

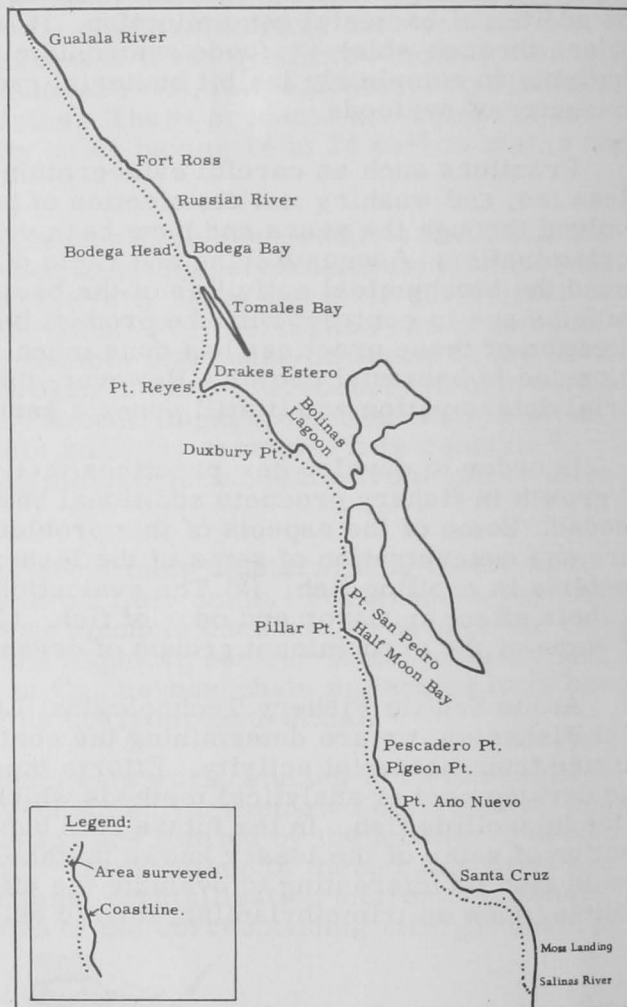
TRENDS AND DEVELOPMENTS

California

AERIAL CENSUS OF COMMERCIAL AND SPORT FISHING CONTINUED (Airplane Spotting Flight 59-7): The in-shore area between the Salinas River, Monterey County, to the Gualala River, Mendocino County, was surveyed from the air (April 25-26, 1959) by the California Department of Fish and Game Beechcraft and Cessna 180 to assess the numbers and distribution of clam diggers, abalone pickers, and hook-and-line fishermen.

Rain squalls and fog prevented observations in the majority of the survey area on April 25 except the coastline from Half Moon Bay to Bolinas Bay. Here visual conditions were poor and assessment of fishermen was limited to estimates rather than actual counts.

The entire area was scouted on April 26 and a census was made of abalone pickers, clam diggers, shore fishermen, and pier fishermen. Tides of -1.3 on April 25 and -1.2 on April 26 favored fishing activities for clams and abalone during the morning hours. The largest number of clambers was in Monterey Bay where 470 pismo clambers were counted on April 26. Large groups of people were observed on both days in the area between Pillar Pt. and Pt. San Pedro. This is a popular area for educational field trips. However, some of the people listed were engaged in fishing for abalone.



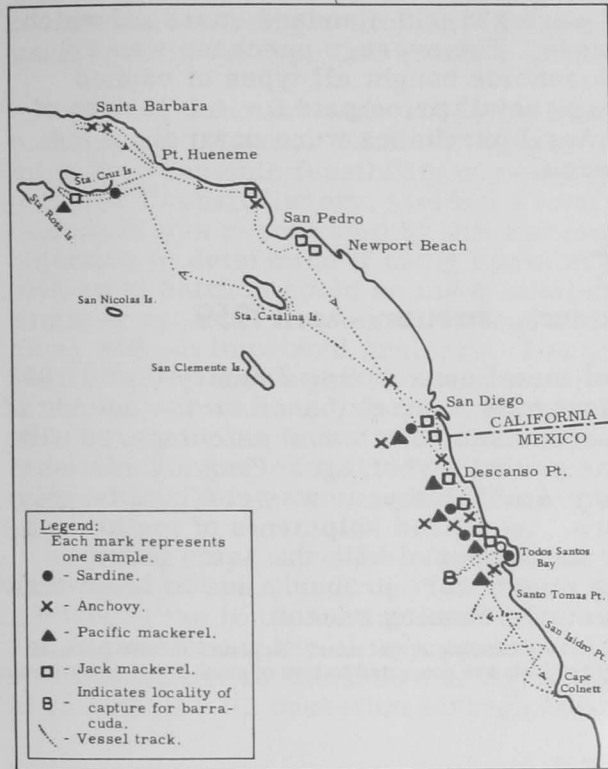
Flight Report of Beechcraft and Cessna 180 (59-7--April 25-26, 1959).

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PELAGIC FISH AND BARRACUDA POPULATION SURVEY OFF COAST SOUTHERN CALIFORNIA AND NORTHERN BAJA CALIFORNIA (M/V Alaska Cruise 59-A-3 Pelagic Fish and Barracuda): The coast and islands of southern California and northern Baja California, from Cape Colnett north to Goleta, were surveyed (March 30-April 17, 1959)

by the California Department of Fish and Game's research vessel Alaska. The objectives were (1) to sample the spawning population of sardines off southern California and northern Baja California; (2) to assess the relative abundance of sardines, Pacific mackerel, jack mackerel, and anchovies; (3) to collect live sardines for genetic studies being

conducted by the U. S. Fish and Wildlife Service, La Jolla; and (4) to refine barracuda tagging techniques prior to the 1959 sportfishing season by catching and tagging barracuda whenever possible and observing mortality and tag retention in the live-bait well.



M/V Alaska Cruise 59-A-3 (March 30-April 17, 1959).

A total of 76 night-light stations was occupied. At each station a 1,500-watt light and four 750-

watt auxiliary lights were used. All lights were illuminated for approximately one hour, whereupon the four auxiliary lights were extinguished and the 1,500-watt light dimmed. The blanket net was then set.

Only 18 of the night-light stations, or 24 percent, yielded one or more of the four pelagic species--sardines, Pacific mackerel, jack mackerel, and anchovies. Anchovies were sampled at 11 stations (14 percent), jack mackerel at 10 (13 percent), sardines at six (8 percent), and Pacific mackerel at six (8 percent).

A total of 472 miles were scouted at night between stations and 239 fish schools were observed--70 were identified as anchovies, 15 as saury, 4 as mackerel, and the remainder unidentified.

Although fish schools were plentiful in the survey area, night-light stations were not as productive of fish as on preceding cruises. The low yield of fish samples can be partly attributed to poor weather conditions. Rough seas in the northern Channel Island area prevented occupation of night light stations in areas where fish schools were visible. In many other areas the efficiency of the night lights was probably reduced by the roll of the vessel in choppy seas.

Ten barracuda were caught, tagged with loop tags, and placed in the live-bait well. Two of the barracuda (36 and 38 inches in length) were caught at Todos Santos Island, and eight (20 to 22 inches long) were caught off Ensenada. One of the smaller fish died and one tag was shed during the cruise. Death was probably due to injuries received from handling prior to gag application. The shed tag had been tied with a square knot rather than the standard double overhand knot.

The barracuda showed little interest or desire to feed upon the live anchovies periodically put in the bait well with them.



Canned Fish

CANNED FISH PURCHASES, APRIL 1959: Canned tuna purchases by household consumers in April 1959 were 847,000 cases of which 47,000 cases were imported. By type of pack, domestic-packed tuna purchases were 182,000 cases solid, 509,000 cases chunk, and 109,000 cases grated or flakes. The average purchase was 1.3 cans at a time. About 28.1 percent of the households bought all types of canned tuna; only 1.7 percent bought the imported product. The average retail price paid for a 7-oz. can of domestic solid or fancy was 34.7 cents and for a 6½-oz. can of chunk 28.2 cents. Imported solid or fancy was bought at 30.6 cents a can. April purchases were slightly lower than the 879,000 cases bought in March by 3.6 percent; retail prices in most cases were slightly lower.

