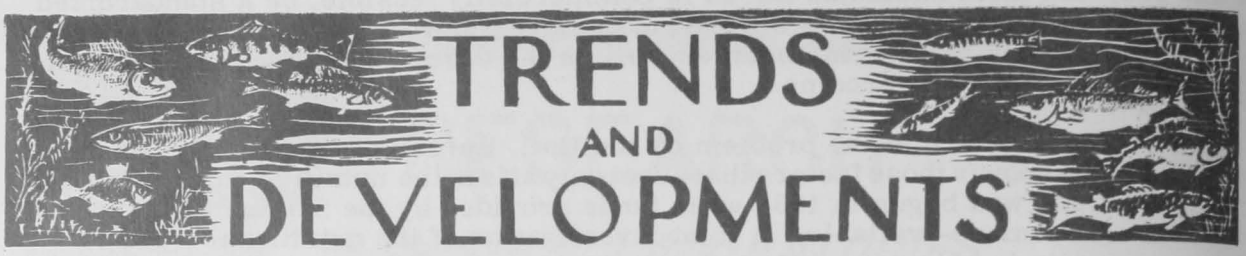

Alaska

FISHERY REGULATIONS FOR 1958 APPROVED: Forecasts by Director Donald L. McKernan of the Bureau of Commercial Fisheries that the pink salmon runs in southeastern Alaska should be considerably better this year than in the previous comparable period are reflected in some relaxation in the 1958 commercial fishing regulations approved April 3 by Secretary of the Interior Fred A. Seaton.

The Department's action, which will permit a small increase in fishing effort by the principal forms of gear used in the fishery, represents the first relaxation of the substantial curtailments which were instituted in 1954 in an effort to halt the decline of the salmon fishery.

"Rehabilitation of the pink salmon runs in Southeastern Alaska was started in 1954," McKernan reported to the Secretary. "The program consisted principally of a reduction in trap fishing effort and on increases in closed areas where purse seines are normally used. This resulted in increased escapements, particularly in the even-year cycle. Pink salmon have a two-year cycle, and since our data indicate that the 1958 runs should be a great deal better than the parent year of 1956, some relaxation is warranted."

Secretary Seaton stated that he has directed the Bureau of Commercial Fisheries to maintain a close watch on the fish runs in Southeastern Alaska. "If this prediction of a better run of pink salmon does not materialize," the Secretary declared, "immediate steps will be taken to assure proper conservation."

Assistant Secretary Leffler assured Secretary Seaton that the Bureau of Commercial Fisheries will, if necessary, exercise the authority contained in the 1958 regulations providing for the immediate reduction in the use of fish traps and other gear or further restrictions to conserve the fish runs.

The Secretary requested Leffler to report to him periodically on the progress of this year's salmon run.

The use of drum seines and power blocks on purse-seine boats in Southeastern Alaska, restricted as a part of the restoration program in 1954, will be permitted this year. The use of this more efficient gear has been permitted in previous seasons elsewhere in Alaska.

The regulations approved today will permit utilization of a maximum of 246 of the 406 available fish trap sites for all of Alaska. This compares with 247 fish trap sites used in 1956, which is a comparable year because of the two-year life cycle of pink salmon, the major species involved.

The pink salmon fishery in Prince William Sound in 1958 will be controlled by a gear timetable in which the closing date is automatically adjusted according to the number of units of gear fished.

There are no substantial changes in the commercial regulations concerning Cook Inlet, Kodiak, and Chignik.

The closing date for the pink salmon fishery on the south side of the Alaska Peninsula has been tentatively set for August 5, but with the prospect that it may have to be closed earlier if expected runs do not materialize. The fall season opens August 18.

A few gill-net boats fished in 1957 in the Unimak District, and in line with policy established in other areas, such fishing is being prohibited since the runs of red salmon taken there are known to be destined for Bristol Bay and are fully utilized by existing gear.

The runs of red salmon in Bristol Bay are expected to be smaller than in 1957 and greater protection will be given the runs during the coming year.

The interest shown last year by Assistant Secretary Leffler in the problem of reducing materially the unsporting practice of salmon snagging in Alaska has led to an amendment which will control the size of hooks that may be used in personal-use fishing. This problem of snagging salmon on the spawning grounds has become serious in the vicinity of a number of population centers, and was particularly bad last year in the Salcha River near Fairbanks where numbers of king salmon of such poor quality as to be unfit for human consumption were snagged off the spawning grounds.

The Assistant Secretary personally observed the practice and declared: "The unpleasant byproducts of this snagging practice are a step backward rather than forward in conservation education." He stated further: "If this regulation is not sufficiently effective to control the practice, it may be necessary to close certain rivers to sport fishing for salmon entirely."

The regulations as issued this year have been completely recodified for the first time since 1949. The opportunity was taken while recodifying to remove repetitous language and to adopt the use of abbreviations and symbols throughout the regulations. The resulting document should be more readable and useful to the public.

California

SARDINES AND MACKEREL TRUCKED FROM SOUTH TO NORTH CALIFORNIA FOR CANNING: Since the disappearance of sardines in Northern California during the last decade, processors of sardines in Monterey and San Francisco have had to depend on sardines transported to their plants by truck from Southern California ports. At several points facilities have been installed for loading sardines onto trucks for transport to the plants. The principal port where these facilities are available is Port Hueneme, which is 70 miles north of Los Angeles. At Port Hueneme there is a good harbor, with excellent unloading facilities. Additional ports are Morro Bay, Avila, and Santa Barbara.

The vessels unload directly into a hopper, either by means of a suction pump or the old-style winch-operated brailer. From the hopper the fish are carried on a conveyor to a chute, and then dropped into a truck. The trucks are various types of flatbed semi or double truck-trailers. On the flatbed, watertight rectangular tanks, open at the top, are installed. These tanks are of various sizes, mostly rectangular, capable of carrying between 18 and 22 tons of fish. The open tops are covered, when on the road, by canvas tarpaulins which are lashed down to cleats on

the flatbed. At the rear of the tank is an opening over which a metal plate is bolted to the tank. This plate is removed when the truck is being unloaded, and the fish are washed out of the opening onto a flume which leads into the cannery. The openings at the top of the tank is such that it permits the truck to move back and forth and be properly loaded with fish and crushed ice.

FIG. 1 - SUCTION PUMP HOOK-UP UNLOADING SARDINES FROM VESSEL TO CONVEYOR BELT AT PORT HUENEME.

At present, the only southern California port out of which sardines, mackerel, or anchovies are being trucked to northern California is Port Hueneme, and between 50-70 trucks are available on a standby basis. Most of the trucks are independent contractors, working for brokers, who contract for the hauls. There is no open bidding by the brokers; their ability to provide good service is the controlling factor. At present three brokers are operating. The trucks that haul the fish also engage in the fruit and vegetable harvest in the area, and the fish hauls provide a very good off-season business. A few haulers work year-around, but the greater part of the trucks only operate during the sardine season, from September 1 through December 31. Minimum hauling rates are set by the Public Utilities Commission, and the rates paid are generally at, or near, this minimum. The haul from Port Hueneme to Monterey

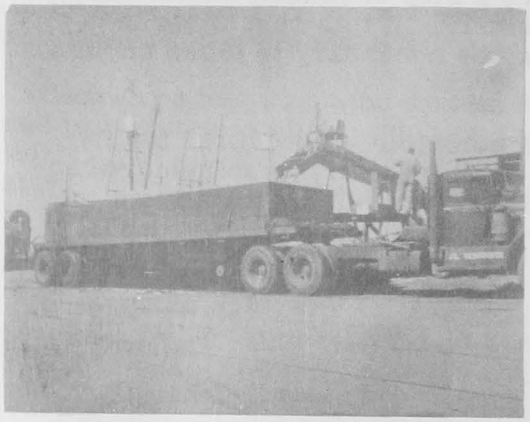

FIG. 2 - END OF CONVEYOR FROM VESSEL TO TRUCK. FISH POURING INTO TANK ON TRUCK.

FIG. 3 - A TRUCKLOAD OF JACK MACKEREL--ABOUT 18 TONS. CRUSHED ICE IS BLOWN ACROSS THE TOP OF THE FISH.

is a distance of approximately 300 miles, and to San Francisco approximately 360 miles. To the basic trucking rates are added charges for use of unloading conveyors, harbor department rates for use of the dock, and cost of ice. In some instances truckers absorb the costs of some items, in others canners do. The Fishermen's Union has contracts with vessel owners, who in turn have contracts with canners, for flat rates to either Monterey or San Francisco. For fish bought by canners this charge is deducted from the gross return to the vessel. The canner pays the truck broker for transporting the fish, and the other charges are split up in any manner that can be negotiated between the canner and truck broker.

As sardine landings are irregular as to time of the day they are unloaded, due to distance from port, moon phase, weather, etc., the trucks are on a standby basis.

Round-trip driving and unloading time to Monterey averages 17-19 hours, to San Francisco 21-23 hours. For a great part of the run the trucks travel through the Salinas Valley, where daytime temperatures in September and October average around 90° F., and if the trip is during the daylight hours at least 2 tons of crushed ice are carried. If it is a night trip about 1 ton of ice is used. One of the canners also requires salt, using 200 to 400 one-pound sacks per load. When loading, ice is blown along the base of the truck about 2-4 inches thick, the fish are then loaded in the tank for a depth of about three feet, more ice is blown on top of the fish, the canvas is lashed on, and the truck is ready to roll. The fish arrive at the cannery in excellent condition, and there is very little loss due to the long trip by truck.

FIG. 4 - TYPICAL TRUCK WITH CANVAS LASHED IN PLACE ON TOP OF TANK. TRUCK BEING WEIGHED. WEIGHING OF TRUCK TAKES PLACE BEFORE AND AFTER ICE IS ADDED.

During the 1957 sardine season 10,377 tons of sardines and 5,586 tons of mackerel were transported by truck to Monterey and San Francisco, and if fish had been available the quantity would certainly have been higher.

This trucking operation, which represents a 25-percent deduction from the sardine ex-vessel price to the vessel-owner and crews, has nevertheless enabled the Monterey canners and vessel owners to survive. It has made little difference to the canners since the price they pay for the fish is competitive with that paid by San Pedro packers. The vessel owners and crew members although operating out of Port Hueneme, although bearing most of the cost of trucking, make out as well as those operating out of Southern California ports because they handle a larger volume. The greatest benefit, however, is probably derived from the fact that the trucking of fish has permitted a few Monterey and San Francisco canneries to survive, where they would have otherwise gone out of business because of lack of fish. This is especially important in the event sardines return to California waters in their former abundance as then all available will be needed to process the harvest.

FIG. 5 - A TYPICAL CONVEYOR OR FLUME USED TO CARRY FISH FROM TRUCKS TO CANNERY.

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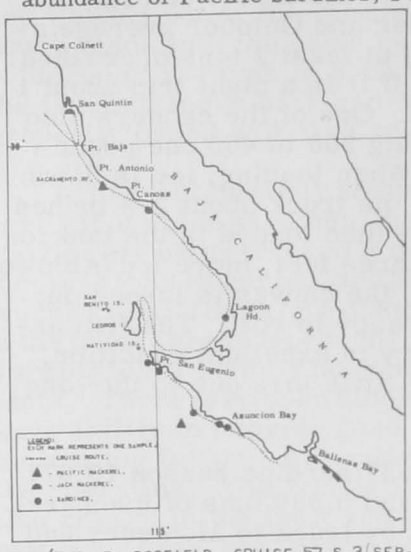
* * * * *

SURVEY OF PELAGIC FISH POPULATIONS BETWEEN CENTRAL AND BAJA CALIFORNIA BY M/V "N. B. Scofield:" Cruise 57-S-3, September 16-October 4, 1957: The coastal waters off Baja California, Mexico, from Ballenas Bay to San Quintin Bay were surveyed by the California Department of Fish and Game Research vessel N. B. Scofield.

The objectives were: (1) To assess the relative abundance of Pacific sardines, Pacific mackerel and jack mackerel with the aid of a 1,500-watt light and the blanket net. (2) To collect study specimens of California black sea bass, Stereolepis gigas. (3) To tag miscellaneous specimens with a new type dart tag and to retain the tagged specimens alive for observations. (4) To acquaint newly assigned personnel with the techniques and various problems of a blanket net-night light survey.



M/V N. B. SCOFIELD, CRUISE 57-S-3 (SEPTEMBER 16 TO OCTOBER 4, 1957).

A total of 51 light stations were occupied, of which, 42 were negative. Of the 9 positive stations, 6 yielded sardines, 1 sardine and Pacific mackerel, 1 Pacific mackerel, and 1 jack mackerel. At many of the stations weather conditions were such that the blanket net could not be used. The sardines in the 7 samples taken ranged in standard length from 32 to 227 mm. (1.3 to 9.1 inches).

Table 1 - List of the Species Captured or Observed at the Light Stations during Cruise 57-S-3

Species	Number of Stations
No fish under light	27
Sardines	17
Pacific mackerel	6
Anchovy	3
Jack mackerel	1
Bonito	1
Barracuda	1
Flying fish	1
Squid	1

Sardines appeared to be particularly abundant in the area from Point San Eugenia to Ballenas Bay; they were also abundant in the area between Lagoon Head and Canoas Point. Although schools were not sighted nor recorded on the fathometer, these fish appeared to be evenly distributed over the entire area. Weather conditions became too extreme for sampling north of Canoas Point, but some traces of schools were observed on the fathometer in the San Quintin Bay area.

