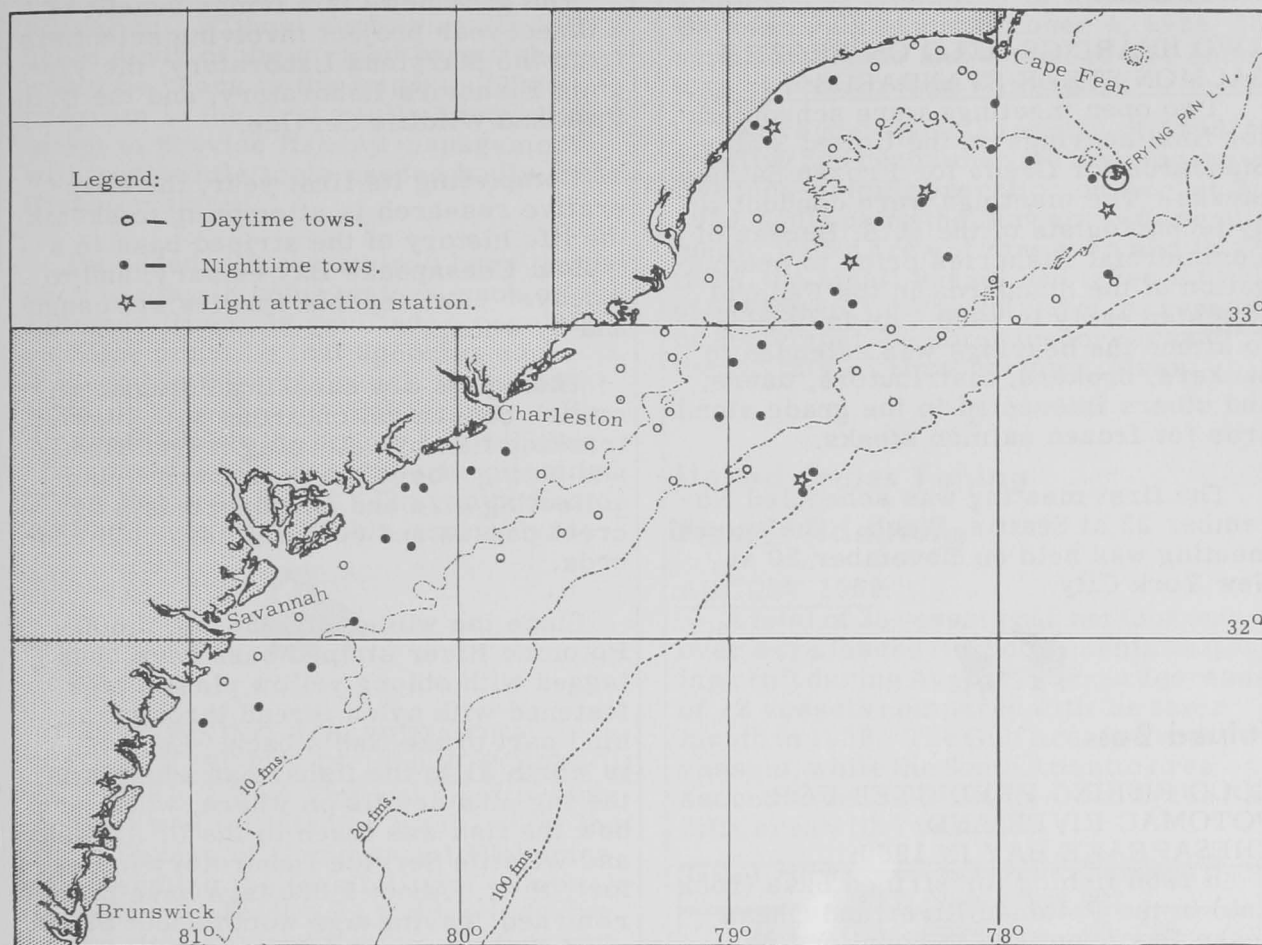
Trawling gear consisted of 60/80-foot (60-foot headrope and 80-foot footrope) and 64/84-foot two-seam shrimp trawls equipped with 6-inch rollers and 54/74-foot fish trawls equipped with 24-inch rollers. All trawls were fished with tickler chains.

Shrimp: Most of the fishing was conducted inside of the 20-fathom curve (60 drags), along the outer edge and adjacent to known shrimping grounds. Thirty-six drags inside of 10 fathoms yielded white shrimp (Penaeus setiferus) in 9 drags, brown shrimp (P. aztecus) in 15 drags, and pink shrimp (P. duorarum) in 12 drags. All three species were present in the same drag on two occasions. The highest catch rate for a combination of these shrimp species was 17 pounds (heads-on) per hour. Twenty-four drags between 10 and 20 fathoms caught small numbers of pink shrimp in 6 drags and a single brown shrimp. Average sizes for whites, browns, and pink shrimp ran 21-25 count (heads-off). Rock shrimp (Sicyonia) were most frequently encountered between 10 and 20 fathoms; however, the best catch (10 pounds) was made in 50 fathoms.