During April, household consumer purchases of California sardines were 55,000 cases; and 25,000 cases imported sardines. The average purchases was 1.9 cans at a time for California sardines and 1.7 cans for imported. Only 1.8 percent of the

households bought canned California sardines and 1.9 percent imported. The average retail price paid for a 1-lb. can of California sardines was 23.0 cents, and for a 4-oz. can of imported 25.6 cents. Retail prices were lower for both California and imported canned sardines. Because of the liberal stocks of canned California sardines, there has been a steady increase in purchases since October 1958.

Canned salmon purchases in April 1959 were 228,000 standard cases, of which 122,000 cases were pinks and 48,000 cases reds. The average purchase was 1.2 cans at a time. About 15.1 percent of the households bought all types of canned salmon; 7.6 percent bought pinks. The average retail price paid for a 1-lb. can of pink was 55.9 cents and for red 84.8 cents. April purchases were down about 8.4 percent from the 249,000 cases bought in March.



Cans--Shipments for Fishery Products, January-April 1959



Total shipments of metal cans during January-April 1959 amounted to 29,964 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 29,888 tons in the same period a year ago. Canning of fishery products in January-April this year was confined largely to tuna and Gulf oysters. Increased shipments of metal cans during April this year as compared with the same month in 1958 and the preceding month were probably due to later-than-

normal stockpiling for the late spring and summer canning season.

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 Fisheries Investigations^{1/}

EXPERIMENTS ON THE ARTIFICIAL PROPAGATION OF TILAPIA FOR TUNA BAIT CONTINUE TO SHOW PROMISE: Experiments were carried out at the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries to test a method for inducing early spawning in tilapia and to determine the growth of young tilapia in fresh water, brackish water (16 parts per thousand) and sea water (33 parts per thousand). These experiments in April are part of a series designed to determine the economic feasibility of rearing tilapia for use during skipjack live-bait fishing--as a supplement to the natural bait available to Hawaiian fishermen.

To induce early spawning, heating cables were used in two tanks, one with a plastic cover. During the late winter months, January through March, the fry production in the control tank (unheated) was 5,980, 13,777 in the tank with heater and cover, and 14,767 in the tank with only the heater. The temperatures in the covered tank were as much as 10° F. higher than the control and were 2° F. higher in the uncovered tank. During March and April, air temperatures increased so that the control tank water temperatures did not differ greatly from those in the heated tanks. The production in each of those tanks for the two months was: 6,019 in the control, 1,649 in the covered, and 7,541 in the uncovered. It appears from the results that a relatively slight rise in water temperature may create favorable spawning conditions and that a relatively large increase in temperature is not necessary.

Growth of young tilapia in the three aquaria, one each with fresh, brackish, and sea water, was very poor, averaging less than 1 millimeter per week, even though

^{1/}Research conducted by the Bureau's Honolulu Biological Laboratory is now listed under "Central Pacific Fisheries Investigations" instead of "Pacific Oceanic Fisheries Investigations."

the concentration of young in the aquaria was similar to that which produced good growth in the larger outdoor tanks. On April 9, a new experiment was started in two outdoor tanks, each about 700-gallon capacity. In the first two weeks, the fish grew at a rate of 2 millimeters per week in the tank with 6,000 fish and 3 millimeters per week in the tanks with 3,000 fish. In the latter tank, the total growth was as great in two weeks as during five weeks in the aquaria. These growth experiments are being continued with emphasis on variations in growth as induced by variations in the type and quantity of the food given to the fish.

During calendar year 1958, the Honolulu Laboratory operated a tilapia rearing plant on the island of Maui. This operation, carried out as an experiment to determine the economic feasibility of rearing tilapia for bait to be used in the Hawaiian skipjack livebait fishery, yielded a total of over one million fry. In January 1959, this plant was reactivated by the Bureau's Honolulu Laboratory with the primary objective to determine if early spawning could be induced in order that these supplemental baitfish could be made available to the skipjack fishermen early in the summer season. Heating, filtering, and aeration systems were installed in the tanks, along with an improved drainage. Early spawning was successfully induced. More favorable weather conditions and water temperatures, along with the improvements in the tanks mentioned above, have resulted in a total production of approximately 567,000 fry by the end of the month of May, this to be compared with 73,000 fry during a similar period in 1958. The total production for the month of May approximated 300,000 fry, ten times that for the same month in 1958.

During May, Bureau biologists met with representatives of the Board of Agriculture and Forestry of the Territory of Hawaii and a Hawaiian Tuna canning firm, to discuss the implementation of a Territorial bait-rearing program. The Territorial legislature made an appropriation of \$130,000 for the construction of a bait-rearing facility by the Board of Agriculture and Forestry, together with an additional \$51,000 for its operation through the next biennium.

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RELATIONSHIP FOUND BETWEEN SEA SURFACE TEMPERATURE AND ABUNDANCE OF SKIPJACK TUNA: A study of the ocean climate for the waters surrounding the Hawaiian Island is being made by the U. S. Bureau of Commercial Fisheries Honolulu Biological Laboratory. One section of this study is concerned with the month-to-month, the seasonal, and the year-to-year changes in the temperature and salinity of the surface waters in this area. Principal emphasis has been placed on the gaining of an understanding of those processes which are of primary importance in the fluctuations of the oceanographic properties, particularly the surface temperatures.

These studies have revealed that the rate of sea surface temperature change at any location throughout the area is characteristic of that location. Applying this discovery to data from the Koko Head monitoring station, a number of applications have become apparent. One is that these characteristic curves have a predictive value. The time during the early part of the year when the rate of change of temperature is zero is associated with the availability of skipjack tuna to the commercial fishery. When the index (when the monthly rate of change of temperature is zero) occurs during the last week of February or before, better-than-average total landings for the summer fishing season may be expected. When the index occurs later in the spring, such as in March, a poor fishing season may be expected. These apparent relationships imply that the sequence of oceanographic events in the early part of the year "set the stage" for a favorable environment (or not so favorable) for the skipjack later in the spring and summer.

This year, the index occurred during the first half of February and the shape of the characteristic curve exhibited some features similar to the curve of 1954, a

year during which a total of 14 million pounds of skipjack (one of the best years on record) was landed at Honolulu. From this it was predicted that the 1959 skipjack season would result in a better-than-average catch. The May skipjack catch for the Territory, with a reduced fleet, totaled approximately 1.7 million pounds, the second highest postwar May landings. The catch for the same month in 1958 was about a tenth of this figure; the total 1958 catch was 6.8 million pounds. Hindcasting, using the 1958 characteristic curve, suggested that this would be the case.

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SKIPJACK TUNA STUDIES OFF HAWAII CONTINUED (M/V Charles H. Gilbert Cruise 44): Learning more about the skipjack tuna in the waters off Hawaii was the objective of a cruise by the fishery research vessel Charles H. Gilbert of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu. The vessel returned June 1 from a 34-day trip, the third in a series.

Studies of the year-round changes of oceanographic conditions and skipjack landings have led the scientists at the Bureau's Laboratory to believe that skipjack tuna prefer a certain type of water. The year-to-year variations in landings at the Honolulu cannery may be related to variations in time of entry and amount of this type of water, an extension of the California Current, into the Hawaiian area. Its presence may be detected by shipboard chemical analysis and temperature measurements.

During May 1959 the California Current Extension water was spread over a considerable area surrounding the Hawaiian Islands. Intermingled was water thought to be from the Kuroshio Current which flows into the island area from the north and west.

Skipjack schools were seen only when within 100 miles of the Islands, and the most promising schools were observed 40-60 miles west and northwest of Kauai during mid-May. A number were caught and released after being marked with a special tag. Information obtained when these tuna are recaptured will add to knowledge of the growth and migration of these commercially-important fish.