Table 2 - Results of Fishing During the Day During Cruise 57-S-3

Species	Number of Stations
Black sea bass	3
Sand bass	1
Kelp bass	1
Yellowtail	1
Ocean whitefish	1

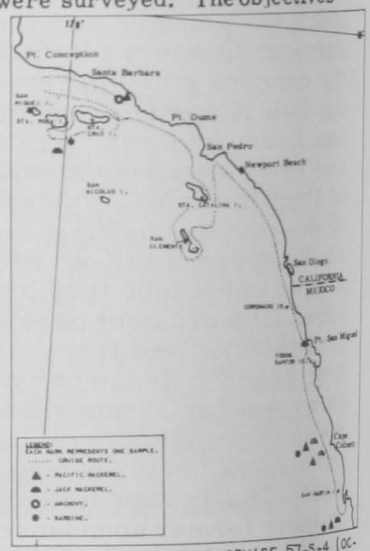
It appears that the distribution of sardines below Point San Eugenia was similar to that found during the 1956 survey. However, a striking difference was noted in the dispersed behavior of the sardine schools during the 1957 survey. In no instance was a trace on the fathometer recorded before turning on the night light. Then, if sardines were around traces would begin to show on the fathometer a few minutes after the light was turned on--indicating that sardines were beginning to accumulate under the light and vessel.

The N. B. Scofield traveled 360 nautical miles scouting fish, during which 8 fish schools of unknown species were observed.

Surface water temperatures, bathythermograph casts, and reversing thermometer casts were taken at all stations. Surface water temperatures in the surveyed area ranged from 17.3° C. (63.1° F.) at San Quintin to 21.8° C. (71.2° F.) at Point Santo Domingo. Sardines taken at the light stations were in waters of 18.5° C. (65.3° F.) minimum to 21.8° C. (71.2° F.) maximum.

Twelve California black sea bass, Stereolepis gigas, were brought back for study purposes. A number of yellowtail, Seriola dorsalis, sand bass, Paralabrax nebulifer, and kelp bass, Paralabrax clathratus, were tagged with a new experimental dart tag and transferred from the tanks of the N. B. Scofield to an aquarium for further observation.

Cruise 57-S-4, October 14-November 2, 1957: The coastal waters from San Quintin, Baja California, to Point Conception, Calif., including portions of areas around San Clemente, Santa Catalina, Anacapa, Santa Cruz, San Rosa, and San Miguel Islands were surveyed. The objectives were: (1) To census the populations of sardines, jack mackerel, Pacific mackerel, northern anchovies. (2) To obtain adult sardines for sereological work being conducted by the U. S. Bureau of Commercial Fisheries. (3) To collect specimens for laboratory study.



M/V N. B. SCOFIELD CRUISE 57-S-4 (OCTOBER 14-NOVEMBER 2, 1957).

Observations and other data included 71 light stations, of which 63 were negative. Of the 7 positive stations, 3 yielded sardines, 5 Pacific mackerel, 5 jack mackerel, and 1 northern anchovy. One station yielded only sardines while another yielded only jack mackerel. The other 5 stations were a mixture of fish. All the sardines from the first successful station were transported to San Diego and transferred to the holding tanks used by the Bureau of Commercial Fisheries for their sereological work. Sardines in the other two samples ranged in length from 136 to 158 mm. standard length (5.3 to 6.2 inches). Throughout the area surveyed, sardines appeared

most abundant in the area from Point Dume to Santa Barbara and around the northern Channel Islands. A moderate concentration of sardines was observed in the San Quintin region in northern Baja California. Northern anchovies, jack mackerel, and Pacific mackerel were observed in greatest abundance in the Point Dume to Port Hueneme area and around the Channel Islands. Jack mackerel were very evident around all the islands. More schools of all species of fish were observed north of the California-Mexico border than between the border and San Quintin.

The N. B. Scofield scouted a total of 548 miles and sighted 444 fish schools. Of the schools sighted, it was determined that 16 contained sardines,

Table 3 - List of the Species Captured or Observed at the Night Light Stations During Cruise 57-S-4

Species	Number of Stations
No fish under the light	31
Pacific mackerel	12
Squid	12
Sauries	10
Sardine	9
Anchovy	8
Jack mackerel	8
Smelt (Atherinidae)	4
Mola	2
Bonito	2
Halfmoon	2

20 anchovies, and 30 mackerel, while 114 probably contained anchovies or sardines or a mixture of the two, and 260 were of undetermined contents. In addition, 4 schools of bonito were sighted in the Santa Monica Bay area. Sauries were very prominent around the islands. In some areas a thin layer of sauries would be visible on either side of the vessel for 10 or 12 miles along the vessel's course.

Surface water temperatures, bathythermograph casts, and reversing thermometer casts were taken at all stations. Surface temperatures throughout the cruise ranged from a minimum of 15.9° C. (60.6° F.) at Smugglers Cove, Santa Cruz Island, to a maximum of 19.3° C. (66.7° F.) at Abalone Point near Laguna Beach. Sardines taken at the night light stations were in waters of 16.5° C. (61.7° F.) minimum to a maximum of 18.4° C. (66.1° F.).

Cruise 57-S-5, November 9-November 23, 1957: The third in this series of cruises was made to the waters off central California from Point Reyes south to Point Conception. The objectives were: (1) To assess the relative abundance of sardines, Pacific mackerel, jack mackerel, and anchovies using 1,500-watt light above the surface of the water and a blanket net as the standard sampling tool. (2) To fish with a lampara net on schools of fish observed from the air in an effort to assist the aerial observers in identifying schools of fish and to explore the technique as a possible sampling method. (3) To deliver live sardines to Steinhart Aquarium, San Francisco.

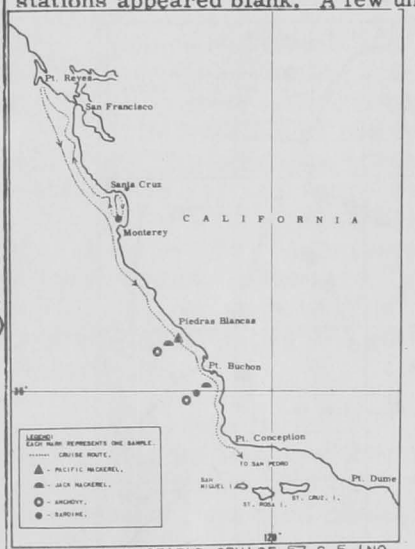
The occurrence of young sardines in Monterey Bay was one of the most significant facts observed during this cruise, the last of the 1957 survey cruises. This was the first indication of sardines less than a year old in the waters north of Point Buchon since the current series of pelagic fish surveys began in 1949. The finding and collection of these fish, size range 99 to 230 mm. (3.9 to 9.1 inches), was consistent with and amplified reports received earlier in the year; eggs and larvae had been reported by the Hopkins Marine Station personnel and in mid-summer commercial fishermen reported small sardines mixed with anchovies, while mixed schools were sighted on several occasions during aerial surveys by Department of Fish and Game personnel.

A small sample of adult sardines was also taken in San Luis Obispo Bay along with a mixed school of fish, composed predominantly of jack smelt, a few mackerel and anchovies.

This is the first year in recent history in which Pacific mackerel were taken in waters north of Point Conception. However, the one sample of 2 fish, collected in San Simeon Bay, does not indicate a great abundance of Pacific mackerel in waters off Central California.

Twenty-six one-hour night light stations were occupied in the survey area. Pelagic fish species were taken in three general localities, principally in bays; Monterey, San Simeon, and San Luis Obispo. The remainder of the stations (23) were either blank or contained such species as jack smelt, sauries, or squid.

A major portion of the 240 miles scouted between stations appeared blank. A few unknown schools of fish were sighted in the vicinity of Point Arguello and Cape San Martin. Schools of very small anchovies, no more than several weeks old, were observed in San Simeon Bay and off Point Sal.



M/V N. B. SCOFIELD CRUISE 57-S-5 (NOVEMBER 9-23 1957).

A fairly heavy concentration of large jellyfish, Chrysarora gilberti, was observed on two adjacent stations in the area between the town of Santa Cruz and Ano Nuevo Point to the northwest. The area of concentration appeared to cover a 10- to 15-mile stretch of coastal water, which is in sharp contrast to the aerial observations of a week previous and to last year's findings when a very heavy and more extensive (50- to 60-mile) concentration was noted. Also, pointing up the marked changes found this year over last was the absence of tunicates and salps, none was seen in 1957, whereas during the November 1956 survey large concentrations of Pyrosoma and salps were frequently seen along the route.

The surface water temperature ranged from 12.8° C. (50.0° F.) off Point Sur to 15.2° C. (59.4° F.) just south of Point Arguello. However, the major portion of the surveyed water mass was relatively uniform, varying only 0.8° C. (range 13.0° to 13.8° C.). There was nothing unusual about the water temperatures

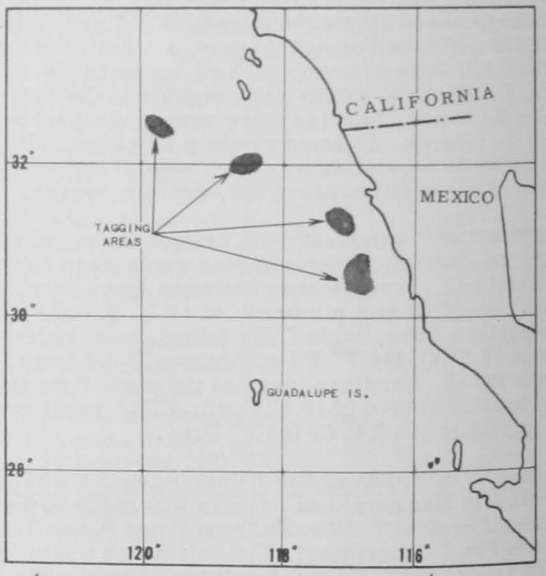
where sardines were found and taken, Monterey Bay registered 14.3° C. and San Luis Obispo 13.1° C. Station routine included bathythermograph casts to allowable depths and 10-meter reversing thermometer casts.

Aerial Scouting--Lampara Net Fishing: Working in San Luis Obispo Bay, five sets of a 100-fathom lampara net were made during daylight hours under the direction of an observer flying in the State Cessna 170. Four sets were made around schools of fish visible from the air but not from the boats. These schools were traced on a small recording fathometer prior to setting the net in an attempt to measure their mass. In each instance, the school was seen to escape the net despite the fact that it was completely surrounded. Each haul yielded only a scoop or two of fish; the shallow water set contained primarily anchovies and white croakers, while the deep water sets caught jack smelt and sardines. Because the schools of fish were seen to escape the net, it was felt that the catch was of scattered fish and not a portion of the school. Therefore the last set was deliberately made on a blank area; no school of fish was visible from the air and no traces were obtained on the fathometer. The resulting catch of this set was one large jack smelt. Thus, it appeared that the first 4 hauls did catch a portion of the encircled school.

* * * * *

PRESEASON EXPLORATORY ALBACORE SURVEY (M/V N. B. Scofield Cruise 57-S-2): An exploratory survey to determine the preseason occurrence of albacore and to delineate the migration route taken by albacore tuna as they approach the west coast of Lower California was made by the California Department of Fish and Game's research vessel N. B. Scofield from June 3-July 15, 1957. Other objectives of the cruise were: (1) to obtain oceanographic and biological data that may be related to the occurrence of albacore; (2) locate and report banks and seamounts within the survey area; and (3) tag albacore as a part of the population, growth, and migration study.

M/V N.B. SCOFIELD CRUISE 57-S-2 (JUNE 3-JULY 14, 1957) PRESEASON EXPLORATORY ALBACORE SCOUTING.



M/V N.B. SCOFIELD CRUISE 57-S-2 (JUNE 3-JULY 14, 1957) ALBACORE TAGGING AREAS.

Surface trolling with commercial gear was conducted during daylight hours in the survey area. Sets of 20 baskets each of Japanese type long-line gear were made in the survey area where conditions appeared favorable for albacore. Fishing with live bait and trolling gear was conducted in the inshore areas.

All viable albacore were tagged and released. All remaining were preserved for shoreside examination in an attempt to discover physical evidence of recent prolonged migration. The location of albacore and other incidental catches were recorded. Locations of reported commercial catches were recorded. Marine life sightings were noted. Night light stations were occupied. Routine observations (size range of fish, stomach regurgitations, etc.) were recorded.

Surface sea temperatures were recorded every two hours while the vessel was under way. Bathythermograph casts were made at each long-line station and at various positions along the vessel's track. Daily weather observations were recorded. The vessel's 6,000-fathom recording fathometer was operated continuously while under way. Reported shoal areas within the survey area were investigated for validity.

Table 1 - Albacore Troll Catch

June 1957	Latitude	Longitude	No.	Water Temp. (Fahrenheit)
9	29° 30' N.	119° 55' W.	4	64.8°
12	31° 00' N.	119° 38' W.	2	63.5°
13	29° 39' N.	119° 50' W.	2	63.7°
13	29° 17' N.	119° 46' W.	2	63.7°
15	30° 37' N.	117° 13' W.	1	62.6°
15	30° 40' N.	116° 54' W.	1	62.6°
15	30° 51' N.	116° 58' W.	3	62.6°
16	31° 49' N.	117° 13' W.	5	64.8°
17	31° 29' N.	117° 56' W.	7	63.3°
17	31° 01' N.	118° 51' W.	1	63.3°
17	30° 50' N.	118° 52' W.	1	63.3°
19	29° 58' N.	119° 28' W.	1	65.5°
22	31° 08' N.	118° 18' W.	1	63.7°
22	31° 19' N.	118° 19' W.	3	63.7°
22	31° 36' N.	118° 30' W.	14	63.7°

Fishing Activities from June 3 to June 22 yielded a total of 48 albacore captured on trolling gear. Long line failed to produce any albacore.