Fish: Fish catches were small over the entire area. Porgy or scup, croaker, and spot made up the bulk of the catch which generally ran below 100 pounds an hour, although a one-hour drag in 19-21 fathoms caught 1,750 pounds of porgy, vermillion snapper, and several miscellaneous species.

A few red snapper and grouper were taken in two of the six drags between 40 and 50 fathoms. Catches of up to 30 pounds of flounder (fluke) were also made in this range.

Biological material representative of the area was collected and preserved for future study by a member of the staff of the Bureau's Biological Laboratory, Brunswick, Ga.

M/V Silver Bay Cruise 19 (October 14-29, 1959).

Spotted Sea Trout

TAGGING TO DETERMINE GROWTH RATES AND MIGRATIONS:

A study to determine growth rates and migrations of spotted sea trout (*Cynoscion nebulosus*) off the west coast of Florida by tagging is being conducted by The Marine Laboratory of the University of Miami. Returns indicate that the tagged spotted sea trout do not travel far from the point of release.

A total of 3,759 sea trout have been tagged, of which 220 tags have been returned from fish released in the Fort Myers, Cedar Key, and Appalachicola,

Fla., areas. All but 4 of the tagged fish were caught within 30 miles of the tagging site. The longest migration of a single fish was from Appalachicola, Fla., to Grand Island, La., or about 265 miles west from the tagging area.

Two types of tags are being used in the experiments. One is an internal small green oval plastic tag that is inserted in the body cavity of the fish and is found when the fish is cleaned. The second type is a yellow plastic tube about two inches in length attached to an internal tag. The plastic tube protrudes from the body of the fish to aid in detection.



Standards

TWO HEARINGS HELD ON FROZEN SALMON STEAK STANDARDS:

Two open meetings were scheduled for final hearings on the United States Standards for Grade for Frozen Salmon Steaks. The meetings were conducted by technologists of the U. S. Bureau of Commercial Fisheries prior to promulgation of the Standards in the Federal Register early in 1960. An invitation to attend the hearings was extended to packers, brokers, distributors, users, and others interested in the grade standards for frozen salmon steaks.

The first meeting was scheduled November 23 at Seattle, Wash. The second meeting was held on November 30 at New York City.



Striped Bass

GOOD FISHING PREDICTED FOR POTOMAC RIVER AND CHESAPEAKE BAY IN 1960:

In 1960 fishing for striped bass (rockfish) in the Potomac River and Chesapeake Bay promises to equal and perhaps exceed the record-breaking 1958 harvest, according to a prediction made by State and Federal biologists.

A biologist of the Maryland Chesapeake Biological Laboratory reported that a whopping crop of Potomac River 1½-year-olds should reach the legal 12-inch minimum size by April or May 1960. His observations have been confirmed by other observers.

Support for the bonanza prediction came in the last two weeks when the biologist and his assistants, looking for fish to tag, noted an unusually large proportion of 10- and 11-inch striped bass in Potomac River pound nets.

Scientists had seen indications of a very large crop during 1958/59 winter-trawling and tagging operations, but felt more evidence was needed before making a prediction. A creel census during the summer helped when it revealed anglers were plagued with undersized fish.

The good news is a fringe benefit of a three-year project involving scientists from the Maryland Laboratory, the Virginia Fisheries Laboratory, and the U. S. Fish and Wildlife Service.

Completing its first year, the cooperative research is attempting to sketch the life history of the striped bass in a typical Chesapeake Bay estuary, and to discover how fast this species are caught, and by whom.

Biologists are checking Potomac River fish concentration areas with trawls, tracking fish by releasing tagged fish, and noting where they are caught, and collecting size and abundance data by creel census and commercial catch records.

Since the winter of 1958/59, 3,600 Potomac River striped bass have been tagged with oblong yellow plastic tags fastened with nylon thread through the hind part of the fish's back. Each tag is worth \$1 to the fisherman who mails the tag plus details on where, when, and how the fish was taken to the U. S. Fish and Wildlife Service Laboratory in Beaufort, N. C. About 1,000 tags have been returned, leaving tags worth about \$2,600 on fish yet to be caught.

Returns to date suggest that while some Potomac River striped bass venture far afield, most tend to stay put in home waters.

The 1959 winter-trawling program, which lasted three weeks, upset the previous suspicion that striped bass concentrate only in deep holes in cold weather. Instead, scientists netted fish spread widely over a 35-mile stretch of river, at depths of 30 to 100 feet. The fish were quite active in spite of water temperatures from 34° to 37° F.

The 1959 summer creel census yielded useful data on the sports catch although it was primarily intended to test data-gathering methods. A full-scale census will be undertaken in the summer and fall of 1960.