Flag-line fishing was carried out and net tows were made to determine the kinds and abundance of marine animals to be found in the various types of ocean water encountered during the cruise.



Crabs

NORTH AND SOUTH CAROLINA BLUE CRAB STUDIES: The U. S. Bureau of Commercial Fisheries wants to know the cause of the annual fluctuations in size of the Atlantic blue crab stocks, the distribution of the stocks, and methods for predicting the annual abundance of crabs.

To find those answers, the Bureau is tagging crabs in South Carolina and North Carolina. Results of tagging 1,642 mature crabs (over 5 inches in width) in January 1958 in the estuary of the North Edisto River, S. C., indicated no substantial movement of tagged crabs away from that area. To substantiate these findings and to determine if crab movement in other estuarine areas is similar, 2,088

tagged crab were released in the North Edisto River, Charleston Harbor, and Bull Bay during the January-March 1959 period. As in 1958, the studies are in cooperation with the Bears Bluff Laboratories, Wadmalaw Island, S. C.



BLUE CRAB

Of the 6,250 commercial size crabs (over 5 inches in width) tagged in the Neuse River and Pamlico Sound, N. C., in 1958, 29.3 percent of the Neuse River tagged crabs and 16.4 percent of the Pamlico Sound tagged crabs have been recaptured.



Croakers

FISHERMEN NOT RESPONSIBLE FOR SHORTAGE IN CHESAPEAKE BAY:

Sport and commercial fishermen together catch only one in ten croakers that disappear from the Chesapeake Bay each summer, according to biologists at the Virginia Fisheries Laboratory, Gloucester Point, Va.

"Of all the older croakers entering the capes from the Atlantic each spring, two-thirds apparently die or disappear before they return to the ocean in the fall," points out one of the biologists who has been analyzing the returns of fish tags from croaker fishermen during the last two years. "However, only one tenth of the total deaths can be attributed to fishermen," he declared. Another biologist, in charge of the Laboratory's finfish investigations, adds further that age analysis investigations have indicated that croakers are not particularly long-lived fish. The rate of decline in numbers of older fish in the Bay compares closely with the estimate made from tag returns.

These results counter the traditional idea that the decline of a fishery is invariably due to too many fish being caught. Although this may definitely be so from some fisheries, it has not been demonstrated to be a primary cause for decline of the croaker fishery. Natural causes of decline, though not as obvious to fishermen as the fish they see landed in their boats, often play a major part in bringing about a scarcity. Many natural conditions reduce the numbers of fishes in the Bay. These include long periods of unfavorable weather, disease, and increased numbers of other fish which may compete for food or may prey on croakers.

Studies to date show that commercial and sport fishing in the Bay does account for the death of millions of fish, but has relatively little effect on the total abundance of croakers in Virginia. Hampering fishing efforts with unsound regulations may rob fishermen of their bread and butter and the fishery will not be benefited.

Unfortunately fishery scientists do not yet have the detailed information needed to accurately determine the normal mortality (death) rate of most marine fishes. More research in this vital area is necessary. As the biological and physical mechanisms effecting changes in fish populations are better understood, biologists will more accurately forecast the abundance of fish and will give explanations for "good and poor" fishing seasons.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MAY 1959: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.0 million pounds (value \$1.1 million) of fresh and frozen fishery products

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, May 1959 with Comparisons							
QUANTITY				VALUE			
May		Jan.-May		May		Jan.-May	
1959	1958	1959	1958	1959	1958	1959	1958
..... (1,000 Lbs.) (\$1,000)			
1,997	2,054	9,134	9,310	1,035	1,152	4,817	5,294

were purchased in May 1959 by the Military Subsistence Market Centers. This was less than the quantity purchased in April by 8.7 percent and 2.8 percent under the amount purchased in May 1958. The value of the purchases in May 1959 was higher by 5.4 percent as compared with April, but was 10.2 percent less than for 1958.

For the first five months of 1959 purchases totaled 9.1 million pounds, valued at \$4.8 million--a decrease of 1.9 percent in quantity and 9.0 percent in value as compared with the same period of 1958.

Prices paid for fresh and frozen fishery products by the Department of Defense in May 1959 averaged 51.8 cents a pound, about 6.9 cents higher than the 44.9 cents paid in April, but 4.3 cents lower than the 56.1 cents paid during May 1958.

Canned Fishery Products: Tuna and sardines were the principal canned fishery products purchased for the use of the Armed Forces during May 1959.

Product	QUANTITY				VALUE			
	May		Jan.-May		May		Jan.-May	
	1959	1958	1959	1958	1959	1958	1959	1958
 (1,000 Lbs.) (\$1,000)			
Tuna	424	315	1,832	1,270	210	158	868	640
Salmon	7	-	7	1,327	5	-	5	724
Sardine	229	-	509	33	26	-	72	12

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated, because it is not possible to obtain local purchases.



Fish-Farming

LAND PURCHASED IN ARKANSAS FOR RESEARCH: Purchase of two tracts of land in two important Arkansas rice, soybean, and cotton growing areas for the development of a fish-farming research station was announced on June 1 by the U. S. Department of the Interior. The land acquired for the projects totaled 296 acres.

The purpose of the research is to provide practical ways by which fish-farming can be conducted profitably in conjunction with agricultural crop growing. The University of Arkansas, through its network of agricultural experiment stations, has long been interested in finding income crops for rotation with rice production, and experience in recent years indicates that fish might be such a crop. However, numerous problems on stocking, disease control, predation, competition, and reservoir management must be solved before that type of fish-farming can be economically feasible.

On March 15, 1958, the President signed a bill which authorizes two major fields of activity:

(1) Biological research on all the problems of fish rearing--selection of species, parasites and diseases, reproduction, food requirements, water quality, predation and competition, and selective breeding for special qualities of growth, disease resistance, and tolerance to special conditions.

(2) Technological improvement--harvesting methods and preparation of fish for the market.

The two Bureaus of the U. S. Fish and Wildlife Service--the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries--will work together to carry out all the provisions of the Act. The former, which does research on fish-cultural problems and fresh-water fishery management, and operates some 100 fish hatcheries over the country, will have responsibility for the biological research, and the latter for technological and market promotion aspects.

One of the purchased tracts comprises 85 acres immediately adjacent to the Rice Branch Experiment Station near Stuttgart. The other is 211 acres adjoining the Southeast Branch Experiment Station at Kelso (P. O. Rohwer). Thus there will be excellent opportunity for close cooperation, joint research effort, especially in crop rotations, and day-to-day consultation. These opportunities are enhanced by the fact that crop research specialists of the U. S. Department of Agriculture are stationed at one of the two University experiment stations.

Biologists of the Arkansas Game and Fish Commission, the Agricultural Extension Service, and the Soil Conservation Service of the Department of Agriculture have had a long-time interest in man-

aged farm ponds and reservoirs for multiple use, including fish and waterfowl. They have provided technical and extension services and consultation to farmers and the general public on pond and reservoir construction, stocking, and management with the best information available.

Other activities, like fishery economics and market promotion and development, are long-established functions of the U. S. Fish and Wildlife Service, and limited assistance has been given to fish farmers already. The very great problem of weed control will be given attention principally by the University of Arkansas Agricultural Experiment Station, Department of Agriculture, in cooperation with fishery biologists.

The U. S. Bureau of Sport Fisheries and Wildlife is making plans for construction and staffing the new station. The Stuttgart site will have a headquarters and laboratory building, experimental ponds, and a small reservoir. The southeastern land will be developed for larger-scale experimentation to extend and test the laboratory findings. Although long-range and fundamental research will be included in the program, it can reasonably be expected that useful results will come from time to time for practical application. These will be made available promptly through publication to all interested, and to the State Game and Fish Commission, the Agricultural Extension Service, other State conservation agencies, and the Soil Conservation Service for use in their technical and extension activities.