A total of 27 albacore was tagged with both "G"-type "spaghetti" tags and experimental dart-tag. Weights of the albacore taken ranged from 11½ to 20 pounds. There was no apparent physical evidence of recent prolonged migration. Stomach analysis revealed that all were empty or contained only digested material with the exception of one stomach which contained red crabs (Pleuroncodes planipes).

Marine life sightings were sparse during this part of the cruise. Albatross were the most numerous of the birds sighted. The offshore tracks covered by the vessel were especially devoid of marine life, while tracks to the north and inshore revealed a variety of marine life. Storm petrels, flying fish, seals, and porpoise were observed in these areas. Albacore "jumpers" were observed June 16, at lat. 31°49' N., long. 117°13' W. and on June 17, at lat. 31°29' N., long. 117°56' W. The predominate species obtained from night-lighting activities were Pacific saury (Cololabis saira) and lanternfish.

Surface sea temperatures in the survey area ranged from 15.9° C. (60.6° F.) to 19.4° C. (66.9° F.). Bathythermograph casts indicated shallow thermoclines for inshore areas and deeper thermoclines for offshore areas. The best catches of albacore occurred in the inshore areas. Investigation of reported shoal areas failed to confirm these reports.

During the tagging phase June 26-July 14, live-bait fishing produced good catches of albacore in the area located between San Martin and Todos Santos Island, Lower California, and 35 to 50 miles offshore. Trolling catches were heaviest between the Sixtymile Bank and the Dumping Grounds. A few fish were taken while trolling 60 to 65 miles southwest of San Nicolas Island. A total of 761 albacore was captured during this part of the cruise.

A total of 604 albacore was tagged and released. Of this total, 58 were double-tagged with type "G" "spaghetti" tags and experimental dart tags. The remainder were tagged with "spaghetti" tags only. Stomachs of injured fish contained Pacific saury, red crabs, and squid remains. The majority of the stomachs examined were empty. Large fish, up to 41 pounds, were encountered from San Martin Island to Todos Santos Islands. These fish were schooled thickly and reacted well to live bait fishing. Trolling in this area was relatively unproductive as compared to live-bait fishing.

Trolling was more productive in the vicinity of the Sixtymile Bank and the area southwest of San Nicolas Island. The catch in these areas was composed of small fish, usually less than 20 pounds. Marine life sightings consisted mainly of storm petrels, small unidentified white birds, and albacore "jumpers." Porpoise were observed throughout this part of the cruise. "Nightlighting" produced Pacific saury, flyingfish, and squid.

Surface sea temperatures in the fishing areas ranged from 16.7° C. to 21.0° C. (61°-69.8° F.). Optimum catches occurred in temperatures ranging from 18.0° to 19.4° C. (64.4°-66.4° F.). Bathythermograph casts indicated shallow thermoclines in the areas fished.

Cans--Shipments for Fishery Products, January 1958

Total shipments of metal cans during January 1958 amounted to 5,841 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 6,947 1/ tons in the same month a year ago. Canning of fishery products in January this year was confined largely to tuna, jack and Pacific mackerel, and Gulf oysters.

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.
1/REVISED.

CORRECTION

In the article "Cans--Shipments for Fishery Products, 1957" which appeared in the April 1958 (p. 24) issue of the Commercial Fisheries Review, the 1957 shipments of 144,560 short tons is incorrect. The total should read 114,560 short tons.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-FEBRUARY 1958: Fresh and Frozen Fishery Products: A total of 1.6 million pounds (value $1.0 million) of fresh and frozen fishery products were purchased in February by the Military Subsistence Market Centers for the use of the Armed Forces under the Department of Defense. The quantity of these purchases were lower than those in January by 3.4 percent and below those in February 1957 by 2.4 percent. The value of the purchases this February was 6.2 percent higher than in the previous month and 23.9 percent greater than in the same month a year ago.

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

QUANTITY				VALUE			
February		Jan.-Feb.		February		Jan.-Feb.	
1958	1957	1958	1957	1958	1957	1958	1957
(1,000 lbs.)				($1,000)			
1,634	1,678	3,326	3,890	1,001	808	1,944	1,977

For the first two months of 1958 purchases totaled 3.3 million pounds, valued at $1.9 million--a decrease of 14.5 percent in quantity and 1.7 percent in value as compared with the same period of 1957.

Prices paid for fresh and frozen fishery products by the Department of Defense in February averaged 61.3 cents a pound--the highest since January 1956 when the average reached 68.7 cents a pound. The average price for February was 5.6 cents a pound more than the previous month and 13.1 cents a pound more than in the same month in 1957. Short supplies of frozen fillets and some other frozen fishery products caused prices in February to rise to the highest they have been for several years.

Canned Fishery Products: Sardines was the only canned fishery product purchased for the use of the Armed Forces during February.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, February 1958 with Comparisons

Species	QUANTITY				VALUE	
	February		Jan.-Feb.		February	Jan.-Feb.
	1958	1957	1958	1957	1958	1958
	(1,000 Lbs.)				($1,000)	
Tuna	-	268	316	268	-	164
Salmon	-	-	695	992	-	378
Sardines	3	1	21	11	1	7

* * * * *

VETERANS ADMINISTRATION TO BUY CANNED FOODS FROM HINES, ILL., DEPOT: The Veterans Administration started to buy canned foods from its supply depot at Hines, Ill., instead of from Washington, D. C., beginning April 7.

Thereafter the new office at the Hines depot will issue all invitations for bids and will make awards on all of the VA's subsistence requirements, except frozen foods, which will be bought from the Washington office.

The VA's Washington office, which set up the agency's postwar buying program and also handled the contracting, will continue to fix policy and general buying procedures.

The Hines depot is located 12 miles west of Chicago and is addressed: Marketing Division for Subsistence Veterans Administration Supply Depot, P. O. Box 27, Hines, Ill.

* * * * *

VETERANS ADMINISTRATION REQUIREMENTS FOR CANNED FISH FROM 1958 PACK: Recently the Veterans Administration issued its estimated requirements for canned fruits, vegetables, and fish to be procured from the 1958 pack. Its requirements for canned fish are:

	Can Size	Dozen Cans
Salmon, red or sockeye	#1	25,260
Salmon, red or sockeye--sodium content restricted to not more than 60 mg. per 100 grams	#½	4,760
Tuna, light meat, chunk style in vegetable oil	4-lb.	5,820
Tuna, light meat, chunk style--sodium content restricted to not more than 50 mg. per 100 grams	#½	8,500

Great Lakes Fishery Investigations

OPERATIONAL PLANS FOR M/V CISCO FOR 1958: During the 1958 season, the U. S. Bureau of Commercial Fisheries research vessel Cisco will again be assigned to operate on Lake Erie. The vessel will participate in a cooperative research program developed jointly by the states bordering Lake Erie, the province of Ontario, and the Bureau.

The Cisco was scheduled to depart from Bay City for Lake Erie on March 24.

Some work with the vessel may be continued after Cruise 11 to fill special requirements. The operation of the Cisco during the 1958 season will, for the most part, be confined to that part of Lake Erie lying west of Pelee Point, Ontario, and Lorain, Ohio.

Operational Two-Week Schedule of M/V Cisco, 1958

Cruise	Period
1	March 25-April 8
2	April 15-29
3	May 6-20
4	May 27-June 10
5	June 17-July 1
6	July 8-22
7	July 29-August 12
8	August 19-September 2
9	September 9-23
10	September 30-October 14
11	October 21-November 4

Major objective of the work by the Cisco during 1958 will be to help gather as much information as possible concerning the life history of 15 important species of fish in western Lake Erie. Special emphasis will be on spawning habits, egg survival, hatching, fry survival, and early life history.

Approximately half of each cruise will be spent in trawling at a number of locations scattered over the entire western end of Lake Erie. Information and experience gained during the 1957 operation of the Cisco will be extremely valuable in this portion of the 1958 work. Length, weight, stomachs, and scale samples for age determination will be taken from fish samples.

The remainder of each cruise will be devoted to collection of detailed information on the spawning habits, survival and growth of the larvae and fry, horizontal and vertical distribution, movements, and food habits of each species. Most of this work will require small nets with fine mesh to be towed at various levels. Electricity will be used in connection with some of these tow nets and a small beam trawl with chafing gear will be fished on rough bottom.

Three times during the operating season the Cisco will join with a number of other vessels from Ontario and the State of Ohio and the Bureau's research vessel Musky in a synoptic survey of western Lake Erie. This operation is designed to produce, largely by means of chemical analysis of water samples, information concerning the currents and movements of water masses in western Lake Erie. During these surveys each of the participating vessels will run predetermined courses on three consecutive days. Water samples will be taken at close intervals by each vessel during each of three days. For comparison with the chemical-analysis method of current determination, several drift bottles will also be released at each point water samples are taken.

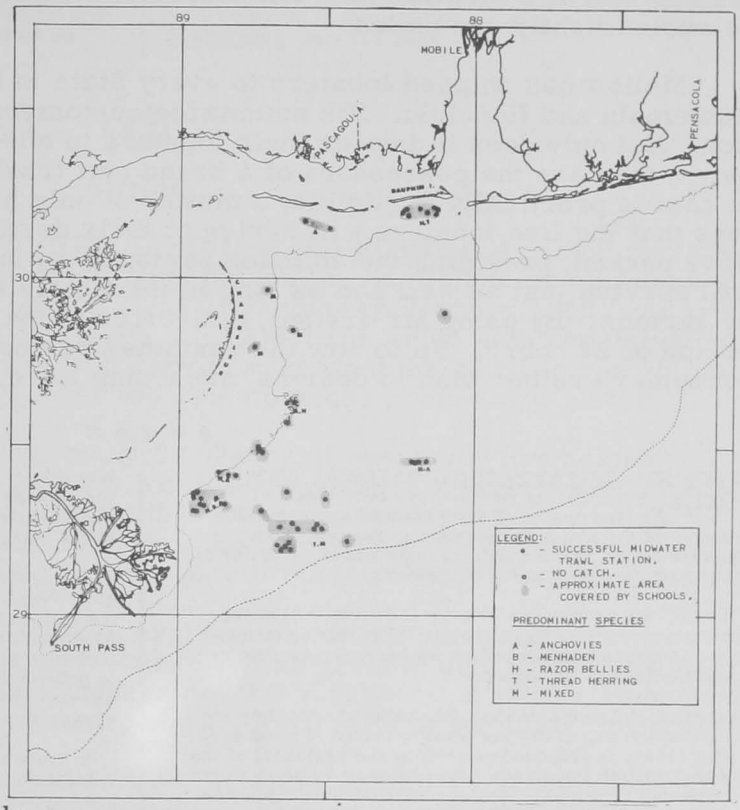
A certain amount of flexibility in the Cisco schedule has been provided to allow for work on other problems that may arise.

Some use will be made of gill nets set obliquely and horizontally at various depths to collect larger members of certain species of fish and to determine their vertical distribution.

Gulf Exploratory Fishery Program

EXPERIMENTAL MIDWATER TRAWLING CONDUCTED OFF MISSISSIPPI DELTA (M/V Oregon Cruise 48): Midwater trawling between the Mississippi Delta and Cape San Blas was conducted by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon January 27-March 14, 1958. The objectives of the cruise were to count, sample, and identify midwater schools in that area, and to test midwater trawls of varying mesh sizes.

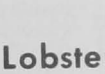
A total of 52 midwater-trawl sets (see chart) were made on depth-recorder indications of midwater schools. Catches of 10 to 1,369 pounds were obtained in 36 tows, and indicated concentrations of many species of herringlike species. Eighteen of the schools sampled were predominantly razor bellies (Harengula pensacolae) and nine were 5- to 6-inch anchovies (Anchoa hepsetus). Scattered schools sampled contained mixtures of thread herring, chub mackerel, round herring, anchovies, scad, gizzard shad, and alewives. Menhaden (Brevoortia patronus) made up the bulk of the catch in two drags off Pass-a-Loutre. One drag (January 30, 1958) contained 1,290 pounds of menhaden in ripe spawning condition.



M/V OREGON CRUISE 48 (JANUARY 27-MARCH 14, 1958).

Two 40-foot square midwater trawls with mesh sizes tapering from 3" to $1\frac{1}{4}$" and 2" to $1\frac{1}{4}$" were used for school sampling. A single set on three dense school indications with an 88-foot nylon trawl resulted in the loss of all the netting.

Recorder indications of subsurface schools were numerous both preceding and following the cold wave during the middle of February. Schools were noticeably diminished during the cold wave.



Lobsters

METAL CONTAINER USED FOR SHIPPING LIVE LOBSTERS: The ingenuity of a Gloucester man for successfully developing a method of packing and shipping live lobsters in a large metal container won a citation from the Massachusetts Department of Commerce. For years attempts have been made to find a new way and more satisfactory methods of shipping lobsters. The customary ways of packing them for shipment is in wooden barrels, wooden boxes, or cartons.

Joseph Mellow, widely known Cape Ann dealer, was commended early this year for his achievement by the Commissioner of the Massachusetts Department of Commerce who said: "this is another in a long line of 'Firsts' for Massachusetts."