The Maryland Laboratory director said the Potomac River project is an example of what can be accomplished

through interstate and interagency co-operation. Without such, a really full-scale study of the striped bass fishery would be years in the future. "This program is the first really adequate attempt to provide fishery management with worthwhile tools needed badly," the Director stated.

He added, "If the striped bass' tendency to stay in home waters, such as the Potomac River, is verified, a possible outcome could be that agencies could manage the River as a unit independent from the Chesapeake Bay fishery. Future research in the larger bay will benefit considerably from experience gained in the Potomac River. The two bodies of water have a remarkable resemblance."



Tuna

PURSE SEINING FOR TUNA OFF MASSACHUSETTS IN 1959 SUCCESSFUL:

In 1951, a New England bluefin-tuna project was initiated by what is now the U. S. Bureau of Commercial Fisheries to determine the feasibility of establishing a commercial tuna fishing industry in the New England region. In that and succeeding years, a number of types of gear were used in extensive areas off that area's coast. By 1954 it had been established that bluefin could be taken in commercial quantities, at least during the summer months, with purse-seine gear in inshore waters.

The Bureau, having thus established the availability of the tuna and having found an efficient gear with which to capture them, made an offer to loan any commercial fisherman a seine net, accessory gear, and technical advice if that fisherman would convert his vessel to tuna seining and make available to the public any pertinent information. There were no takers. The resource lay untapped.

But in 1958, a Provincetown, Mass., fisherman with a small otter trawler became interested in the project and accepted the Bureau's 1954 offer. During the first season of operation, catches of sufficient size were made to indicate the

commercial feasibility of this fishery. Between July 24 and October 4, 1958, 38 sets were made and a total of 179 short tons of bluefin tuna was landed.

The vessel spent the winter of 1958/59 trawling and recommenced the cooperative tuna-seining operation on August 2, 1959, again using the Bureau-owned equipment. With a crew of nine men and in 21 trips, the small vessel had taken a total of 696 tons of tuna by the end of the season on September 26--in an inshore area in the vicinity of Provincetown, Mass.



United States Fishing

Fleet ^{1/} Additions

AUGUST 1959:

A total of 36 vessels of 5 net tons and over were issued first documents as fishing craft during August 1959--a decrease of 22 vessels compared with the same month in 1958. The Gulf area led with 14 vessels, while the South Atlantic area was second with 8 vessels, followed by the Pacific area with 7 vessels.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, August 1959

Area	August		Jan.-Aug.		Total
	1959	1958	1959	1958	
	(Number)				
New England . . .	1	-	11	10	13
Middle Atlantic . .	-	2	6	11	13
Chesapeake . . .	4	10	60	65	99
South Atlantic . .	8	18	67	94	135
Gulf	14	20	102	198	270
Pacific	7	5	77	89	112
Great Lakes . . .	-	-	5	5	10
Alaska	2	3	30	27	31
Virgin Islands . .	-	-	-	1	1
Total	36	58	358	500	684

Note: Vessels have been assigned to the various areas on the basis of their home ports.

During the first eight months of 1959, a total of 358 vessels were issued first documents

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, August 1959

Net Tons	Number
5 to 9	16
10 to 19	7
20 to 29	7
30 to 39	1
40 to 49	5
Total	36

as fishing craft--142 below the same period of 1958. Most of the decline occurred in the Gulf area where 96 fewer ves-

sels were documented in 1959 than in 1958.

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

SEPTEMBER 1959:

A total of 41 vessels of 5 net tons and over were issued first documents as fishing craft during September 1959-- a decrease of 24 vessels compared with the same month in 1958. The Gulf area continued to lead with 15 vessels. The Chesapeake area was second with 9 vessels, followed by the Pacific area with 7 vessels.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, September 1959

Area	September		Jan. -Sept.		Total
	1959	1958	1959	1958	
	(Number)				
New England	2	1	13	11	13
Middle Atlantic	4	-	10	11	13
Chesapeake	9	4	69	69	99
South Atlantic	2	16	69	110	135
Gulf	15	33	117	231	270
Pacific	7	7	84	96	112
Great Lakes	1	1	6	6	10
Alaska	1	3	31	30	31
Virgin Islands	-	-	-	1	1
Total	41	65	399	565	684

Note: Vessels have been assigned to the various areas on the basis of their home ports.

During the first nine months of 1959 a total of 399 vessels were issued first documents as fishing craft-- 166 below the same period of 1958. Vessels receiving first documents from the Gulf States area dropped 114 below the 1958 nine-month period.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, September 1959

Net Tons	Number
5 to 9	21
10 to 19	10
20 to 29	4
30 to 39	2
40 to 49	2
50 to 59	1
160 to 169	1
Total	41



United States Fishery Landings, January-September 1959

Landings of fish and shellfish in the United States during the first 9 months of 1959 totaled over 3.6 billion pounds-- about 11 percent higher than for the same period of 1958.