The Stuttgart property will have a modern, functional laboratory, fish-holding facilities, a service

building for shop, garage, and storage, a reservoir of about 30 acres, and experimental ponds ranging from one-tenth acre to one acre in surface area. The Kelso land already has a building and a high gallonage rice well, and an adequate surface water supply. Well-stabilized levees have been constructed on three sides of 160 acres of the plot. Five-, ten-, and twenty-acre reservoirs are planned for the site. There is excellent prospect for experimental work on two nearby 80-acre reservoirs to be constructed by the landowner.

Construction of facilities and the development of the two tracts of land for research purposes, and initial staffing will proceed as soon as appropriations are made. Engineering specifications have not been drawn up, but a general layout plan has been made with the advice and assistance of Dr. S. W. Ling, fishery expert for the Food and Agricultural Organization of the United Nations. Dr. Ling recently visited the sites in Arkansas as well as several research stations and fish hatcheries in the South.

Professional staffing contemplates a team of research specialists in aquatic biology, microbiology and parasitology, physiology, biochemistry, biostatistics, and genetics. There will also be supporting personnel for fish handling, water management, and maintenance.

Work with several groups of fish can be foreseen now. The catfishes, buffalofishes, and basses will be important, and an additional good possibility is for carefully controlled experiments with a desirable import which has not yet been tried in the United States.



Fisheries Loan Fund

LOANS APPROVED THROUGH MAY 31, 1959: As of May 31, 1959, a total of 575 applications for fisheries loans totaling \$18,610,193 had been received. Of these 313 (\$7,654,233) have been approved, 209 (\$5,740,789) have been declined or found ineligible, 41 (\$1,677,126) have been withdrawn, and 23 (\$2,916,029) are pending. Several of the pending cases have been deferred indefinitely at the request of the applicants. Sufficient funds are available to process new applications when received.

The following loans were approved between April 1 and May 31, 1959:

New England Area: Alexis Fagonde, Jr., Beals, Me., \$3,000; Murray Pinkham, Boothbay Harbor, Me., \$4,000; Frederick P. Elwell, St. George, Me., \$2,000; Elizabeth N. Corporation, Fairhaven, Mass., \$36,830; Tripolina Bramante, Medford, Mass., \$35,000, C & F Fishing Corporation, New Bedford, Mass., \$46,600.

South Atlantic and Gulf Area: Sidney J. Clopton, Pensacola, Fla., \$14,800; W. D. Coons & A. E. Moorer, Mt. Pleasant, S. C., \$17,000.

California: Wm. Howard Day, San Diego, Calif., \$19,950; Wm. G. Huston, San Diego, \$7,000; Salvatore Tarantino, San Francisco, \$2,500.

Pacific Northwest Area: Kenneth E. Staffenson, Agate Beach, Oreg., \$3,500; Clayton C. Howe, Anacortes, Wash., \$2,000; Alex. C. Prankard, Olympia, Wash., \$6,232; Earl E. McCarthy, Seattle, Wash., \$29,600; Ora L. Olson, Snohomish, Wash., \$29,524.

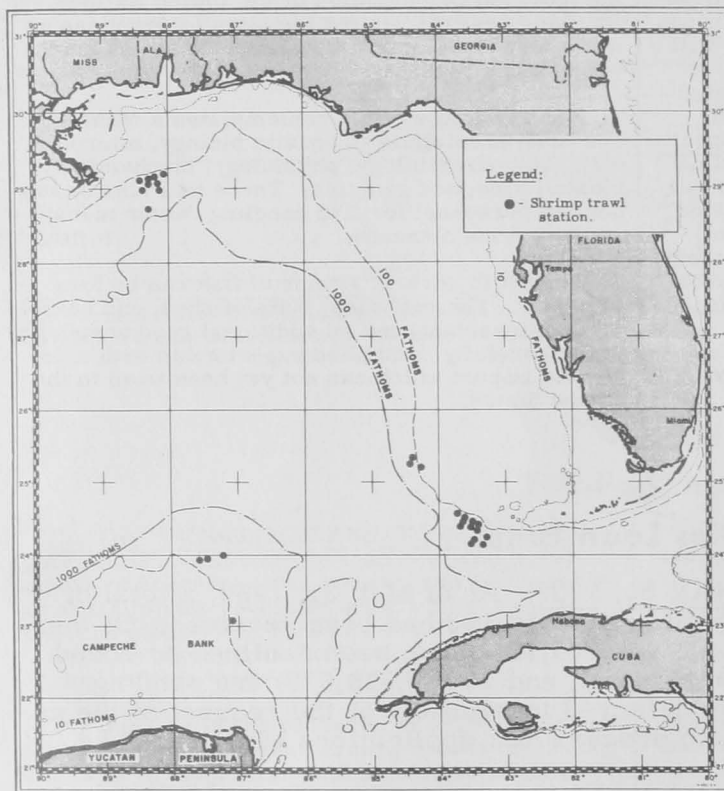
Alaska: Douglas R. Freed, Elfin Cove, \$2,500; Edward K. Haffner, Juneau, \$5,600; Sig Dale, Ketchikan, \$3,305; Victor Edenso, Ketchikan, \$6,000; Arne Iverson, \$10,500.

Hawaii: Sea Queen Fishing Co., Honolulu, \$20,000.



Gulf Exploratory Fishery Program

ROYAL-RED SHRIMP EXPLORATIONS IN GULF OF MEXICO (M/V Silver Bay Cruise 17): Trawling transects through the royal-red shrimp grounds off Mobile, Ala., and Dry Tortugas were made during a nine-day cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay. The objective of the trip was to determine the availability of red shrimp in the two areas previously delineated by the Bureau's vessel Oregon and to check on optimum fishing depths. Forty-foot trawls were used.



M/V Silver Bay Cruise 17 (June 2 to 12, 1959).

The best catches were made southwest of Dry Tortugas where nine drags between 100 and 500 showed red shrimp present in depths ranging from 160 to 300 fathoms. Fishable concentrations were present between 180 and 220 fathoms. Two four-hour drags in 200 fathoms caught 500 pounds of 31/35-count red shrimp.

Eight drags were made off Mobile between 200 and 600 fathoms. Royal-red shrimp were present in all catches between 200 and 400 fathoms but only in small numbers.

Four exploratory drags in the red shrimp depth range along the eastern edge of Campeche Bank resulted in gear damage due to bad bottom.

During the run between Campeche Bank and the North Gulf trawling area numerous mixed schools of skipjack and blackfin tuna were observed, chiefly in the early morning and late afternoon. A large concentration of schools of very small unidentified tuna was observed between $27^{\circ}30'$ and 28° north latitude along $88^{\circ}20'$ west longitude.



Insecticides and Pesticides

INTERIOR DEPARTMENT ENDORSES ENLARGED RESEARCH PROGRAM ON EFFECTS ON FISH AND WILDLIFE; Endorsement of legislation to increase the scope and value of the re-

search now being conducted to determine the effect of insecticides and pesticides upon fish and wildlife resources was announced by the U.S. Department of the Interior on June 21.

Investigations which have been made under existing legislation clearly indicate a problem of much greater magnitude than originally contemplated and show that the existing authorization is inadequate, the Department report stated.

In letters to Chairman Warren S. Magnuson of the Senate Committee of Interstate and Foreign Commerce and to Chairman Herbert C. Bonner of the House Committee on Merchant Marine and Fisheries, Assistant Secretary Ross L. Leffler cited some of the known harmful effects of current practices in the use of pesticides on wildlife and on fresh-water and salt-water fish. Four major objectives of the research program listed in the report are:

(1) To determine the acute and chronic toxicities of some 200 basic pesticidal chemicals on the market, plus the many which are in various stages of development;

(2) To conduct chemical analyses of plant and animal tissue to determine the presence of pesticide residues, to develop diagnostic procedures for determining suspected poisonings, and to measure the degree and duration of toxic conditions in fish and wildlife habitats;

(3) To carry out field appraisals of immediate and long-range effects of pest control operations upon fish and wildlife populations;

(4) To facilitate the compilation and dissemination of findings from research studies so that chemists, entomologists, and others may apply such knowledge in the development of new pest-control materials, formulations, and techniques of application to minimize hazards to desirable forms of animal life.