The old method used was to place the lobsters in a specially-constructed wooden barrel so that they could be iced on four sides and on top and bottom. It proved successful but there was always danger of the barrel being smashed in shipment. Then Mellow thought: "Why not try a galvanized barrel--the same kind used for for trash?" He had the interior constructed the same as in the wooden barrels with the addition of a plastic lining and a special ring for the top so that the cover would be sealed tightly and nailed.

Mellow has shipped lobsters to every State in the Union and as far away as Guatemala and Honolulu. His nationwide customers were delighted with this innovation. Not only does it deliver their lobsters in absolute safety but after they are eaten, they are the possessors of a brand new trash can. Mellow says the difference in cost is practically negligible, a matter of only a few pennies more and he guarantees that the live lobsters will arrive at their destination as lively as the day they were packed, providing the shipping period is no longer than $4\frac{1}{2}$ days. The lobsters will survive just as well and as long in the tightly sealed can as in wooden barrels or cartons. By using air-freight, deliveries to the Far West are made within a period of 24 hours. Up to now the container has been used for shipping directly to consumers rather than to dealers, according to reports.

* * * * *

WOOD SHAVINGS AS PACKING MATERIAL SHOWS PROMISE: Encouraging results have been obtained in the first of a long series of tests planned by research personnel of the Maine Department of Sea and Shore Fisheries on the use of wood shavings and other materials for the packing and shipping of lobsters.

"So far, the results are strictly tentative," says the Commissioner of the Department. "Far more extensive tests will have to be made before we can make specific recommendations to the industry."

Experimental packs and test shipments tried to date indicate that the use of dry softwood shavings in cardboard packing cases, as proposed recently by the president of the Belgian Shellfish Importers Association, may be an important new way of shipping lobsters considerable distances. Raoul Halewyck of Ostend, Belgium, demonstrated the practicality of this method to a group of Maine lobster dealers at Rockland recently.

At the Department's McKown Point research station, Boothbay Harbor, marine biologists have kicked off their investigation by putting various lobster packs through tests under three separate conditions. The Director of Research said that containers had been shipped by truck to New York City and back, while a second group was kept at the laboratory at room temperatures, and a third group was subjected to high temperatures in an incubator.

Packages used included discarded liquor cartons, special cartons designed for a Maine lobster dealer, and the conventional barrel in which lobsters are packed in rockweed and surrounded by ice.

The first test shipment consisted of five containers, each with 10 pounds of live lobsters. One liquor carton had wood shavings and no ice. A second liquor carton had shavings and ice. The special cartons were also packed with and without ice, and the barrel had its usual quota of rockweed and ice.

When the test shipment was returned to the laboratory, the lobsters had been in their various containers for 68 hours. An immediate check disclosed the following:

The liquor carton with shavings and no ice had seven lobsters in good condition. Two appeared dead and two were weak. The liquor carton with ice had seven lobsters in good condition. Four near the top, which had been shaken out of the shavings, appeared lifeless--98 percent of the ice still remained, suggesting that the method of packing had insulated the ice even more effectively than the lobsters.

On this point, one of the Department's research staff at work on this project said that initial tests had proved the importance of proper packing. "While the container and the packing materials are key factors, the way in which the materials are used can make a considerable difference in the survival rate."

The special cartons gave quite favorable results, biologists found. One packed with wood shavings but without ice had ten lobsters in good condition, and only one which appeared lifeless. The shavings had settled about six inches in the box. The same container with ice packed in polyethylene bags had nine lobsters in good condition, and two which were weak. Both had thrown their crusher claws. Again, about 98 percent of the ice remained.

In the standard barrel, which had been subjected to the same conditions as the cartons, seven lobsters were in good condition, while four appeared lifeless--three on bottom of the pack and one in the middle.

Much closer checks are being kept on the containers which remain at the laboratory. As pointed out, shipping tests give a picture of how lobsters will survive under actual conditions. But there is no way of knowing what has been happening to the packages in transit, the temperature ranges to which they have been subjected, not how they have been handled.

The containers tested in the laboratory, on the other hand, are under constant observation. Hourly temperature checks are made with an instrument called a potentiometer. Each box or barrel is wired and thermocouple units are placed inside when it is packed. Thus technicians are able to record the exact temperatures inside each container as well as those of the surrounding atmosphere.

Groups of containers have been tested at room temperatures ranging from 52 to 66degrees. One group tested out slightly better than the containers sent in the test shipment. One hundred percent survived in good condition in the special carton packed with shavings and ice, while the conventional barrel pack had seven in good condition, and four which appeared lifeless.

Perhaps the most rugged test so far conducted was given a series of containers placed in an incubator at temperatures ranging from 95 to 101 degrees. Preliminary findings were too limited to be conclusive. Biologists did find, however, that under these conditions containers needed ice in order for the lobsters to survive 20 or more hours.

Once temperatures inside the containers started to climb, the lobsters were likely to die quickly. Thus,

while the wood shavings are excellent insulation, once the heat begins to get through to the lobsters, their minutes of life are numbered. Ice slows down this process. In one wooden fish box, for example, using wood shavings and ice, survival was 100 percent after over 30 hours of high temperatures. The box was removed just as the interior temperatures began to climb.

As a result of the knowledge gained in these preliminary tests, additional research will be conducted on various types of containers and insulating materials. Additional test shipments will be made regularly. All legal sizes of lobsters will be used in the experiments.

A nationally-known paper box manufacturer has agreed to make information available to the Department on its most recent container research. Sample boxes will be supplied the Department which, the firm believes, will be suitable for lobster shipping. (Maine Coast Fisherman, January 1958.)

Maine

MARKET OUTLOOK FOR CANNED SARDINES IMPROVES: A major increase in Maine sardine sales at the consumer level during the past three months, and a sizable gain for the eight-month period, June 1957 through January 1958, was reported by Maine Sardine Council on March 20, 1958. The sales data regularly collected by the Council's market research services showed the gains to run 20 percent and 14 percent, respectively, over the same periods a year ago.

The increases represent many, many thousands of cases and has helped to bring the industry's inventory position down to a very favorable level, the Council's Executive Secretary stated. He also said that movement of stocks from packers' hands during January and February 1958 was the largest for a like period since the Council started keeping records six years ago and totaled nearly 500,000 cases.

Although the Council has no definite explanation of this increased business activity, it could involve a number of factors such as greater demand for low cost, high protein foods during a period of recession, the high price of meats, improved quality, more meals being eaten at home, and the Council's promotional programs.

The Council stated that imported sardine sales remained about the same during the eight-month period while California sardines showed a huge loss due to a short pack.

From an inventory standpoint the Maine sardine industry should be in a very good position by the start of the 1958 packing season, the Council reported.

Market Development

INITIAL STEPS TAKEN IN PLAN FOR NEW ENGLAND FISHERIES: Initial steps to help the New England groundfish industry establish a comprehensive market development plan have been taken by the U. S. Bureau of Commercial Fisheries.

The objective of this initial program is to determine those fields in which the industry's sales promotion efforts can best be directed. This phase of the program is being conducted through a contract awarded to a New York City firm. The study is financed from funds provided by the Saltonstall-Kennedy Act of 1954 for the betterment of the domestic fishing industry. This organization will point up problem areas in the field of marketing the cod, haddock, ocean perch, and other groundfish produced by the New England industry. A general plan of approach was included in the report submitted to the Bureau by April 1, 1958.

The Bureau in turn will submit the findings to the New England Committee for the Aid of the Groundfish Industry for industry consideration and action.

The Bureau of Commercial Fisheries has already completed or has under way several studies on the New England fisherman's production and processing problems.

Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS FIRST HALF 1958: United States civilian consumption of fishery products per person through early spring this year was expected to be about the same as a year earlier. Total supplies were a little larger than in early 1957 because of somewhat heavier stocks of canned items. Retail prices of fishery products during the first quarter of 1958 were predicted to average somewhat above the year-earlier record level, with increases likely to be greatest for the fresh and frozen items.

Civilians had almost as much fishery products per person in 1957 as in 1956. There was a slight reduction in the quantity of canned products consumed, but the rate for the fresh and frozen and the cured items remained about unchanged. Retail prices of fishery products in 1957 averaged above those in the preceding year and were at a record high.

The total commercial catch of edible fish and shellfish in 1957 was about 5 percent smaller than a year earlier. The reduction was least for the species marketed mainly as fresh or frozen products and greatest for those used primarily in canning. To some extent the latter was reflected in a reduced pack of canned fishery products in 1957. The output of canned tuna was almost equal to the record volume packed in 1956, but this was a result of substantially increased use of imported frozen tuna. Commercial landings of tuna by the domestic fleet were much smaller than in 1956. The salmon pack was much smaller in 1957, with the substantial reduction in Alaska only partly offset by the considerable increase in the Oregon and Washington packs. Production of Maine sardines was somewhat smaller than in 1956 and the pack of California sardines (pilchards) was the fourth smallest since 1921. The estimated heavier stocks of canned fishery products at the end of 1957 than a year earlier to some extent reflect the reported slower movement of supplies of some items into distribution channels than in the same part of the 1956-pack marketing season.

Commercial freezings of edible fish and shellfish in the continental United States (excluding Alaska) during 1957 were almost 4 percent smaller than in the preceding year. Stocks of frozen edible fishery products were more than 4 percent smaller at the end of 1957 than at the beginning.

Preliminary figures for 1957 indicated that imports of fresh and frozen fishery products were higher than in 1956 and those of the canned commodities were up noticeably. Exports of canned salmon were much larger in 1957, while those of sardines were down substantially.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Bureau of Commercial Fisheries, U. S. Department of Interior, and published in the former agency's February 25, 1958, release of The National Food Situation (NFS-83).

North Atlantic Fisheries Investigations

OBSERVATIONS ON HADDOCK MADE OFF HIGHLAND LIGHT (M/V Silver Mink): The Highland Grounds, located a few miles NNE. of Highland Light off Cape Cod, Mass., were surveyed for data on haddock by the M/V Silver Mink (under charter to the U. S. Bureau of Commercial Fisheries) during a one-day cruise on February 12, 1958.

Four otter-trawl tows were made with an otter trawl containing a $1\frac{1}{2}$-inch mesh end liner in the cod end over a two by seven mile (east and west) course. The tows yielded 1,056 haddock which were measured for length. Additional data collected included scale samples from 265 male fish and 244 fish. From a sample containing 53 male and 53 female fish, round weights and gonad weights and state of development were recorded. The drumming muscle length and weight were also recorded. In addition, fin rays and stomach contents were collected and preserved for later analysis for this group of 106 fish. A total of 296 haddock were tagged and released during the cruise.

All species were identified and enumerated in one sample tow, and the important species were measured.

Haddock gonads were ripening but contained very few translucent fully mature eggs and probably will not be spawning on the Highland Ground until March. Pollock ovaries were fully ripe and in a running condition. Haddock preponderated in the catches followed by dabs and longhorn sculpin. The community appeared to be consistent in species composition and abundance within the area.

North Atlantic Herring Research

WINTER HABITAT AND LIFE HISTORY OF MAINE HERRING POPULATIONS STUDIED (M/V Delaware Cruise 57-9): Otter trawl tows for herring were made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel M/V Delaware along the coast of Maine and on Georges Bank during this cruise. The cruise was planned to learn more of the winter habitat and general history of the common herring (Clupea harengus). There were three phases with periods at sea from December 12-22, 1957; January 6-17, 1958, and from January 27-February 6, 1958.

FIG. 1 - THE SERVICE'S RESEARCH VESSEL DELAWARE.

Small catches of sardine herring were made in Casco Bay, Sheepscot Bay, Penobscot Bay, Bluehill Bay, 3 miles northwest of Monhegan Island, and in the area south by east of Monhegan Island at distances of approximately 20-42 miles offshore. Larger mature herring were caught in Passamaquoddy Bay, on Georges Bank, on Fippennis Ledge, and in the area 15-33 miles south of Portland, Me.

The first tows were made in Passamaquoddy Bay using a $\frac{3}{4}$-inch mesh No. 31 trawl and Danish herring trawls. Four tows were made along the Perry Shore; along the northwest shore of Deer Island near Western Passage, and at the center of Passamaquoddy Bay. A total of only 48 large herring of approximately 8 to 10 inches total length was taken in Passamaquoddy Bay, all of which were taken in the tows near the inside (northern) end of Western Passage. Rough and hard bottom prevented towing in other parts of Passamaquoddy Bay.

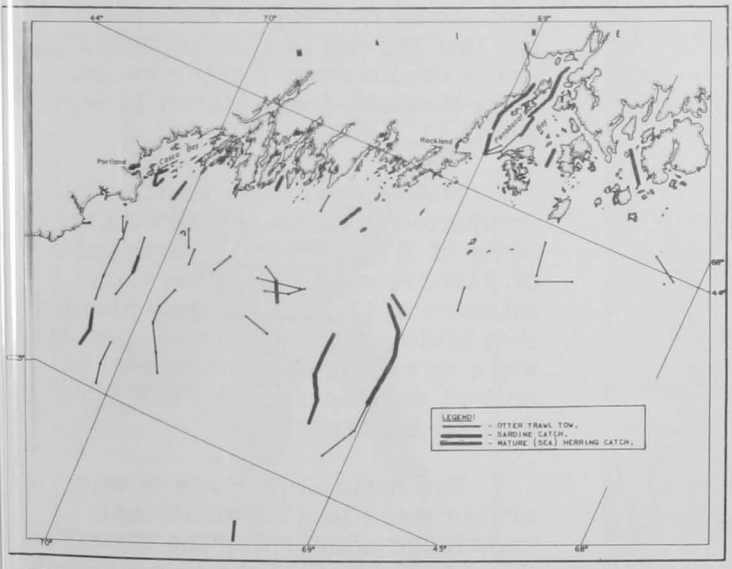


FIG. 2 - M/V DELAWARE CRUISE 57-9 (DECEMBER 12, 1957-FEBRUARY 6, 1958).