Menhaden landings amounted to 1,851 million pounds during the first 9 months of 1959-- a gain of 534 million pounds compared with the same period the preceding year. Landings of jack and Pacific mackerel increased along the Pacific Coast by 7 and 10 million pounds, respectively, during the nine-months period. In the South Atlantic and Gulf States, shrimp landings exceeded those of the previous year by 9 million pounds. In New England, whiting landings also recorded a rise of 9 million pounds.

During the first 9 months of 1959, landings of haddock and ocean perch in New England were down 8 and 13 million pounds, respectively. There was also a 16-million-pound decline in the yield of industrial fish in this area.

Species	Period	1959	1958	Total 1958
..... (1,000 lbs.)				
Anchovies, Calif.	9 mos.	2,200	6,322	8,148
Cod:				
Maine	8 mos.	2,300	2,400	2,735
Boston	9 "	14,300	13,139	16,183
Gloucester	9 "	2,400	2,321	3,189
Total cod		19,000	17,860	22,107
Haddock:				
Maine	8 mos.	2,400	2,973	3,997
Boston	9 "	60,100	70,391	81,509
Gloucester	9 "	10,800	8,368	9,798
Total haddock		73,300	81,732	95,304
Halibut 2/:				
Wash. and Oreg.	9 mos.	17,100	15,411	16,200
Alaska	9 "	21,400	19,888	19,888
Total halibut		38,500	35,299	36,088
Herring:				
Maine	8 mos.	83,200	106,474	170,977
Alaska (season over)	9 "	110,000	88,801	88,801
Industrial fish, Maine & Mass, 3/	9 mos.	88,700	105,000	108,869
Mackerel, Calif.:				
Jack	9 mos.	17,800	10,918	21,698
Pacific	9 "	23,500	13,504	24,624
Menhaden	9 mos.	1,851,100	1,316,925	1,544,700
Ocean perch:				
Maine	8 mos.	51,100	52,494	71,068
Boston	9 "	2,200	1,826	2,625
Gloucester	9 "	50,300	62,529	74,951
Total ocean perch		103,600	116,849	148,644
Salmon:				
Wash. 4/	9 mos.	33,500	44,906	54,363
Oreg. 4/	8 "	4,300	6,701	8,179
Alaska	to Oct. 11	141,700	239,143	241,255
Sardines, Pacific	10 mos.	38,900	141,500	207,429
Scallops, sea, New Bedford (meats)	9 mos.	14,300	12,014	15,253
Shrimp (heads-on):				
South Atl. & Gulf	9 mos.	88,700	79,577	195,808
Washington	9 "	2,700	6,306	6,730
Oregon	8 "	2,400	1,392	1,523
Alaska	8 "	9,500	4,856	7,862
Squid, Calif.	9 mos.	15,700	4,862	4,864
Tuna, Calif.	to Oct. 9	236,400	269,004	307,378
Whiting:				
Maine	8 mos.	21,900	22,600	23,577
Boston	9 "	600	335	596
Gloucester	9 "	53,800	44,578	58,927
Total whiting		76,300	67,513	83,100
Total of all above items		3,075,300	2,777,458	3,403,704
Others (not listed)		538,800	542,366	1,312,296
Grand total		3,614,100	3,319,824	4,716,000
1/ Preliminary.				
2/ Dressed weight.				
3/ Excluding menhaden.				
4/ Landed weight.				

Table 2 - United States Fishery Landings by States for Periods Shown, 1959 and 1958 1/

Area	Period	1959	1958	Total 1958
..... (1,000 lbs.)				
Maine	8 mos.	186,300	214,045	316,955
Massachusetts 2/:				
Boston	9 mos.	89,000	100,334	123,764
Gloucester	9 "	197,400	185,102	230,218
New Bedford ...	9 "	89,800	89,103	111,669
Provincetown ..	9 "	21,500	17,957	25,754
Total Mass. ...		397,700	392,496	491,405
Rhode Island 3/...	8 mos.	84,900	70,562	103,452
New York 3/.....	8 "	26,000	28,176	42,063
New Jersey 3/...	9 "	42,700	37,953	50,933
North Carolina 3/	9 "	45,400	45,450	54,866
South Carolina 3/	9 "	11,800	11,586	15,359
Georgia	8 "	11,900	11,612	20,066
Florida 3/.....	8 "	85,300	95,073	158,724
Alabama	7 "	7,700	5,395	10,343
Mississippi 3/...	7 "	10,600	8,002	82,476
Louisiana 3/.....	5 "	24,600	28,800	75,237
Texas 3/.....	8 "	40,700	35,463	80,478
Ohio (Mar.-Aug.)	8 "	14,600	13,798	19,145
Oregon 2/.....	8 "	36,000	44,112	59,467
Washington 2/....	9 "	113,000	122,887	164,987
California:				
Certain species 4/	9 mos.	334,500	446,110	581,199
Other	6 "	42,100	42,524	82,709
Total Calif.		376,600	488,634	663,908
Rhode Island, Middle Atlantic, Chesapeake, South Atlantic, and Gulf States (menhaden only)	9 mos.	1,815,700	1,313,092	1,540,867
Alaska:				
Halibut 5/.....	9 mos.	21,400	19,888	19,888
Herring (season over)	9 "	110,000	88,801	88,801
Salmon	to Oct. 11	141,700	239,143	241,255
Shrimp	8 mos.	9,500	4,856	7,862
Total of all above items		3,614,100	3,319,824	4,308,537
Others (not listed)		6/	6/	407,463
Grand total		6/	6/	4,716,000