The Assistant Secretary for Fish and Wildlife pointed out that while in 1940 the wholesale value of the pesticides then being used in this country was \$40 million, this had jumped to \$290 million in 1956. By 1975, it is estimated that the wholesale value of such materials will approach the billion dollar mark. One-sixth of all the croplands and millions of acres of forests, rangelands, and marshlands are treated annually with these chemicals. Most of these areas are important wildlife and fish habitat.

Some of the chemicals persist in the soil for periods of three to five years or longer. Certain

food chain organisms, such as earthworms, living in treated soil or waters, tend to concentrate the poison in their body tissue. Hence, birds like the woodcock or robin, as well as aquatic creatures--fishes, crabs, shrimp and oysters--are affected when they feed upon contaminated organisms.

Studies made to date have shown that DDT may kill fish and other aquatic life when applied at dosage rates in excess of one-quarter pound per acre; two pounds per acre will kill birds; five pounds will cause heavy mortality among mammals. Other insecticides such as heptachlor, dieldrin, aldrin, and endrin, have acute toxicity ranges of 15 to 200 times that of DDT.

Considerable aerial spraying is carried out over salt-water marshes, particularly in the East, and control chemicals applied to land areas adjacent to inshore water reach important fish-producing water by drainaga. There is thus need to determine the effects of pesticides on inshore aquatic life--fish, shrimp, and shellfish--which live in these waters as adults and on these species for which the marshes and estuaries are essential nursery grounds. Menhaden, shad, striped bass, croakers, and sea trout or weakfish are reared in those areas during their early stages. Shrimp, crabs, oysters, and clams which support major commercial fisheries, spend a part or all of their lives in inshore environments.

Findings from limited studies carried out at the Galveston Laboratory show that lindane, an insecticide employed for the control of mosquitoes, is very toxic to shrimp. A total kill of laboratory test animals resulted within 24 hours after exposure to concentrations of the chemical as low as five parts per billion. Other findings reveal that crabs may be killed by eating fish containing low levels of malathion.

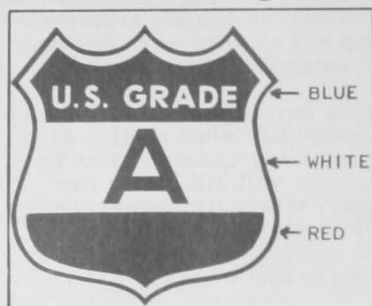
The proposed legislation, H. R. 5813 (S. 1575), would raise the authorization from \$280,000 to \$2,565,000 a year. The Assistant Secretary stated that while the present appropriation authorization was inadequate, no specific authorization should be listed in the Act. He recommended that the research program be permitted to expand on a logical and scientific basis and that funds be requested from Congress as required by circumstances and in accordance with established budgetary procedures.



Inspection of Fishery Products

SEATTLE FISH PLANT STARTS PACKING UNDER USDI INSPECTION: Continuous USDI inspection of fishery products was started by one of the larger fish processors in Seattle the latter part of May. This is the first plant in the Northwest to use the voluntary continuous inspection of fishery products now offered by the Bureau of Commercial Fisheries, U. S. Department of the Interior, Seattle. Products produced under continuous inspection may show on the label the shield bearing the U. S. Grade and the words "Packed Under Continuous Inspection of the Department of the Interior." Halibut and salmon steaks and cod fillets are being packed under inspection at the plant. Packing of frozen swordfish steaks and king crab meat will be included later.

Inspection and grading services are available on a fee basis to processors who meet the existing standards of quality for fishery products. Grade standards are



Shield using red, white, and blue background.



Shield with plain background.

now available for halibut steaks, fish sticks, breaded frozen shrimp, and haddock fillets. Grade standards for salmon steaks, cod fillets, and frozen raw breaded fish portions will be available shortly. Inspection services are also available to assure wholesomeness of the product and conformity to written specifications for fishery products not presently covered by established standards.

the country packing 47 fishery products under the Bureau's continuous inspection program.

There are now 23 plants throughout



Institutional Consumption

STUDY POINTS UP POTENTIAL FOR FISHERY PRODUCTS IN MANUFACTURING PLANTS' EATING FACILITIES: The market potential for fish and shellfish (fresh, frozen, and canned) in the eating facilities of the Nation's manufacturing plants is not being fully exploited, a survey made for the U. S. Department of the Interior indicates. The study shows that 85 percent of the plants with food facilities (having 250 employees or more) serve fish and only 52 percent serve shellfish.

Dun and Bradstreet, Inc., made the survey in conjunction with a larger food survey which that firm was making for the Department of Agriculture. The purpose of the survey was to discover and point up areas toward which distributors could direct attention in their drive to sell more of these highly nutritional fishery products. A survey was financed by funds provided by the Saltonstall-Kennedy Act for the betterment of the domestic fishing industry.

The survey showed that manufacturing plants in the northeast section of the country and on the West Coast are more apt to have fish or shellfish on the menu than are plants in the Midwest and South. In the South the use of shellfish on the menu is on a par with the Midwest section of the country.

The survey also showed that the eating places in large plants (plants with over 1,000 employees) are more consistent users of fish and shellfish than those in the smaller plants.

Half of the large plants which have food facilities are located in the north-central part of the United States. This indicates that the possibilities of increasing the sale of fishery products in the manufacturing plants of that region are relatively promising.

The survey showed that company-operated restaurants and cafeterias are more consistent users of fishery products than are contractor-operated eating facilities.



Lobsters

ACTIVITY AND CATCHABILITY OF LOBSTERS: The activity and catchability of lobsters is being studied by the Canadian Fisheries Research Board's St. Andrews Station. The report appears in the Journal of the Fisheries Research Board (vol. 15, no. 6). Activity was measured by the speed with which a lobster retreats when a bright light is turned on it.

When lobsters are accustomed to water of a certain temperature, their walking rate increases with water temperatures from 36° F. to 50° F. and again from 68° F. to 77° F., but there is little change between 50° F. and 68° F. Lobsters used to colder water became more active when temperature increased, but those used to higher temperatures slowed down when moved to either cooler or warmer water.

Fishing experiments in Passamaquoddy Bay showed how much catches fall off as water temperatures go down in the fall. The change in catches fits in well with the decline in activity as shown in the laboratory experiment. The relationship between activity and catchability helps in the interpretation of catch-per-unit-of-effort data. It also explains the improvement in fishing as waters warm in the spring.



Oysters

EXPERIMENT ON GROWING OYSTERS ON RAFTS: An oyster raft culture experiment is being conducted at Taylor's Pond, Chatham, Mass., by the Bureau of Commercial Fisheries Biological Laboratory of Woods Hole, Mass. The study includes oysters from Virginia, Wareham River and Oyster River, Mass. The seed taken from Virginia last fall and held at Taylor's Pond suffered a severe mortality during the winter. The few survivors are not growing as rapidly as the native oysters. If this method of oyster culture is successful, many small salt-water coves and bays can be used for raising oysters despite bottom types.



Salmon

FYKE NET USED IN ALASKA TO MEASURE RED SALMON ABUNDANCE: Each year since 1955 a fingerling fyke net has been installed on the Kvichak River, Alaska, by the Fisheries Research Institute under a Saltonstall-Kennedy Act-financed contract awarded by the U. S. Bureau of Commercial Fisheries to the Institute. The fyke net is designed to obtain an index of abundance of the annual seaward migration of red salmon--the catch of fingerlings in the net was 203,000 in 1955, 50,000 in 1956, 23,000 in 1957, and 1,913,000 in 1958.

The adult red salmon from the ocean which escaped the fishery and entered the Kvichak totaled 250,000 in 1955, 9,443,000 in 1956, 2,965,000 in 1957, and 535,000 in 1958.