Thirteen tows were made on the northern edge of Georges Bank with a No. 41 trawl equipped with rollers and a small mesh cod end. Some herring were taken in nearly every tow, the largest catch being about 350 pounds and averaging 100 to 150 pounds per ton. These herring were large and mature, many showing evidence of having spawned and recovered.

Two days of plankton collection and oceanographic field work was done during this first phase of the cruise in the area between Cape Sable, Nova Scotia, and Georges Bank.

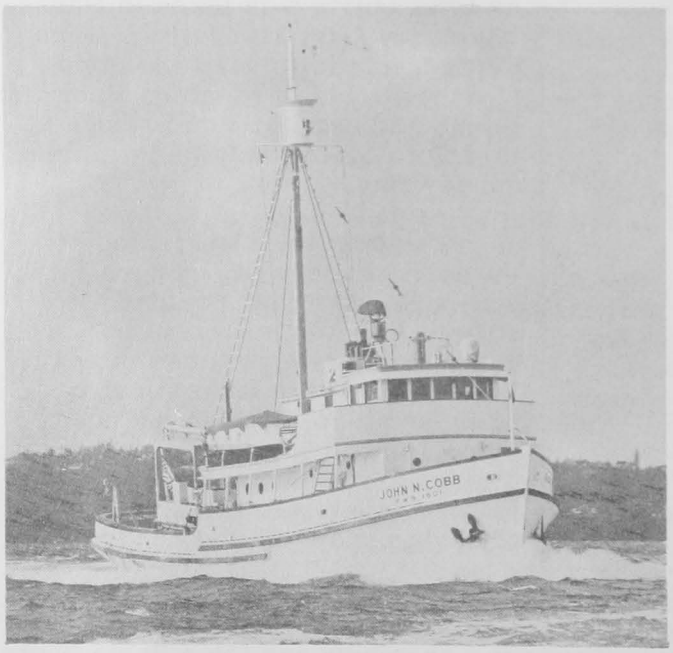
During Phases 2 and 3 tows were made along the Gulf of Maine coast from Cape Ann, Mass., to Mt. Desert Rock, Me., ranging offshore to Jeffreys Ledge and to 40 miles south of Monhegan Island (see chart). Small catches (up to 75 pounds per tow) of 4- to 6-inch small herring, were made in Luckse Sound of Casco Bay; in East Penobscot and West Penobscot Bays; and in Bluehill Bay. Catches of from a few to 25 small herring measuring 5-6 inches in length were taken in several tows made in positions 12 to 36 miles south by east of Monhegan Island. Small catches of large (sea) herring were made on Fippennies Ledge and 6 miles east of Jeffreys Ledge. Samples of all catches were returned to Boothbay Harbor for biological studies of parasites and racial composition.

Areas of trawlable bottom are uncommon and hard to find along this coast and many inside locations were too restricted for operating a vessel the size of the Delaware. However, where suitable bottom was found, most of the inside tows and a good percentage of the outside tows yielded small quantities of herring. The indications are that many of the fish in their second year of life remain in inside areas or relatively near shore in the Gulf, not schooled, but scattered over a wide area. The fact that these fish were taken with bottom trawls is evidence that at least part of the herring populations remain near the bottom during this season. Larger herring, in their third year or older, were taken in Passamaquoddy Bay; in the "trough" between Jeffreys Ledge and the Mainland; on Fippennies Ledge; and on Georges Bank.

All catches made during this cruise were small and in most cases can be considered no more than "trace" catches. Nevertheless, these add considerably to the knowledge of the winter habitat of the sardine herring.

North Pacific Exploratory Fishery Program

SURVEY OF SHRIMP STOCKS OFF SOUTHERN WASHINGTON AND NORTHERN OREGON PLANNED (M/V John N. Cobb Cruise 36): Shrimp exploration off the coasts of southern Washington and northern Oregon were planned for the Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb from March 17 to April 11, 1958.



THE BUREAU OF COMMERCIAL FISHERIES EXPLORATORY FISHING VESSEL JOHN N. COBB.

The explorations were to be conducted in cooperation with the State of Washington Department of Fisheries and the Fish Commission of Oregon. It was planned that biologists from these agencies were to accompany the vessel to collect shrimp samples and other data on the fishery.

The main objectives of this cruise were to gain additional knowledge concerning the distribution of shrimp and the commercial shrimp potential of the area centered off the mouth of the Columbia River, and to test the efficiency of

various types and sizes of shrimp trawls. A 40-foot Gulf of Mexico flat-type shrimp trawl and two styles of larger Gulf semi-balloon trawls were to be used during the initial stage of the exploration.

Explorations for shrimp off the Washington coast were conducted by the Bureau in cooperation with the State of Washington Department of Fisheries during the fall of 1955 and spring of 1956. Major fishing effort during these cruises extended from Willapa Bay to Destruction Island at depths of 50 to 100 fathoms. During the 1956 cruise the John N. Cobb, using Gulf shrimp trawls for the first time in this region, located good commercial pink or "cocktail" shrimp grounds off Grays Harbor and off Copalis Head. Shrimp production from these grounds totaled over 2 million pounds in 1957, and at present there are at least three shrimp plants equipped with shrimp peeling machines in the Grays Harbor-Willapa Bay area actively engaged in canning shrimp.

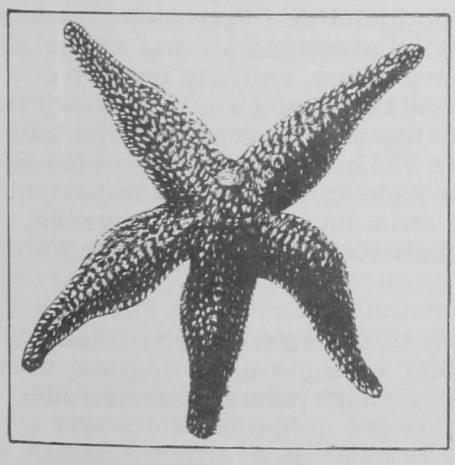
Preliminary shrimp explorations by the Fish Commission of Oregon in 1951, utilizing a small beam trawl, showed that pink shrimp were widely distributed between the Columbia River and Yaquina Head. Although there has been only limited production of shrimp from these grounds to date, the recent establishment of two shrimp plants in the Astoria area has created a need for additional data on the shrimp potential of the area.

It was planned to spend a considerable amount of time fishing in waters deeper than 100 fathoms to determine if larger species of shrimp are present at these depths in significant quantities.

Oysters

INCREASED STARFISH POPULATION THREATENS LONG ISLAND INDUSTRY: The starfish has suddenly developed into a threat to the Long Island Sound oyster industry, the U. S. Bureau of Commercial Fisheries reported on March 27, 1958.

The crisis developed because of a "bumber crop" of starfish which increased that population about 10 times normal size. Eight years ago another such crisis occurred in Long Island Sound when invading starfish wreaked havoc upon oyster beds up and down the Connecticut coast.



The 1958 starfish invasion, which has ruined from 60 to 90 percent of the oyster crop in some beds, is the latest of a series of problems which have beset the oystermen of the area. Lack of seed oysters necessary to maintain the fishery, an excess of the ever-present oyster drill, and the action of destructive storms are among the troubles of this unit of the industry.

The Bureau and the oyster industry have joined forces to attack these many problems. One policy upon which the scientists and the industry agree is the establishment of refuges in certain estuaries on Long Island Sound where oysters could be placed during these invasions, since neither the drill nor the starfish can tolerate brackish water. Such a move would not only offer a haven against predators but would probably increase the setting of oysters to provide badly needed seed for the continuation of the industry.

The Bureau, through its biological laboratory at Milford, Conn., has done considerable work on oyster problems of Long Island Sound. One Bureau project which has been carried to a successful conclusion in the laboratory stage is a method of artificial propagation of oysters. Another problem which the Oyster Institute, acting under contract with the Bureau, has been probing, relates to the use of natural ponds and estuaries in the seed oyster program. Other projects which are contemplated include expanded research on oyster larvae, their food, diseases and predators to determine the cause of good and bad setting years.

Pacific Oceanic Fishery Investigations

TAGGED SKIPJACK TUNA RETURNS HIGH: The recovery of skipjack tuna tagged by the U. S. Bureau of Commercial Fisheries Pacific Oceanic Fishery Investigations in 1957 has continued at a high rate. By February 25, 1958, some 736 recoveries had been made, or 9 percent of the total released. This high percentage of tag recoveries has some rather interesting implications. These are: (1) the high rate of returns may indicate little tagging mortality, which means that the plastic dart tag is a good tag for pelagic fish such as skipjack, and (2) also indicates that the Hawaiian aku or skipjack fishery took a suprisingly high proportion of the stock of fish in which the tagged fish were mingled.

The 1957 skipjack season in Hawaii was an unusual one in that the large skipjack of 18-22 pounds in weight, which normally occur during the summer months and are the backbone of the landings during that period, failed to appear. In addition, the annual catch for 1957 was the lowest on record, about half that of a normal year. The large skipjack are considered by the fishermen to be migratory and are called season fish. Their absence likely caused a concentration of fishing pressure on the smaller sizes which the fishermen regarded as being in part resident fish, at least when taken in inshore localities. The pattern of tag recoveries in relation to the areas of release of tagged fish was highest from those same inshore localities.

While it is obvious that additional tagging will be necessary before the migratory pattern of Hawaiian skipjack will be at all well understood, the present large number of recoveries--far larger than ever before attained in tuna tagging--may represent a breakthrough both as a technique and in understanding the movements and growth of Hawaiian skipjack.

Salt Marshes

CONFERENCE ON IMPORTANCE TO FISHERIES: A conference was held in Georgia the last week of March 1958 where scientists considered the importance of salt marshes in relation to abundance of oysters and other valuable fisheries.

Marshes form an important part of the coastline of the Chesapeake Bay and many South Atlantic States. Virginia biologists have found that they play an essential part in the lives of seafood animals. Accumulated plant and animal material on salt marshes is washed off by high tides and heavy rains, causing important changes on oyster grounds, and in the nursery grounds of crabs and migratory fishes. These materials can cause damage by using up the oxygen supply of the water and are believed to lead to such catastrophes as the 1955 kill of oysters in the Rappahannock River. Discussions at the conference brought to light many important facts that will help Virginia reap maximum benefit from her marine resources, reports a news release from the Virginia Fisheries Laboratory at Gloucester Point, Va.

Held at the Marine Laboratory of the University of Georgia at Sapelo Island, off the Georgia coast, the conference brought together biologists, geologists, oceanographers, and other scientists interested in the origin and role of salt marshes in the economy of the sea.

Among the guests were authorities from New Zealand, Great Britian, Germany, Holland, and Canada. Selected participants from the United States came from as far afield as California, Colorado, Louisiana, Texas, and Massachusetts. Limited accommodations held the attendance down to about 50 participants, all experts in their particular specialties.

Theme of the conference was the importance of salt marshes as land forms, producers of vegetation, shelter, and feeding grounds for animals, and as historical records of past changes in topography of sea coasts.

Sardines

SPAWNING OFF SOUTHERN CALIFORNIA FAIRLY WIDESPREAD IN FEBRUARY 1958: Sardine spawning is fairly widespread around and below Point Conception, Calif., according to a preliminary examination by the U. S. Bureau of Commercial Fisheries biologists of plankton collected in a February 1958 cruise in waters off the coast of southern California. The spawning, which appears to be light to moderate, is much earlier in the year than is normal for that area and undoubtedly is related to the "warm" water conditions still occurring off southern California. From 1951 through 1957 there were only six occurrences of sardine eggs off southern California in January and February, i.e., less than one occurrence per year, on the average, for these two months. In February 1958 eggs and larvae were taken at 10 stations.

Plankton samples are examined as soon as they are brought into the Bureau's La Jolla, Calif., laboratory so that events taking place during the prevailing unusual water conditions may be known.

Shrimp

PACIFIC NORTHWEST SHRIMP INDUSTRY AIDED: Federal activities designed to help the recently established "cocktail" shrimp industry of the Pacific Coast are being conducted on the producer, processor, and consumer levels, the Department of the Interior reported April 8, 1958.

Involved in the program are the exploratory fishing, technological, and market development branches of the U. S. Bureau of Commercial Fisheries, United States Fish and Wildlife Service. Previously, Bureau activities have helped establish the industry by probing the locations and extent of the fishing grounds and by demonstrating the value of shrimp peeling machinery in the processing.

The present program consists of additional exploratory work and gear research, technological research on ways to maintain shrimp in prime condition until they are processed, and in extending the market for the finished product. The "cocktail" shrimp is usually canned and is a popular article with those who know it.

The Bureau's exploratory vessel John N. Cobb is scheduled to concentrate on shrimp fishing during the coming season. Approximately 12 weeks will be spent between Cape Flattery in Washington and Cape Blanco in Oregon. The vessel will also spend eight weeks in the vicinity of Kodiak Island and Cook Inlet in Alaska.

The Washington-Oregon portions of the exploratory work will be done in cooperation with the Washington Department of Fisheries and the Oregon Fish Commission; the Alaska portion in collaboration with the Alaska Department of Fisheries. The first cruise started March 17 and will end on April 11. Biologists from the State agencies will accompany the vessel on the cruise to collect shrimp samples and other data on the fishery.