1/ Preliminary.
 2/ Landed weight.
 3/ Excluding menhaden.
 4/ Includes catch of anchovies, jack and Pacific mackerel, Pacific sardines, squid, and tuna. Data on tuna are for the season to October; data on Pacific sardines are for a ten-months period.
 5/ Dressed weight.
 6/ Data not available.
 Note: Data principally represent weight of fish and shellfish as landed except for mollusks which represent the weight of meats only.

Landings of menhaden, Alaska herring, and industrial fish in Maine and Massachusetts used in the manufacture of meal and oil comprised 57 percent of the production during the first 9 months of 1959. This was 11 percent more than for the same period of 1958.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, SEPTEMBER 1959:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during September 1959 increased by 11.2 percent in quantity and 13.7 percent in value as compared with August 1959. The increase was due primarily to higher imports of groundfish fillets (up 5.9 million pounds), and frozen tuna other than albacore (up 2.7 million pounds), and to a lesser degree, an increase in the imports of canned salmon and frozen shrimp. The increase was partly offset by a drop in the imports of fresh and frozen salmon (down 0.8 million pounds) and canned tuna in brine (down 0.4 million pounds).

United States Foreign Trade in Edible Fishery Products, September 1959 with Comparisons

Item	Quantity		Value		
	September 1959	Year 1958	September 1959	1958	Year 1958
	(Millions of Lbs.)		(Millions of \$)		
Imports:					
Fish & shellfish:					
Fresh, frozen, & processed 1/	95.5	92.7	956.8	25.7	25.6
278.4					
Exports:					
Fish & shellfish:					
Processed only 1/ (excluding fresh & frozen)	7.7	3.3	41.2	3.8	1.3
15.6					

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

Compared with September 1958, the imports in September 1959 were up by 3.1 percent in quantity and 0.4 percent in value due to higher imports of canned salmon (up 2.1 million pounds) and fillets other than groundfish (up 1.6 million pounds).

United States exports of processed fish and shellfish in September 1959 were higher by 68.0 percent in quantity and 137.5 percent in value as compared with August 1959. Compared with the same month in 1958, the exports in September 1959 were higher by 129.1 percent in quantity and 192.3 percent in value due to sharply higher exports of relatively high-value

Maine herring landings through the end of August amounted to 83 million pounds--down 23 million pounds as compared with the same period in 1958. Landings of Pacific sardines through the end of October lagged nearly 103 million pounds behind the same period the previous year. California landings of tuna also decreased--down 33 million pounds. Total landings of Alaska salmon dropped from 239 million pounds in 1958 to 142 million pounds--the smallest catch since 1900.

canned salmon and a 112-percent increase in exports of California sardines.

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GROUND FISH FILLET IMPORTS, OCTOBER 1959:

During October 1959, imports of groundfish and ocean perch, classified as fillets, into the United States totaled 11.5 million pounds. Canada was the leading country with 7.9 million pounds or 69 percent of the October 1959 total. Iceland was second with 3.2 million pounds. Imports from five other countries made up the remaining 376,000 pounds.

The sharp decline in October 1959 of imports of the above species classified as fillets was due to a recent United States Customs Court ruling which held that fish fillet blocks imported in bulk (15 pounds and over) are dutiable at one cent a pound under Tariff paragraph 720 (b) rather than at $1\frac{7}{8}$ cents or $2\frac{1}{2}$ cents a pound under Tariff paragraph 717 (b). This ruling became effective on September 15, 1959. Thus data on imports of groundfish fillets since that date are not comparable with previous data.

During the first ten months of 1959, imports of groundfish and ocean perch, classified as fillets, but not including fish blocks since September 15, into the United States totaled 137.6 million pounds. Canada, with 70.7 million pounds accounted for 51 percent of the 1959 ten-months total. Imports from Iceland (36.7 million pounds) represented 27 percent of the total, while Denmark followed with 14.0 million pounds or 10 percent, and Norway with 10.3 million pounds or 7 percent. Seven other countries made up the remaining 5.9 million pounds or 5 percent.