The large migration of fingerlings in 1958 was probably brought about by the good escapement in the 1956 brood year and by favorable environmental conditions.

The migrants in 1958 were two years old while those of other years were chiefly three years old. Because fingerlings from the Kvichak usually spend two winters in the ocean to become fully mature before returning to the Kvichak to spawn, a return in 1960 of a substantial portion of the migrants in 1958 is implied.

* * * * *

NEW TYPE OF SALMON COUNTING STATION AT ROCKY REACH DAM ON COLUMBIA RIVER: A radically new type of fish-counting station will be used at Rocky Reach Dam on the Columbia River, the U. S. Bureau of Commercial Fisheries Biological Laboratory at Seattle announced.

At this station the human observer (or camera) is placed in a subsurface room and looks through a large plexiglass window at the weir opening from the side. The counting gate is on the side rather than in the center of the fishway. Those fish which may be traveling up the other side are diverted over by a standard grill. The counting board will be vertical and will contain controllable lights. The opening will be provided with racks for fish-counting tunnels in anticipation of the day when electric counters will be available.



Scallops

TEMPERATURE OF OCEAN WATERS AFFECTS SURVIVAL OF GIANT SCALLOPS: Scallops in the southern Gulf of St. Lawrence undergo mass mortalities that lead to sudden disappearances of local fisheries. A recent report in the Canadian Journal of the Fisheries Research Board (vol. 15, no. 6) suggests why. A series of critical tests showed that scallops are killed by fairly warm water of 69° F. to 74° F. The exact temperature depends upon the previous temperature experience of the scallop, since those which are accustomed to warm conditions are more resistant to rapid warming. Sudden flooding of scallop beds by warm water may thus lead to mass mortalities. Such floodings have been observed to occur.

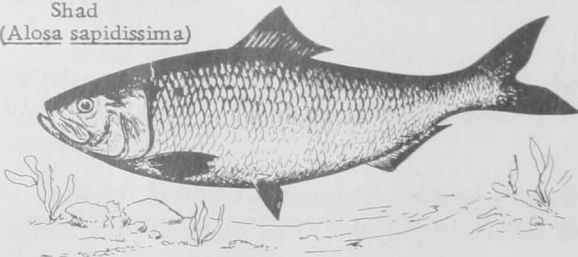
Rapid changes in water temperatures can damage scallop populations in a second way. Scallops, unlike other shellfish, are ordinarily mobile and actually escape enemies. Sudden temperature changes such as are known to occur, on the Magdalen Shallows, even if not killing, reduce scallop activity and make them easy prey to their enemies. Populations can be greatly cut down by predation.



Shad

ATLANTIC STUDIES CONTINUED: The Bureau of Commercial Fisheries is trying to rehabilitate the greatly depleted Atlantic shad runs. To achieve this goal, stream conditions must be improved, pollution abated, fishways built, and adequate spawning escapements permitted. The Bureau's present research is designed to provide the knowledge needed to do these things successfully.

Shad
(*Alosa sapidissima*)



Studies on the York River's shad fishery (including Mattaponi and Pamunkey Rivers) were begun February 15, 1959, in cooperation with the Virginia Fisheries Laboratory. The objectives of this study are to determine total catch, fishing effort, fishing rate, size of run, and spawning escapement. As of March 31, a total of 294 shad had been tagged at the river mouth. All

fishermen were asked to keep records of their catch and effort.

Data collected in 1959 will be used with those obtained since 1953 by the Virginia Fisheries Laboratory to determine population parameters for each year that catch and effort data are available. When these data have been obtained for a series of years, studies can proceed to determine factors affecting population abundance.

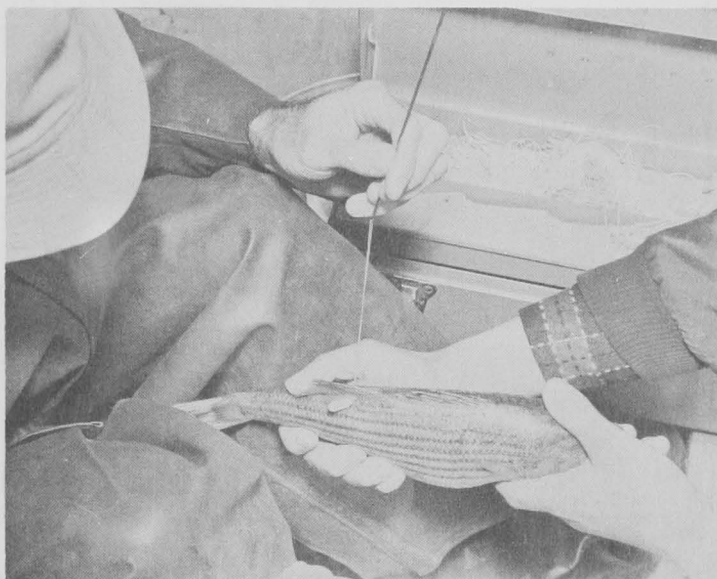
The commercial shad fishing season on St. Johns River closed March 15, 1959. While complete catch data have not been received, it is evident that the 1959 catch will equal or exceed that of 1958 (552,000 pounds) which was the highest since 1947.

The sport fishery for shad on the St. Johns River is the largest on the Atlantic coast. During the 1959 sport fishing season a voluntary creel census, controlled by two sport camp operators, is being conducted. The return of census cards indicated that the sport catch will be higher than that in 1958 when 65,000 (approximately 175,000 pounds) were taken.



Striped Bass

STUDIES IN ALBEMARLE SOUND, N. C.: The construction of dams and increased pollution in the Roanoke River, the most prominent striped bass production tributary of Albemarle Sound, threaten sustained abundance of the population. To resolve the problems confronting the fishery, a cooperative study for developing this river basin by scientific means became necessary. The United States Fish and Wildlife Service began to participate in this study in 1955 chiefly because the Southeastern Power Administration, administered by the Department of the Interior, controls the sale of power generated by the John H. Kerr Dam and needs information relative to minimum river flows required during the annual striped bass spawning migrations.



Attaching disc tag with nylon thread to striped bass.

In the 1958/59 season the Bureau of Commercial Fisheries' Beaufort, N. C., Biological Laboratory continued for the third successive year to get catch, effort, and age composition data in the commercial striped bass fishery. In the summer of 1956 seine sampling in upper Albemarle Sound revealed a relatively outstanding abundance of young-of-year fish. The 1956 year-class first appeared in the commercial catch during the fall of 1957. The number of one-year-old fish from this brood year was above normal. The 1956 year-class then constituted the two-year-old portion of the catch in the fall of 1958.

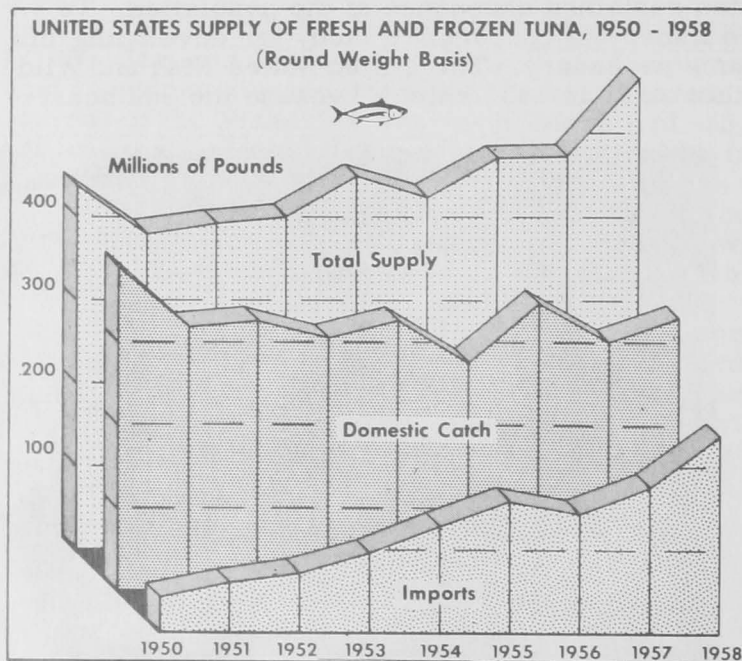
From 1955 through 1958 the fall fishery (September, October, November, and December) in Albemarle Sound yielded 1,117,000 pounds of striped bass. Of this figure, 20 percent was landed in 1955, 20 percent in 1956, 14 percent in 1957, and 46 percent in 1958. The largest portion of the 1958 catch can be assumed to be one- and two-year-old fish since these two age classes constituted from 88 to 95 percent of the total catch each year from 1955 through 1957. Thus, large numbers of young-of-year fish in 1956 and increased numbers of one-year-old fish in the catch in 1957 lead to the conclusion that the pronounced increase in catch in 1958 resulted from an exceptionally large year-class produced in 1956. In 1957 an increase in numbers of one-year-old fish occurred though the total catch was lower than for any of the fall seasons from 1955 through 1958.