The main objective of the first cruise will be to gain additional knowledge about the commercial shrimp potential of the area centered off the mouth of the Columbia River and to test the efficiency of various types and sizes of shrimp trawls. Among trawls to be tested is a 40-foot Gulf of Mexico flat-type vessel and two styles of larger semi-balloon trawls. A special exploratory effort to find stocks of larger shrimp will be made off the Alaska coast.

As in other fishery products the key to maintaining quality and flavor is careful handling which begins as soon as the shrimp is taken from the water. The pink shrimp is delicate and easily bruised. Bruising sets up a chemical process which adversely affects the color and flavor.

At a recent meeting in Seattle with 30 representatives of the Pacific Northwest shrimp industry, Bureau representatives outlined the results of previous technological research, showing the various points at which the bruising and crushing is more apt to occur, and demonstrating the preferred techniques for handling, storing and icing. Industry spokesmen have transmitted summaries of the Bureau's recommendations to the various segments of the fishery.

The "cocktail" shrimp has gained many followers in the Midwest. At the request of members of the industry, the Bureau's Market Development personnel is scanning the Midwest and other areas for possible additional markets to absorb this expected new production.

South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JANUARY-MARCH 1958: Oyster Research: A continuing study on growth and mortality of oysters, both in their natural environment and in the experimental ponds, at the Bears Bluff Laboratories, Wadmalaw Island, showed that none grew during the first quarter of 1958. Ordinarily oyster growth during this period of the year is good, and it must be assumed that the extreme temperatures of this winter is the primary cause for the lack of growth.

Despite the cold, only from 3 to 5 percent of the experimental oysters in the pond and in We Creek died. This is not an alarming mortality, and many of those killed were destroyed by blue crabs. (Progress Report No. 35, January-March 1958, of the Bears Bluff Laboratories.)

In addition to studies at the Laboratory proper, natural oyster reefs in the vicinity were examined in mid-March. Several square-yard samples were taken at low water upward to the limit of oyster growth. The 11-percent mortality found is not unusually high for South Carolina. The percentage of marketable oysters in these samples is low, only 6 percent are over 3 inches, with an additional 25 percent barely large enough to be used for canning purposes. A detailed study of the reproductive organs indicated that their development had been retarded, and that only a minute percentage showed any sexual development. Apparently spawning will be delayed this year.

The subnormal winter temperature has given impetus to a study, now under way, on the extremes of temperatures to which South Carolina oysters are subjected. Unlike oysters in the Chesapeake Bay, for example, South Carolina oysters are exposed to air temperatures for several hours during the time of low water. The air temperatures to which they are subjected then are a great deal more extreme than the temperature of the water in which they are submerged in other areas.

Shrimp Research: Low-water temperatures in this quarter quite apparently caused most shrimp and fish to leave their usual habitat. This is shown by their scarcity in the 105 experimental trawl hauls made during the quarter at the 17 regular shrimp survey stations. No white shrimp were taken in 74 experimental trawls during February and March. The availability of white shrimp in January was quite low, being about one-third of what it was in January 1957.

Likewise, commercial fish--that is sea trout, whiting, croaker, and spot--were scarce during this quarter. Excluding an abnormally large catch of spot taken in one drag off Kiawah Island in February, the catch per unit of effort of commercial fishes is 8 times less this year compared to last.

Several times slush ice was noted along the edge of the marsh and shore. Fish kills were reported and recorded in both inshore and offshore waters. The most drastic kill was reported by Wm. North who found 26 small (2-4 in.) channel bass per lineal foot frozen and dead along the edge of Wando River.

Although subnormal temperatures have resulted in a definite reduction in the productivity of experimental trawls, only continued sampling can determine what the final effects of the extreme cold

will be. Toward the end of the quarter, young croaker and spot, and other fishes began to reappear in the experimental catches.

On February 21, Bears Bluff Laboratories vessel T-19 made a run southeastward 135° from the North Edisto sea buoy. In 11 fathoms of water at approximately 32°17' N. and 79°52' W. a few dead fish were noted floating on the surface. These proved to be angelfish (Angelichthys isabelita, Jordan & Rutter). On the same day the trawler Hope, a few miles to the southward and a few miles further offshore than the T-19, reported running through about 15 miles of scattered dead fish. Most of the fish were angelfish, but a few dead porgy and vermilion snapper were also reported.

On February 24 and 25, the T-19 again resurveyed the general area, taking water temperatures and making occasional sample trawls. The presence of several species of live fishes in the trawls, with the observation that the dead fish found on the surface were mostly of one species (angelfish) eliminates manmade devices such as depth charges as the cause of this fish kill. The survey indicated that there was a mass of cold water ranging from 40° to 50° F. lying along the shore out to approximately 15 fathoms. Beyond the 15-fathom curve, the temperature rose rapidly, and at 23 fathoms had reached a temperature of 64° F. The angelfish, being largely a tropical fish, could not survive the low temperatures of this mass of cold water.

Pond Cultivation: This winter, the coldest on record since 1918, the 5 salt-water experimental ponds at Bears Bluff were frozen over, and the water temperature under the ice dropped to 32.5° F. Most of the experimental fishes in the ponds had already been killed by a previous cold spell, so that this temperature was of more theoretical than practical importance. The freeze-over did not kill the blue crabs in the ponds, however, and as soon as the water temperatures warmed again, the crab population became active. When one of the ponds was drained on March 11, the crab population was reported as being about normal. Oysters in the ponds were not killed.

All the experimental ponds are now being prepared for stocking with shrimp and fish for a continued study of the productivity of these salt-water ponds.

Crab Research: In mid-January a crab tagging program was begun in cooperation with the U. S. Bureau of Commercial Fisheries. This program, planned several years previously, is an attempt to determine whether or not South Carolina crabs migrate from one river system to another. Through the combined efforts of 3 biologists of the Bureau at Beaufort, N. C., and 3 members of the Staff of Bears Bluff Laboratories, some 1,600 crabs were tagged and released in the North Edisto River.

There is no trawl fishery for crabs in the North Edisto River, nor at sea in the vicinity of the river mouth. There is normally an intense trawl fishery a few miles to the northward in the vicinity of Charleston and to the southward in the vicinity of St. Helena Sound. Through these tagged crabs it was hoped to determine whether or not the crab industry could recruit its catch from other geographical areas. To date, tag returns have been few--2 from the area of release, one upriver 2½ miles, and one 5 miles southward along the coast.

Bears Bluff Laboratories has recommended to the General Assembly that the crab trawling season be extended by two weeks. This was done after an examination of the catch records of the Laboratories' two research vessels; fishermen's catches; and the reports of landings of the Branch of Statistics of the U. S. Bureau of Commercial Fisheries. Monthly landings indicated that the commercial crab catch is off by at least 650,000 pounds during this quarter, coincident with cold weather. Extension of the season for two weeks would not put an undue strain on South Carolina's crab resources.

Sport Fishing License Sales Continue Upward Trend

The popularity of sport fishing and wild-game hunting in the United States soared to new heights during the fiscal year ending June 30, 1957, when a record total of 34,195,183 licenses was sold to devotees of these outdoor sports, the U. S. Fish and Wildlife Service reported on March 16, 1958.

This represents an increase of 1,031,352 over the previous high total attained in fiscal year ending June 30, 1956, when 33,163,831 paid fishing and hunting license holders were recorded. The 1957 total was divided between 19,276,767 for fishing and 14,918,416 for hunting. Fishing licenses accounted for the largest proportion of the increase--574,784 against 456,568 for hunting licenses.

Total cost to hunter and anglers for all licenses, permits, tags, and stamps (not including the Federal "duck stamp") was $90,617,039--an increase of $829,145

over the previous year's total of $89,787,894. Hunting licenses amounted to $47,847,456 of the 1957 total while fishing licenses cost $42,769,583.

Resident fishing licenses accounted for 16,645,394 of the 19,276,767 total; nonresident licenses numbered 2,631,373. The states to attract the greatest number of nonresident anglers were Wisconsin (354,897), Minnesota (303,339), Michigan (267,217), Florida (195,925), Tennessee (169,047), and Colorado (119,288). Almost one-half--or 24,773--of Nevada's total of 54,259 fishing license holders were nonresidents.

In the category of hunting license sales, the total of 14,918,416 was divided between 14,508,469 resident and 409,947 nonresident. Pennsylvania had the greatest number of nonresident hunters--35,503.

Under the Federal aid formulas for the distribution of Pittman-Robertson funds for the restoration of game and the Dingell-Johnson funds for the restoration of sport fishes, the number of license holders (not the amount paid for licenses) is one of the factors considered for apportionment purposes.

State Fishing Licenses Issued in the United States, July 1, 1956, to June 30, 1957

State	Paid Fishing License Holders			Total Cost to Anglers for All Licenses, Permits, Stamps, etc. 1/
	Resident	Nonresident	Total	
	No.	No.	No.	$
Alabama	437,132	27,847	464,979	746,876.80
Arizona	161,671	17,340	179,011	452,288.30
Arkansas	373,261	25,581	398,842	704,252.20
California	1,391,619	19,645	1,411,264	4,158,271.90
Colorado	229,791	119,288	349,079	1,268,756.50
Connecticut	103,682	4,287	107,969	384,761.10
Delaware	9,651	1,406	11,057	23,740.65
Florida	290,553	195,925	486,478	984,718.75
Georgia	408,620	7,761	416,381	555,278.93
Idaho	158,498	54,195	212,693	544,167.50
Illinois	807,442	18,984	826,426	959,236.20
Indiana	804,670	42,072	846,742	882,189.40
Iowa	367,837	14,474	382,311	544,452.50
Kansas	204,428	5,799	210,227	431,950.50
Kentucky	337,042	75,932	412,974	874,239.00
Louisiana	186,106	32,651	218,757	295,859.00
Maine	150,029	78,056	228,085	822,915.75
Maryland	123,948	22,769	146,717	234,229.50
Massachusetts	218,157	5,446	223,603	644,528.25
Michigan	852,640	267,217	1,119,857	2,452,974.50
Minnesota	939,763	303,339	1,243,102	3,051,524.25
Mississippi	140,804	52,975	193,779	396,309.50
Missouri	516,634	61,645	578,279	1,486,167.55
Montana	188,609	49,806	238,415	613,478.50
Nebraska	188,253	18,034	190,287	306,543.50
Nevada	29,486	24,773	54,259	193,134.50
New Hampshire	82,744	53,926	136,670	457,851.25
New Jersey	145,365	18,485	155,850	613,467.25
New Mexico	67,286	33,326	100,612	377,819.50
New York	778,207	50,429	828,636	1,890,198.75
North Carolina	340,013	44,372	384,385	707,190.10
North Dakota	70,342	2,157	72,499	76,813.00
Ohio	884,163	27,599	911,762	1,879,223.00
Oklahoma	323,420	63,780	387,200	840,437.00
Oregon	326,329	29,032	355,361	1,280,532.50
Pennsylvania	688,362	30,501	718,863	1,839,772.00
Rhode Island	16,879	689	17,568	54,137.63
South Carolina	243,485	16,098	259,583	500,312.50
South Dakota	84,076	39,682	123,758	239,942.00
Tennessee	485,372	169,047	654,419	795,775.00
Texas	417,620	9,416	427,036	708,583.85
Utah	155,884	10,387	166,271	492,165.40
Vermont	72,089	36,135	108,224	257,260.50
Virginia	371,072	15,606	386,678	638,536.00
Washington	373,438	22,594	396,032	1,461,643.50
West Virginia	211,102	9,885	220,987	661,764.05
Wisconsin	787,829	354,897	1,142,726	2,478,486.50
Wyoming	108,191	62,083	170,274	595,663.50
TOTALS	16,645,394	2,631,373	19,276,767	42,769,583.38

1/ This is the gross cost to the fishermen for various types and categories of licenses issued by the respective States for the privilege of fishing and/or possessing fish.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, APRIL 1957, P. 25

Trout

UNITED STATES GROWERS ASSOCIATION ADOPTS IDENTIFYING SEAL: A new seal identifying high-quality United States-grown mountain trout has been adopted by the U. S. Trout Farmers Association for use with advertising, package labels, stationary, and identification tags, according to the President of the Association.

The seal, depicting two mountain trout, one following the other in oval design, will be used by the Association and individual members of the Association. Its primary purpose is to readily identify United States-grown trout and minimize confusion created by some foreign trout importers who use a United States address.

The President said the seal was adopted by the Association and its individual members as a part of a newly-formed advertising program wherein they will feature the high quality of mountain trout produced in United States streams.

There are approximately 360 producers of trout in the United States, of which about 75 - 100 raise trout to commercial sizes for the institutional restaurant and hotel trade, and for wholesale and retail food outlets. Among the other producers are state hatcheries, private fishing clubs, public fishing clubs, Federal hatcheries, fish-out fishing ponds, and others. Rainbow, eastern brook, brown, cutthroat and miscellaneous kinds of trout are grown by these producers.

"One of the greatest problems in placing trout on the menu is to be assured a top-quality product," said the President. "The U.S. Trout Farmers Association has top-quality production as one of its primary objectives, and it intends to identify such top quality with a seal. Top quality can be maintained on trout produced within the United States because there is little time lapse from the cold streams where the trout are produced to the customer's table."

Unique Devices Being Developed for Fishery Research and Management

The haddock, which has been a popular northwest Atlantic food fish for four centuries, is about to join the "do-it-yourself" club--that is if a device which technicians and biologists of the Department of the Interior now have in process of invention proves successful. The device is an instrument with which a haddock will automatically attach a metal tag to its own body, a Department news release of April 13 reports.