Note: See Chart 7 in this issue.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1959 at the $12\frac{1}{2}$ -percent rate of duty is 52,372,574 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports from January 1-November 28, 1959, amounted to 49,966,082 pounds, according to data compiled by the Bureau of Customs. The quota for 1958 of 44,693,874 pounds was reached on November 20, 1958.

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U. S. IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY-SEPTEMBER 1959:

Summary: During the first nine months of 1959, the most important United States imports--tuna, shrimp, fish meal, and groundfish and ocean perch fillets--exceeded the quantities received during the same 1958 period. The most important exports--canned sardines, canned salmon, canned shrimp, canned squid, and fish oils--were above the quantities shipped during the same period of 1958.

Imports: GROUND FISH FILLETS AND BLOCKS: Imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets and blocks for January-September 1959 were 0.4 percent above those of the like period of 1958. Cod fillets, up 16 percent; fillets of haddock, hake, etc., up 17 percent; blocks down 9 percent; and ocean perch fillets, down 25 percent. Canadian shipments of fillets and blocks were 19 percent below those of January-September 1958.

TUNA, FROZEN: During January-September 1959, imports of frozen albacore were down 22 percent from the like 1958 period; imports of other species of tuna were up 37 percent. Total imports of frozen tuna from Japan were 4 percent below the nine months period of 1958. Ecuadoran shipments of tuna were more than four times those for the like period of 1958. Shipments from Peru for the first 9 months of 1959 exceeded the previous record annual high. Included in the Peruvian and Ecuadoran figures were tuna caught and transshipped by United States flag vessels.

TUNA, CANNED IN BRINE: Imports during January-September 1959 were about the same as for the comparable period of 1958. A 21-percent decline in canned albacore shipments was offset

by an 8 percent rise in other canned tuna. The increase in imports of canned albacore in brine from countries other than Japan was due in part to large shipments from Spain.

SHRIMP: During January-September 1959, receipts were 33 percent above those of the like period of 1958. Most of the leading suppliers shipped shrimp in greater quantities. Shipments from Hong Kong were stopped until some acceptable method was devised to prevent shrimp from the Chinese mainland from being included in such shipments. Forty-nine countries are presently exporting shrimp to the United States.

CANNED SARDINES: Due to larger receipts from Portugal, Norway, and Denmark, imports of canned sardines in oil during January-September 1959 were up 16 percent over those of the like period of 1958. Imports of canned sardines not-in-oil continued at low levels.

SALMON: Lower shipments of canned salmon in the first 9 months of 1959 from Canada were nearly offset by greater shipments from Japan. Imports of fresh or frozen salmon, nearly all from Canada, were down 26 percent from the first 9 months of 1958.

FISH MEAL: Imports for January-September 1959 were 50 percent above those for the comparable period of 1958. Peru, which has been increasing its production of this product at a high rate in recent years, was the principal foreign supplier.

FISH SOLUBLES: With Denmark providing 76 percent of this product, imports for the first nine months of 1959 were 255 percent above those of the like period of 1958.

OTHER IMPORTS: During January-September 1959, the following products were received in substantially greater quantities than during the same period of 1959; tuna loins and discs, up 59 percent; canned lobsters, up 49 percent; fresh and frozen sea scallops, up 40 percent; canned crabmeat, up 37 percent; oysters (mostly canned), up 18 percent; and fresh or frozen frog legs, up 18 percent. Imports of fresh or frozen lobster

were up about 4 percent. The following products were received in lesser quantities: fresh and frozen flounder fillets, down 10 percent; and sperm whale oil, down 33 percent.

Exports: CANNED SARDINES, NOT IN OIL: Exports during the first nine months of 1959 were about 4 times those of the same period of 1958. The most important customer for this product continued to be the Philippines which took 33 percent of the total.

CANNED SALMON: During January-September 1959, the United Kingdom took nearly 5 times more canned salmon than during the comparable period of 1958. The Philippines accounted for most of balance. Total exports were up 336 percent.

SHRIMP: Canned exports January-September 1959 were up 46 percent over the first nine months of 1958, fresh and frozen exports were up 20 percent. The larger part of these products were shipped to Canada.

CANNED SQUID: During January-September 1959, exports were 47 percent above those of the like period of 1958.

FISH OILS: Totals for the first nine months of 1959 indicate that United States exports of fish oils have rebounded from the low-level of exports in 1958. The largest export market for fish oils was northern Europe. Canada, also a substantial market, took 77 percent less than during the like period of 1958. January-September 1959 exports were 113 percent more than in the same period of 1958.



Virginia

BIOLOGISTS ESTIMATE SPORT FISHERY CATCH IN CHESAPEAKE BAY:

Sport fishermen had to fish for 10 or 12 hours during 1959 to catch as many croaker as they did during one hour in 1956-57, but the fish they caught were generally of a larger size, according to

information collected by a biologist at the Virginia Fisheries Laboratory. This estimate of availability was obtained through interviews with sport fishermen and through log books voluntarily kept by them.