State organizations with limited help from the Fish and Wildlife Service are continuing Roanoke River striped bass population studies to evaluate on a long-term basis the annual abundance of fish in the spawning runs in relation to water discharge from power dams and industrial mill-waste loadings. For the fourth consecutive year a tag-recovery study was begun in March 1959 to estimate population size, spawning escapement and fishing rate.



Tuna Consumption Zooms to Record High in Half a Century

Because the Pacific sardine failed to make its annual appearance in United States fishing waters in 1903, a new fishery was born. When the sardine harvest failed, a few of the hitherto nonutilized tuna were canned and offered to the American public. The canned product was well received and tuna has become the principal fish canned in the United States.



Note: Nearly all of it is canned.

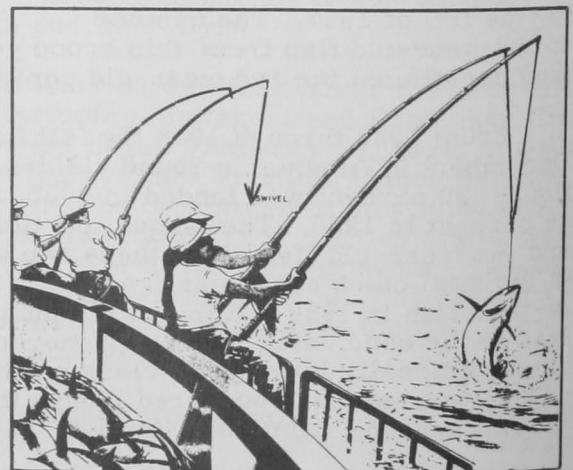
bluefin, yellowfin, and skipjack--326,000 pounds live weight, valued at \$44.6 million.

Until after the close of World War II the United States market was largely supplied by American fishermen, the imports playing a minor part. In the prewar year of 1939, only 4 percent of the pack produced in American canneries was from imported raw tuna. In the postwar year of 1949, it was 3 percent. But in 1958, more than 39 percent of the American pack was from imported raw tuna.

The increase in the ratio of imported tuna already canned to the total supply was not so noticeable. In 1939, the 10 million pounds of canned imported tuna was 12.6 percent of the supply; in 1958, the 46 million pounds imported already canned, was 14.3 percent of the supply.

In 1958, 36 canneries in seven States, American Samoa, Hawaii, and Puerto Rico packed 277 million pounds of canned tuna and an additional two million pounds of tunalike bonito and yellowtail. Another 46 million pounds of canned tuna and 12 million pounds of canned yellowtail and bonito were imported in the United States. Tuna is now the leading food fish in quantity landed; and in third place on the basis of value at the ex-vessel level, exceeded only by shrimp and salmon.

Although the industry was started in 1903, records are only available from 1911. In 1911 the Pacific Coast catch was confined to one species, the albacore--850,000 pounds live weight. In 1958, the catch included albacore,



The peak year for the United States pack of bonito and yellowtail was 1947, when 9 million pounds were canned. In 1958, the pack was two million pounds. The peak of imports on those two varieties was 1957, when 15.5 million pounds of canned yellowtail and bonito were imported. In 1958, the imports of those varieties amounted to 12 million pounds.



United States Fishing Fleet ^{1/} Additions

APRIL 1959: A total of 45 vessels of 5 net tons and over was issued first documents as fishing craft during April 1959--14 less than in April 1958. The Gulf area

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

Area	April		Jan.-Apr.		Total
	1959	1958	1959	1958	
	(Number)				
New England	1	4	6	7	13
Middle Atlantic	-	-	3	3	13
Chesapeake	9	7	30	31	99
South Atlantic	5	5	23	37	135
Gulf	15	28	40	90	270
Pacific	13	10	21	29	112
Great Lakes	-	-	3	2	10
Alaska	2	5	4	8	31
Virgin Islands	-	-	-	1	1
Total	45	59	130	208	684

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

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

Net Tons	Number
5 to 9	26
10 to 19	8
20 to 29	6
30 to 39	2
40 to 49	1
50 to 59	1
90 to 99	1
Total	45

led all other areas with 15 vessels, followed by the Pacific with 13 vessels, the Chesapeake with 9, the South Atlantic with 5, Alaska with 2, and the New England area with 1.

During January-April 1959, a total of 130 vessels was documented as fishing craft--a decline of 78 vessels as compared with the first four months of 1958. Most of the decline occurred in the Gulf area with 50 less vessels documented as compared with the 1958 four-months period.

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



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, APRIL 1959: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during April 1959 increased by 7.5 percent in quantity and 6.6 percent in value as compared with March 1959. The increase was due primarily to higher imports of groundfish fillets (up 8.2 million pounds) and frozen albacore and other tuna (up 2.7 million pounds), and to a lesser degree, an increase in the imports of shrimp and canned tuna in brine. The increase was partly offset by a 5.2 million-pound decrease in the imports of canned salmon (down 5.2 million pounds).

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

Item	Quantity			Value		
	April		Year	April		Year
	1959	1958	1958	1959	1958	1958
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish & Shellfish:						
Fresh, frozen, & processed ^{1/}	90.4	66.0	956.8	25.9	19.5	278.4
Exports:						
Fish and Shellfish:						
Processed only ^{1/} (excluding fresh and frozen)	5.2	1.3	41.2	1.1	0.3	15.6

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

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

Compared with April 1958, the imports in April 1959 were up by 37.1 percent in quantity and 32.8 percent in value due to higher imports of groundfish fillets (up 6.6 million pounds), frozen albacore and other tuna (up 11.6 million pounds), and frozen shrimp (up 3.7 million pounds). Compensating, in part, for the increases was a drop of about 2.5 million pounds in the imports of canned salmon.

United States exports of processed fish and shellfish in April 1959 were lower by 32.1 percent in quantity and 47.6 percent in value as compared with March 1959. Compared with the same month in 1958, the exports this April were higher by 294.6 percent in quantity and 266.7 percent in value. The higher exports in April this year as compared with the same month in 1958 were due to better stocks of California sardines available for export to foreign markets.

* * * * *

GROUND FISH FILLET IMPORTS, MAY 1959: Imports of groundfish and ocean perch fillets and blocks into the United States during May 1959 amounted to 13.9 million pounds--an increase of 2.9 million pounds, or 26 percent, as compared with the same month last year.

Iceland was the leading country with 5.6 million pounds--a gain of 4.2 million pounds compared with May 1958. Canada was second with 4.9 million pounds--2.7 million pounds less than the corresponding month of last year. Denmark followed with 1.7 million pounds (up 400,000 pounds).