Two methods for tagging haddock are being explored. Common to both will be a fish weir or trap with an escape opening. One plan is to have an electronic tagging device which the fish will trigger as it goes through the opening. Another is to have both a tagging device and an underwater television camera at the point of escape. A man on shipboard would watch the fish as it goes through the opening, press a button and put the tagging apparatus in action.

The second method would permit the accumulation of biological data as well as providing a means for tagging. This device is being developed for use on haddock research but can be used quite generally in tagging work.

Other aids to fishery research and management which the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, is developing include: an electric "sentry" to keep carp and other undesirable fish out of river basin impoundments; a detector which will "put the finger" on a herring carrying a metal tag even though that particular herring may be covered by a whole netful of other herring; a pocket-size underwater television camera for use in streams; and a temperature regulator which will permit testing the reaction of fish to changes in water temperature.

The Bureau of Commercial Fisheries has already created or developed such things as the electrical fence to kill sea lamprey or to guide adult salmon away from danger areas; an electric fish counter and an automatic camera by which a fish takes its own picture as it passes a research point; a transmitter which can be attached to the back of salmon and which will inform on the whereabouts of the salmon for as long as eight hours; a telemeter to indicate the location of a midwater trawl; and a "carriage" which permits proper mobility of underwater television cameras in fishery research.

One of the tasks of the Bureau of Commercial Fisheries is to develop data and to effect practices which will help commercial fishermen catch fish at a rate to assure maximum sustained harvest. One of the items essential to carrying out this responsibility is knowledge of the migration pattern of a species.

Considerable research is being done on haddock because of its importance to the consumer and the fisherman, and because the annual harvest which once exceeded 260 million pounds now approximates 135 million pounds. Haddock is one of the species of fish which spawn in the sea and which put their fertilized eggs at the mercy of the winds and the waves. Even the young fish are at the mercy of the currents for some three months before they flip their tails skyward and head for the bottom.

The electric "sentry" will be especially valuable to the sport fisheries since this technique offers what appears to be an excellent opportunity to keep rough fish out of sportfish waters. This device will be largely an adaptation of the electric fence already being used. It will be located at points through which the rough fish enter the impoundment and will carry an electric charge heavy enough to kill any fish entering the field. It will operate at places and times to prevent or minimize destruction of the wanted species.

The herring tag detector is being developed for use on Alaska herring research. These small fish are taken in such great quantities that tagged individuals are too often "lost in the crowd." The detector will help locate these fish when they are harvested and permit notation of pertinent migration data.

Underwater television is being used in biological studies in coastal waters but present equipment is too large for effective use in smaller streams. Since many species of fish spend part of their life in inland streams, a small television camera would prove valuable in studies of these fish or any fish which spend all or part of their life in rivers or creeks. The temperature regulator would permit laboratory simulation of natural water temperature conditions.

Several of the devices mentioned above have been developed at the Fisheries Instrumentation Laboratory, a unit of the Pacific Salmon Investigations at Seattle, Wash. This unit has a staff of experts--electrical engineers, electronic engineers, and instrument makers--who are qualified to develop new devices that will improve the efficiency and effectiveness of fishery research and management. The services of this unit have been made available over a wide geographical area and the demands for its services are constantly increasing. The development of specialized units of this type to serve the needs of research workers is one of the means adopted in recent years to improve the effectiveness of the Bureau's operations.

United States Fishing Fleet[1/] Additions

JANUARY 1958: Forty-six vessels, of 5 net tons and over, were issued first documents as fishing craft during January 1958--20 more than in January 1957. The Gulf area led with 16 vessels, followed by the South Atlantic with 15, the Chesapeake 7, the Pacific 6, and the New England and Middle Atlantic areas with 1 vessel each.

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

Area	January		Total
	1958	1957	1957
	(Number)		
New England	1	1	19
Middle Atlantic	1	2	23
Chesapeake	7	8	104
South Atlantic	15	8	130
Gulf	16	1	166
Pacific	6	2	102
Great Lakes	-	-	8
Alaska	-	4	48
Puerto Rico	-	-	1
Total	46	26	601

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, January 1958

Net Tons	Number
5 to 9	11
10 to 19	8
20 to 29	5
30 to 39	12
40 to 49	4
50 to 59	4
90 to 99	1
180 to 189	1
Total	46

1/INCLUDES BOTH COMMERCIAL AND SPORT FISHING CRAFT.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JANUARY 1958: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during January 1958 were up about 4.2 percent in quantity, but were 3.5 percent lower in value as compared with December 1957. Compared with January 1957, the imports this January were

lower by 7.3 percent in quantity and 5.3 percent in value. The imports for January 1958 were higher than in December 1957 for groundfish fillets, frozen tuna, canned salmon, and canned sardines. These increases more than offset lower imports of lobster and spiny lobster tails, shrimp, and canned tuna. Imports of edible fishery products in January this year were down substantially from the same month in 1957 for groundfish fillets (40 percent), canned salmon, and lobster and spiny lobster tails. These decreases in January 1958 were partially offset by moderate increases in the imports of other fillets, canned sardines, and frozen tuna.

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

Item	Quantity			Value		
	Jan.		Year	Jan.		Year
	1958	1957	1957	1958	1957	1957
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & Shellfish: Fresh, frozen & processed 1/	67.6	73.0	837.0	19.5	20.6	248.4
Exports:						
Fish & Shellfish: Processed only (excluding fresh and frozen) 1/	2.6	9.2	69.7	0.6	1.8	16.8

1/ INCLUDES PASTES, SAUCES, CLAM CHOWDER AND JUICE, AND OTHER SPECIALTIES.

United States exports of processed fish and shellfish in January 1958 were lower by 49.2 percent in quantity and 40.0 percent in value as compared with December 1957. Compared with the same month in 1957, the exports in January 1958 were down by 82.3 percent in quantity and 66.7 percent in value. The sharp decreases in both quantity and value this January as compared with a month ago and the same month in 1957 were due, primarily, to a shortage of the usual types of canned fish available for export, chiefly California sardines and Pacific mackerel.

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GROUNDFISH FILLET IMPORTS, FEBRUARY 1958: During February 1958, imports of groundfish fillets (including ocean perch) and fish fillet blocks amounted to 11.2 million pounds. Compared with the corresponding month of last year, this was an increase of 4.2 million pounds (60 percent). Imports of 4.5 million pounds of groundfish and ocean perch fillets from Iceland were primarily responsible for the over-all increase. There were no imports from Iceland during February 1957.

Canada continued to lead all other countries exporting these fillets to the United States with 5.9 million pounds during February 1958. Iceland was next with 4.5 million pounds. Imports from Norway, Denmark, the Netherlands, and Miquelon and St. Pierre accounted for the remaining 804,000 pounds.

Imports of groundfish and ocean perch fillets and blocks into the United States during the first two months of 1958 totaled 21.9 million pounds. Compared with the same period of last year, this was a decrease of 4.1 million pounds or 16 percent. Canada accounted for 70 percent of these imports during the 1958 period, followed by Iceland with 24 percent. Norway, Denmark, the Netherlands, West Germany, and Miquelon and St. Pierre accounted for the remaining 6 percent.

NOTE: SEE CHART 7 IN THIS ISSUE.

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IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, JANUARY 1958: Summary: Imports of many of the major fishery products into the United States during January 1958 were less than in January 1957. Groundfish fillets and blocks were down 40 percent, canned tuna 23 percent, canned bonito 44 percent, canned salmon 40 per-

cent, and lobsters 37 percent. Increases were noted in fillets other than groundfish (up 18 percent), frozen tuna (6 percent), canned sardines (93 percent), canned crabmeat (53 percent), and fish meal (82 percent). There was little change in shrimp and swordfish imports in January 1958 as compared to January 1957.

Exports of the major fishery products in January 1958 were substantially less than during that month in 1957, due primarily to the shortage of exportable supplies of canned California sardines, canned mackerel, and fish oils.

Imports: FROZEN TUNA: Imports of 13.2 million pounds during January 1958 were up 6 percent from January 1957. Frozen albacore imports were 5.2 million pounds, an increase of 184 percent as compared to January 1957; other frozen tuna declined by 25 percent.

TUNA LOINS AND DISCS: Imports of frozen cooked tuna in the form of loins and discs has been increasing. In January 1958, 1.4 million pounds were imported, 66 percent more than in January 1957. Japan was the largest supplier. Initial shipments reported from Cuba during January 1958 totaled 154,000 pounds.

CANNED TUNA: In January 1958, 1.5 million pounds of canned tuna were imported, 23 percent less than in January 1957. Imports of canned tuna, other than albacore, amounted to 1.3 million pounds, an increase of 24 percent; imports of canned albacore this January were 76 percent less than in January 1957.

GROUNDFISH: Imports of groundfish and ocean perch fillets and blocks in January 1958 totaled 11.0 million pounds, a decline of 40 percent from the same month a year ago. Imports of groundfish fillets (cod, ocean perch, and haddock) decreased an average of 50 percent; blocks decreased 24 percent. Imports from Iceland during January were 80 percent less than for that month in 1957.

SHRIMP: Imports in January were 5.7 million pounds, only slightly below the imports in January of last year. Imports from Mexico amounted to 3.9 million pounds.

CANNED SALMON: Imports of 2.7 million pounds were 40 percent less than the same month a year ago. Japan was the principal supplier with 2.3 million pounds.

FRESH AND FROZEN LOBSTER: Imports during January 1958 were 3.0 million pounds or 37 percent less than during January 1957. Canada supplied about half of the January 1958 imports.

CANNED SARDINES: Imports during January 1958 amounted to 3.5 million pounds, nearly double that of the same month of 1957. The increase was mostly sardines, not in oil, from the Union of South Africa.

CANNED BONITO: Total January 1958 imports of 910,000 pounds decreased 44 percent from the same period last year due to a decline in imports from Peru.

SWORDFISH: Imports in January of 1.5 million pounds were about the same as during January 1957. These imports were almost entirely from Japan.

CANNED CRABMEAT: Imports totaling 467,000 pounds were 53 percent more in January 1958 than in January 1957 due to higher imports from Japan.

FISHMEAL: Imports of fishmeal totaled 7,696 tons, an increase of 82 percent over January 1957. Gains were reported in the imports from Peru and Norway.

Exports: CANNED SARDINES: Exports of canned California sardines to all countries declined to 592,000 pounds in January 1958, a decrease of 77 percent over the same period last year.

CANNED MACKEREL: Exports of 648,000 pounds indicate a decrease of 67 percent in January 1958, as compared with the same month last year. The principal decline was reported in exports to the Philippines.

CANNED SALMON: Canned salmon exports were 81,000 pounds, 76 percent less than in January 1957.

FISH OIL: January exports of fish oil totaled 6.1 million pounds, down 63 percent from the same month last year. Most of the decrease was in shipments to West Germany; exports to Canada increased.

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IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA PROVISO: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1958 at the 12½-percent rate of duty has not been established as yet. Any imports in excess of the established quota will be dutiable at 25 percent ad valorem.

Imports from January 1-March 1, 1958, amounted to 4,341,824 pounds, according to data compiled by the Bureau of Customs.

Virginia

LABORATORY TO STUDY PARASITES ON FISH FROM ANTARCTICA: Word has just reached Dr. William J. Hargis, Jr., of the Virginia Fisheries Laboratory that members of the International Geophysical Year Expedition to Antarctica will collect and ship fishes to him for use in his study of fish parasites. Dr. Hargis is one of the country's leading experts on certain parasites found on the gills of fishes. Two years ago he received gills from South African coelacanths, a strange fish whose ancestors were once thought to have been extinct for at least 20 million years.

For years the biologist has been gathering information about these parasites and from his studies has theorized that it is possible to learn about the relationships and travels of fishes from studies of the parasites living on them. "Fish parasites have evolved in ways which enable them to survive year after year on the fishes to which they are attached. Over long periods of time, fishes themselves have changed to meet changing environmental conditions. Parasites have largely become adapted to specific fishes and will not normally develop unless those particular fish are available to them," he states. "But this work also has tremendous potential importance to our eventual understanding of the phenomenon of parasitism itself," he further declared.

Since transportation from the Antarctic to the continental United States has ceased because of the approaching winter in the southern hemisphere, it is not likely that any fish will reach the Virginia Laboratory before next December or January.

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SURVEY OF SALT-WATER SPORT FISHING NEARING COMPLETION: Salt-water sport fishermen in Virginia catch at least 3.5 million pounds of fish each year, according to a biologist of the Virginia Fisheries Laboratory at Gloucester Point, Va.

In 1955 a survey of sport fishing in Tidewater was initiated, to estimate the catch by sports fishermen in the bottom fishery, which takes principally croaker,

spot, gray sea trout (weakfish), and flounder or fluke. Selected party-boat operators and private fishermen were given record books in which they were asked to write down their catches and the length of time spent fishing each day. Other sport fishermen were interviewed on the fishing grounds, or on piers, and at boat liveries. Counts of fishermen also were made from piers and bridges, and by air. The survey continued through 1956 and 1957, and a detailed report will be released soon.

Sport fishing usually reached a peak about the middle of the morning and the numbers of fishermen decreased steadily after 11 a.m. The amount of fishing increased seasonally also, reaching a peak in July. Heaviest fishing was on weekends and holidays, when at least three times as many fishermen tried their luck. The Fourth of July was the busiest day. It was estimated that on the lower York River alone, 1,141 sport fishermen were out on that date in 1957. Growth of the salt-water sport fishery is illustrated by the increase from 825 on July 4, 1955, and 1,034 on July 4, 1956.