"Most fishermen realize that there has been a sharp drop in the numbers of croaker, and also changes in the abundance of other salt-water fishes," the biologist stated. "Catch record information obtained from log books and interviews make it possible to follow and compare these changes through a season and from one year to another. Those who have been keeping a log of their salt-water fishing trips should now send them to the Virginia Fisheries Laboratory for tabulation."

The records show that spot were caught in great numbers in 1959. Fishing for them was 2-3 times better in 1959 than during the 1958 season, though the fish were somewhat smaller in size. Good catches were made from July to the end of the season in lower Chesapeake Bay, whereas, in 1958, there was a late and short run of spot in the same waters.

Flounder or fluke catches during 1958 were running about 10 times higher than during 1956-57, and were three times higher in 1959 than in the 1956-57 seasons. Gray sea trout catches tell a story of continuing decline within Chesapeake Bay. Croaker, spot, gray sea trout, and fluke have been the mainstays of the sport catch for many years, but the swellfish or puffer joined this group during 1959. Previously reported only as an incidental portion of the sport catch, swellfish may rank ahead of gray sea trout, fluke, and croaker when the 1959 catch data is completely tallied. Perhaps more fishermen are becoming aware of the fine flavor and texture of swellfish and are taking them home instead of throwing them a-

way. Swellfish are marketed as "sea squab" and appear on the menus of some of the best restaurants.

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LARGE-SCALE BLUE CRAB TAGGING PROGRAM UNDER WAY:

In the largest blue crab tagging program ever conducted in Chesapeake Bay, biologists of the Virginia Fisheries Laboratory released approximately 4,000 tagged crabs in Tidewater Virginia from May 15 to October 16, 1959.

Many of the tagged blue crabs have been caught by crab fishermen and close to 500 tags have been returned to the Laboratory. A reward of 25 cents is paid for each tag and the person returning the tag is told when and where the tag was placed on the crab. The biologist in charge of this program emphasizes the need for the prompt return of all tags by those who find them.

Of all the crabs released in the York River, only four were caught outside the River, while most of them stayed within ten miles of the spot where the tag was placed on them. Tagged crabs seem to move in no special direction during the summer months. Some males have been caught 6 or 7 times in the same pot and large numbers have been caught more than one time.

Crabs are being tagged and released in the York, Rappahannock, James, and Back Rivers tributary to the Bay in the hope that the biologists will be able to determine where the crabs caught in the winter dredge fishery originate, and at what time they move into the dredging area.

On October 16, 1959, biologists tagged and released 500 blue crabs in the Poquoson-Messick area. It will be of extreme interest to commercial crab fishermen as well as to biologists to know what proportion of the winter catch originates from each Virginia river. Therefore, all Chesapeake Bay commercial fishermen are requested to assist the Laboratory by noting the location of the catch and returning tags promptly.



Wholesale Prices, November 1959

The November 1959 wholesale price index (120.7 percent of the 1947-49 average) for edible fishery products (fresh, frozen, and canned) was down only 0.3 percent from the preceding month. However, compared with November 1958 the drop was sharper--5.9 percent.

Because of lower wholesale prices for frozen dressed halibut and salmon and Great Lakes whitefish, the drawn, dressed, and whole finfish subgroup price index declined 4.3 percent from October to November 1959. The drop was offset slightly by a small increase in the wholesale price for dressed large haddock at Boston and fresh Great Lakes yellow pike. Haddock landings in New England continued light. Compared to November 1958, prices in November 1959 were down 15.2 percent for fresh large haddock, 8.8 percent for frozen dressed halibut, 3.2 percent for large and medium red king salmon, and 16.7 percent for round whitefish at New York. Fresh Lake Superior dressed whitefish prices were unchanged and fresh Great Lakes yellow pike prices were up by about 40.0 percent. The net result was a drop of 5.0 percent in the index for this subgroup from November 1958 to November 1959.

Fresh processed fish and shellfish wholesale prices in mid-November 1959 were higher by 4.0 percent from the preceding month. Higher wholesale prices for small haddock fillets (up 5.9 percent), fresh shrimp at New York City (up 3.9 percent), and fresh shucked oysters (up 3.7 percent) raised the price index of this subgroup for the

second straight month. From November 1958 to November 1959, the fresh processed fish and shellfish subgroup index declined 3.4 percent. Lower prices for small haddock fillets (down 6.2 percent) and fresh shrimp (down 19.8 percent) more than compensated for a sharp increase of 16.6 percent in the prices for fresh oysters. Supplies of oysters on the East Coast were reported below normal.



Peeling shrimp in a breaded shrimp plant, Coral Gables, Fla.