During the first five months of 1959, imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets (including blocks) totaled 74.5 million pounds. Compared with the same period of last year, this was a gain of 17.3 million pounds or 30 percent. Canada (27.7 million pounds) made up 37 percent of the 1959 five-months total. Imports from Iceland (26.4 million pounds) comprised 35 percent of the total, while Denmark (9.1 million pounds), and Norway (8.4 million pounds) accounted for 12 percent and 11 percent of the total, respectively. The remaining 5 percent was made up of imports from West Germany, Miquelon and St. Pierre, the Netherlands, France, the United Kingdom, and Ireland.

The quota of groundfish and ocean perch fillets and blocks permitted to enter the United States at $1\frac{7}{8}$ cents per pounds in the calendar year of 1959 is 36,919,874 pounds, based on a quarterly quota of 9,229,968 pounds. The quota for the calendar year 1958 amounted to 35,892,221 pounds. Imports during individual quarters in excess of the established quarterly quota enter at a duty of $2\frac{1}{2}$ cents a pound.

Note: See Chart 7 in this issue.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA AS OF MAY 30: 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 for January 1-May 30, 1959, amounted to 17,689,773 pounds, according to data compiled by the Bureau of Customs. For January 1-May 31, 1958, a total of 16,035,401 pounds had been imported. The quota for 1958 of 44,693,874 pounds was reached on November 20, 1958.



Wholesale Prices, June 1959

Wholesale fishery products prices increased slightly from May to June this year, but were down substantially from June a year ago. The June 1959 edible fish and shellfish (fresh, frozen, and canned) wholesale price index (123.5 percent of the 1947-49 average) was higher by 1.5 percent from the pre-

ceding month, but down by 6.1 percent from same month of 1958. During this June groundfish landings continued to drop off from the early spring run; fresh halibut were in good supply and prices were down from a year ago; and the market for shrimp continued weak due to an oversupply, with prices down sharply from last year.

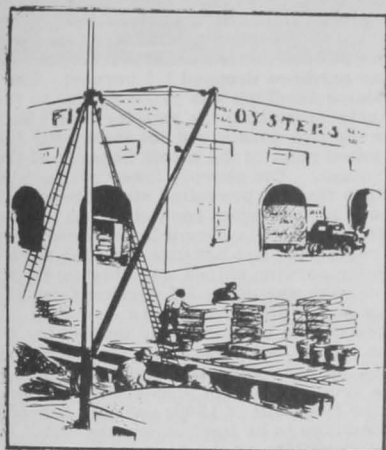


Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, June 1959 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/}		Indexes (1947-49=100)			
			(\$)		June	May	Apr.	June
			1959	1959	1959	1959	1959	1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					123.5	121.7	122.7	131.5
Fresh & Frozen Fishery Products:					139.9	138.1	139.6	150.4
Drawn, Dressed, or Whole Finfish:					147.9	145.5	141.9	147.2
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.11	.10	109.1	97.0	76.0	121.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.34	.35	105.2	107.0	102.1	123.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.78	.78	175.8	174.1	171.3	168.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.57	.78	140.1	192.1	241.7	132.6
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.88	.95	177.0	192.1	217.4	141.6
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.68	.60	158.3	140.7	166.5	129.0
Processed, Fresh (Fish & Shellfish):					136.7	136.4	136.5	151.3
Filletts, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.38	.35	129.3	117.4	97.0	124.2
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	.85	.86	133.5	136.7	137.4	163.5
Oysters, shucked, standards	Norfolk	gal.	5.75	5.63	142.3	139.2	142.3	139.2
Processed, Frozen (Fish & Shellfish):					122.4	119.8	128.3	139.7
Filletts: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	100.8	103.4	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.34	.33	105.2	103.6	111.4	102.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.28	.28	112.8	112.8	118.8	116.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.79	.76	121.1	117.6	128.1	152.0
Canned Fishery Products:					100.4	98.6	99.0	104.7
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . . .	Seattle	cs.	23.50	22.50	122.6	117.4	117.4	120.0
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	79.3	84.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.15	7.15	83.9	83.9	82.2	132.4
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.22	8.35	87.5	88.8	87.5	82.5

^{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.

The June 1959 wholesale price index for the drawn, dressed, and whole finfish subgroup was up by 1.6 percent from the previous month due to substantially higher prices for large drawn haddock at Boston and for fresh-water yellow pike at New York City, and slightly higher prices for fresh king salmon at New York City. Decreases in wholesale prices for drawn whitefish (down 27.1 percent) at Chicago and round whitefish at New York City (down 7.9 percent) failed to offset the higher haddock, salmon, and yellow pike prices. The subgroup index for this June as compared with June last year was about unchanged (down only 0.5 percent) because this June's lower drawn haddock prices (down 10.3 percent) and substantially lower fresh halibut prices (down 15.0 percent) more than offset higher fresh salmon, whitefish, and yellow pike prices.

The fresh processed fish and shellfish subgroup index from May to June this year was about unchanged. Higher haddock fillet and shucked oyster prices just about compensated for a drop of 2.3 percent in fresh shrimp prices at New York City. The subgroup index in June 1959 as compared with June a year ago was lower by 9.6 percent because of sharply lower prices this June for fresh shrimp (down 18.3 percent). On the other hand, this June's prices for fresh haddock fillets were higher by 4.1 percent and for shucked oysters were up 2.2 percent.

From May to June this year, increases of 1/2 to 1-cent a pound in the wholesale prices for frozen flounder and haddock fillets at Boston and 3 cents a pound for frozen shrimp at Chicago resulted in a 2.2-percent rise in the June index for the frozen processed fish and shellfish. From June 1958 to June this year the subgroup index dropped 12.4 percent, due primarily to a drop of 20.3 percent in the frozen shrimp prices

and slight declines in frozen ocean perch and frozen flounder fillet prices. The only increase in June this year over the same month in 1958 was a 3.1-percent rise in haddock fillet prices.

In June this year the over-all index of canned fish prices rose 1.8 percent over the preceding month, but was down by 4.1 percent from the same month of 1958. The light stocks of canned salmon from the 1958 pack resulted in an increase in price of about 4.4 percent (\$1 a case) from May to June this year. During the same period wholesale prices for canned tuna and canned California sardines were unchanged (substantial discounts offered below quoted prices), but the price of canned Maine sardines dropped 1.5 percent. The drop in prices for Maine sardines was probably due to the lack of offerings of packs containing the smaller fish. Packing of Maine sardines for the new season did not start until June 1 and the pack was limited most of the month because of the lack of packing-size sardines. The sharply lower primary price for California sardines that has prevailed since the end of the 1958 packing season in December continued into the month of June. Prices for this product in June this year were down 36.6 percent from June a year ago because the 1958 pack was greater. However, Maine sardine prices were higher by 6.1 percent and canned salmon was up by 2.2 percent from June a year ago. As of the end of June there were excellent stocks of canned lightmeat tuna available; the market for California sardines was steady, but substantial stocks remained unsold from the 1958 pack; a subnormal pack of salmon was predicted with a prospect of high prices and inadequate supplies in 1959 and the first half of 1960; and the pack of Maine sardines was predicted to be light unless the small herring appear in large quantities as the season progresses.



FILLETS KEEP BETTER AT LOW TEMPERATURES

It is important during transportation and storage that fish be held as close to ice temperature as possible, or even a degree or so below. A few degrees in temperature make a difference in the spoilage time. For example, five boxes of fillets, which represented a selection of fish of good quality from a Canadian plant, were each stored at temperatures ranging between 31.5° and 77° F. The approximate keeping times were as follows: 31.5° F.--11 to 12 days, 33° F.--6 to 8 days, 37° F.--5 to 6 days, 45° F.--2 to 3 days, 77° F.--22 to 30 hours.

The reduction in the storage temperature from 37° F. to 31.5° F. (5½°) doubled the keeping time. Even the reduction from 33° to 31.5° F. made a very significant difference.

This does not mean, however, that a reduction in storage temperature of 37° to 31.5° F. will add 5 or 6 days to the keeping time of all fillets, regardless of quality or extent of contamination. (Spoilage Problems in Fresh Fish Production, Bulletin No. 100, Fisheries Research Board of Canada, Ottawa, 1954.)