From October to November 1959 the wholesale price index for frozen processed fish and shellfish was unchanged. The first increase in many months for frozen headless 26-30 count shrimp at Chicago (up 1.2 percent) equalized lower prices for frozen haddock fillets (down 2.3 percent) and fro-

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, November 1959 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/} (\$)		Indexes (1947-49=100)			
			Nov. 1959	Oct. 1959	Nov. 1959	Oct. 1959	Sept. 1959	Nov. 1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					120.7	121.1	121.6	128.3
Fresh & Frozen Fishery Products:					133.4	134.0	134.8	147.4
Drawn, Dressed, or Whole Finfish:					147.2	153.8	159.9	155.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.13	.13	129.2	127.9	153.1	163.3
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.31	.32	95.9	98.5	101.1	106.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.75	.79	168.5	177.2	179.7	174.1
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.73	.75	179.7	185.9	179.7	179.7
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.63	1.00	126.4	202.3	146.7	151.7
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.70	.69	164.2	161.8	170.0	117.9
Processed, Fresh (Fish & Shellfish):					134.0	128.9	124.3	138.7
Fillets, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.45	.43	153.1	144.6	117.4	163.3
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	.65	.63	102.7	98.7	105.1	128.0
Oysters, shucked, standards	Norfolk	gal.	7.00	6.75	173.2	167.1	151.6	148.5
Processed, Frozen (Fish & Shellfish):					106.4	106.4	107.2	135.5
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.38	.38	98.8	99.5	98.8	108.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.32	.33	99.7	102.0	102.0	127.1
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.27	.27	108.8	108.8	108.8	120.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.63	.62	96.4	95.3	98.0	132.7
Canned Fishery Products:					103.4	103.4	103.4	101.1
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . .	Seattle	cs.	24.50	24.50	127.8	127.8	127.8	113.2
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	10.80	10.80	77.9	77.9	77.9	86.2
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.50	7.50	88.1	88.1	88.1	96.9
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	93.1	87.5

^{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.

zen flounder fillets (down 0.7 percent). A sharp drop of 21.5 percent occurred in the wholesale price index for this subgroup from November 1958 to November 1959. Declines of 27.4 percent for frozen shrimp, 21.6 percent for haddock, 9.9 percent for ocean perch, and 9.1 percent for flounder fillets at Boston reflected better supplies of both domestic and imported products.

Canned fish prices in November 1959 were the same as in October and September. Stocks of all items in the subgroup, except tuna, were smaller as of the end of November 1959 than they were a year earlier. The pack of California

sardines in 1959 is forecast at only one-third or less of the 1958 pack. The Maine sardine pack as the 1959 season ended on November 30 was about 350,000 cases below the pack of 1958, which was only fair. Although there was a small amount of salmon packed in November 1959, it did little towards relieving the shortage of this canned product. The November 1959 canned fish price index was up 2.2 percent from November 1958. Higher prices for canned pink salmon (up 13.9 percent) and canned Maine sardines (up 6.4 percent) were offset by lower prices for canned California sardines (down 9.6 percent) and for California light meat tuna (down 9.1 percent).



FROM PIGFISH TO PORPOISE

Porpoises are dolphins because they are members of the dolphin family, the Delphinidae. Most of the technical books list the particular species found off southeastern United States as dolphins. But they are more commonly called porpoises because they have long been known by that name all along the Atlantic and Gulf coasts.

To many scientists in this country and to almost all European zoologists, porpoises are somewhat different animals from the ones we are acquainted with. The "true" porpoises are small (only 5 or 6 feet long), blunt-headed (instead of long-snouted), and have spade-shaped (instead of conical) teeth. Nevertheless, they too are usually included in the family Delphinidae, though some authorities have placed them in a family of their own.

One of these "true" porpoises is the most common member of the dolphin family in European coastal waters, holding the position there that our bottlenosed porpoise (or dolphin) holds along the coast of the United States. The Old World porpoise has been well known to fishermen in those waters for a long time. The name "porpoise" is hundreds of years old. It has been traced back through the Old French porpeis to the Latin *porcus pisces*, meaning pigfish or hogfish. It is interesting to note that even today porpoises (or dolphins) along the United States coast are sometimes called "herring hogs" by American fishermen, many of whom believe, quite mistakenly, that these aquatic mammals eat their weight in fish every 24 or 48 hours. (In point of fact they eat only about 5 percent of their weight a day.)

Fishermen and seafaring men who migrated to this country from Europe or England found a small cetacean abundant in these waters. It was similar to the porpoise they knew along the European coast--at least it had a similar appetite for fish--so they simply transferred the name to this New World "fishhog."

The net result is that we have two common names for each of the three species of small cetacean that are common in southeastern United States waters. The bottlenosed dolphin is our (common) porpoise. The longsnouted dolphin, which occurs farther offshore, is called the spotted porpoise. And the wide-ranging and attractively-marked common dolphin is known as the saddleback porpoise. (Mariner, December 1958.)