Croaker catches were best in late June or early July but most spot and trout were caught in September. The flounder catch remained fairly steady throughout the season.

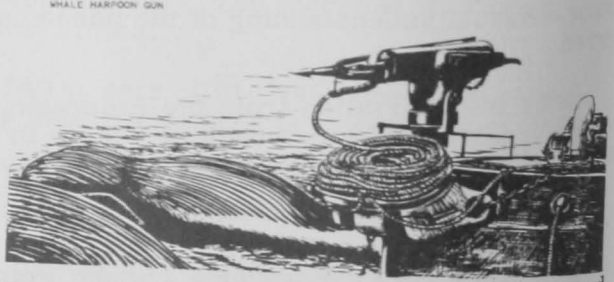
Best croaker catches were made in the lower part of the Bay, at Ocean View, Hampton Roads, and the York River. Spot fishing was best in the Rappahannock and at Ocean View.

The total annual catch of croakers was about 6.5 million fish weighing nearly 3 million pounds; spot almost 2 million fish weighing half a million pounds; trout 0.5 million fish weighing 150,00 pounds, and flounder 70,000 fish weighing about 70,000 pounds.

Records published by the U. S. Bureau of Commercial Fisheries for 1956 indicate that commercial fishermen landed 9.5 million pounds of croakers, 3.25 million pounds of spot, 3.25 million pounds of gray sea trout, and 2 million pounds of flounders or fluke in Virginia in 1956. The sport fishery took almost as many croakers and spot as pound nets did.

Whaling

UNITED STATES CATCH IN 1957: America's only active whaling fleet--the Dennis Gayle, the Allen Cody and the Donna Mae--brought in 237 whales during the 1957 season, the Department of the Interior reported on March 28. Most of the whales were taken in the vicinity of the Farallon Islands which are about 30 miles west of the Golden Gate.


WHALE HARPOON GUN

Whale oil is no longer essential for lamps, nor is whalebone so important to a lady's wardrobe, but the mink farms, the cosmetic industry, the soap and washing powder business, the pet food plants, the paint factories, and dozens of other modern industries offer a market for whale products and their derivatives.

The 1957 harvest consisted primarily of humpback whales--199 were taken. There were 22 finbacks, 14 sperm whales, one sei, and one bottlenose. The season on humpbacks and finbacks was from May 1 to October 31, but the sperm whales

were taken from April 1 to November 30. Processing these whales resulted in 3,277,350 pounds of whale oil, 2,494,000 pounds of whale meal, and 1,797,000 pounds of whale meat.

The largest whale taken was a 68-foot finback, but two other finbacks measured 67 feet each, and others were in excess of 60 feet. The finback produces between 12 and 15 tons of meat. The humpback whale averages between 40 and 43 feet in length and yields between 6 and 8 tons of meat and 1,800 gallons of oil.

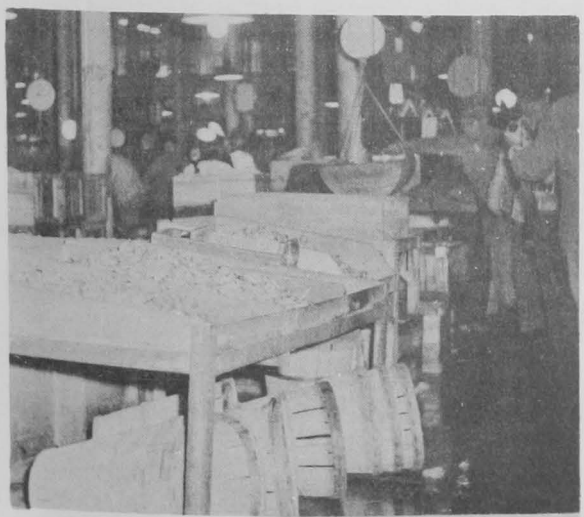
There were 145 whales taken in 1956 when the United States industry was reactivated after a five-year lapse. Whalers first operated off the California coast in the early 1800's. The first shore installation was in 1841 and the whaling industry on the Pacific Coast has continued intermittently ever since. American whaling activities in the Atlantic were once an important marine operation, but no whales have been taken off the East Coast for many years.

The Secretary of the Interior is responsible for the issuance of licenses and for the collection of statistical and biological data on whales. Reports are made through the Bureau of Commercial Fisheries, U. S. Fish and Wildlife Service, on all operations, number of men employed, and size and species of whales as required by the whaling treaty. These data are transmitted to the International Bureau for Whaling Statistics, Sandefjord, Norway, for compilation and publication.

Wholesale Prices, March 1958

Seasonal declines in fresh drawn haddock, fresh haddock fillets, and frozen shrimp wholesale market prices were primarily responsible for the slight decline in the March index as compared with the preceding month. In March 1958 the edible fish and shellfish (fresh, frozen, and canned) wholesale price index (124.5 of the 1947-49 average) declined 1.9 percent as compared with February, but was 4.3 percent higher than in the same month a year ago.

Wholesale prices for drawn, dressed, and whole finfish from February to March 1958 decreased about 8.7 percent due mostly to a 39.1-percent drop in the price for fresh drawn haddock at Boston. Declines in haddock and other groundfish prices at New England ports are to be expected in late winter and early spring as the catches improve at this period of the year. The lower fresh haddock prices more than offset increases in fresh-water whitefish. Due to the continued scarcity of fresh-water lake trout, this product has been dropped from the index beginning with January 1958. In addition, all subgroup indexes have been reweighted beginning with January 1958 (see footnote). The wholesale price index this March for the subgroup was higher by 1.4 percent than in the same month in 1957, due to higher frozen dressed halibut and salmon prices. All other items in this subgroup were lower in March 1958 than in March 1957.



FULTON FISH MARKET, NEW YORK CITY, SHRIMP ON DISPLAY AT ONE OF THE STANDS.

The fresh processed fish and shellfish subgroup wholesale prices in March this year were unchanged from the preceding month. A rather sharp decrease in small haddock fillet prices was compensated for by the higher fresh shrimp and shucked oyster prices. Compared with March 1957, the index for this subgroup this March was higher by 1.3 percent because of higher fresh haddock fillet prices (up 1.6 percent) and fresh shrimp (up 5.5 percent) prices. These increases offset a 6.3-percent drop in shucked oyster prices at Norfolk.

Frozen processed fish and shellfish prices in March 1958 were about as in the preceding month since the increase in the frozen flounder fillet price was about balanced out by a slight drop in the frozen shrimp price at Chicago. From March a year ago to March this year the frozen processed fish and shellfish subgroup advanced 17.3 percent due to higher wholesale prices for all frozen fillet items and frozen shrimp.

The canned fishery products subgroup index in March 1958 was up about 0.5 percent from the preceding month due to a 1.3-percent increase in canned tuna prices; other canned fish prices were unchanged. This March as compared with March a year ago wholesale canned fish prices were about unchanged. Higher canned tuna and California sardine prices were offset by lower (12.2 percent) canned Maine sardine prices.

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

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			Mar. 1958	Feb. 1958	Mar. 1958	Feb. 1958	Jan. 1958	Mar. 1957
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					124.5	2/126.9	2/123.7	119.4
Fresh & Frozen Fishery Products:					140.7	2/144.9	2/140.3	132.0
Drawn, Dressed, or Whole Finfish:					125.1	2/137.0	2/133.5	123.4
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.15	91.2	149.7	152.3	100.5
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.32	.32	99.0	97.5	96.4	95.9
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.63	.63	139.9	141.0	138.8	139.3
Whitefish,L. Superior, drawn, fresh	Chicago	lb.	.75	.60	185.9	148.7	146.3	195.8
Whitefish,L. Erie pound or gill net, rnd., fresh	New York	lb.	.80	.64	161.8	128.4	128.4	182.0
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.68	.70	158.3	164.1	111.4	173.5
Processed,Fresh (Fish & Shellfish):					144.6	2/144.6	2/144.2	142.7
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.35	4.49	119.1	165.0	163.3	117.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.96	.95	151.7	150.1	140.6	143.8
Oysters, shucked, standards	Norfolk	gal.	5.63	5.38	139.2	133.0	145.4	148.5
Processed, Frozen (Fish & Shellfish):					140.9	2/141.1	2/131.3	120.1
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.41	.40	106.0	103.4	103.4	103.4
Haddock, sml.,skins on, 1-lb. pkg.	Boston	lb.	.40	.40	125.6	125.6	117.7	87.9
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.30	.30	118.8	118.8	114.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.94	.95	144.3	145.8	131.5	128.9
Canned Fishery Products:					101.8	2/101.3	2/100.4	101.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.00	23.00	120.0	120.0	120.0	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.50	11.35	82.9	81.8	81.8	80.8
Sardines, Calif., tom. pack,No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	9.75	9.75	113.8	113.8	113.8	105.0
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans cs.	New York	cs.	6.99	6.99	74.3	74.3	67.9	84.6

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Revised due to new weighting structure reflecting 1954 values.

NOTE: REVISION OF WEIGHTING STRUCTURE: THE BUREAU OF LABOR STATISTICS HAS COMPLETED A REVISION OF THE WEIGHTING STRUCTURE OF THE WHOLESALE PRICE INDEX, IN ACCORDANCE WITH ITS POLICY TO REVISE THE INDEX WEIGHTS WHENEVER COMPREHENSIVE DATA FROM THE INDUSTRIAL CENSUSES BECOME AVAILABLE.

FIGURES FOR JANUARY, FEBRUARY, AND MARCH 1958, CONSTRUCTED WITH THE NEW WEIGHTS, ARE PRESENTED FOR THE FIRST TIME IN THIS RELEASE. THESE INDEXES CONSTITUTE THE "OFFICIAL" JANUARY AND FEBRUARY INDEXES. THE INDEXES FOR THESE 3 MONTHS ARE DIRECTLY COMPARABLE WITH THE DECEMBER INDEXES CALCULATED WITH THE OLD WEIGHTS; INDEXES FOR JANUARY AND FEBRUARY, COMPUTED WITH THE OLD WEIGHTS, WHICH APPEARED IN EARLIER RELEASES ARE NO LONGER OFFICIAL.

THE NEW WEIGHTING STRUCTURE INCORPORATED STATISTICS ON NET SELLING VALUE OF COMMODITIES IN THE YEAR 1954 AS REPORTED IN THE 1954 CENSUS OF MANUFACTURES, CENSUS OF MINERALS INDUSTRIES, VARIOUS OTHER DATA FURNISHED BY THE BUREAU OF MINES OF THE U. S. DEPARTMENT OF INTERIOR, THE U. S. DEPARTMENT OF AGRICULTURE, AND OTHER SOURCES. FROM JANUARY 1947 THROUGH 1954 THE WEIGHTS WERE BASED PRIMARILY ON THE 1947 INDUSTRIAL CENSUSES. ADJUSTMENTS WERE MADE IN JANUARY 1955 TO ALIGN THE MAJOR GROUP WEIGHT TOTALS WITH THE 1952-53 AVERAGE SHIPMENT VALUES BUT THIS DID NOT REPRESENT AS COMPLETE A WEIGHT REVISION AS THE ONE NOW IN FORCE.

THE CURRENT WEIGHT REVISION LEAVES THE INDEX CONCEPT BASICALLY UNCHANGED. THE INDEX, AS BEFORE, REPRESENTS THE PRICE MOVEMENT OF THE AGGREGATE OF COMMODITIES PRODUCED AND PROCESSED IN THIS COUNTRY (OR IMPORTED), AND FLOWING INTO PRIMARY MARKETS. THE WEIGHTS REPRESENT THE NET SELLING VALUES IN THE WEIGHT BASE REFERENCE PERIOD, IN THIS CASE 1954. THESE VALUES ARE F.O.B. PRODUCTION POINT AND EXCLUSIVE OF EXCISE TAXES. SPECIAL ATTENTION WAS GIVEN TO DEVELOPMENT OF DATA ON INTERPLANT TRANSFERS. THESE ARE EXCLUDED, AS ARE MILITARY PRODUCTS, AND GOODS SOLD AT RETAIL DIRECTLY FROM PRODUCING ESTABLISHMENTS.

ABOUT 90 NEW ITEMS HAVE BEEN ADDED TO THE BUREAU OF LABOR STATISTICS WHOLESALE PRICE INDEX (THERE WERE NO ADDITIONS TO THE "FISH AND SHELLFISH" PART OF THE INDEX), MOSTLY IN THE MACHINERY AND METAL GROUPS; AND 58 ITEMS HAVE BEEN DROPPED (FRESH-WATER LAKE TROUT WAS THE ONLY PRODUCT DROPPED FROM THE "FISH AND SHELLFISH" PART OF THE INDEX) BECAUSE OF THEIR DECLINING IMPORTANCE IN TERMS OF VALUE OF SHIPMENTS.

THE DECREASE IN IMPORTANCE IN FARM PRODUCTS (GROUP 01) AND PROCESSED FOODS (GROUP 02) BETWEEN DECEMBER 1954 AND DECEMBER 1957 ON THE OLD WEIGHTING SYSTEM CAME ABOUT BECAUSE PRICES IN THESE GROUPS INCREASED LESS THAN IN THE INDEX AS A WHOLE DURING THIS PERIOD. THE INTRODUCTION OF NEW WEIGHTS INCREASED THE RELATIVE IMPORTANCE IN THE TOTAL INDEX OF SUCH SUBGROUPS AS FRUIT AND VEGETABLES AND LIVESTOCK AND POULTRY AND THEREFORE OF THE FARM PRODUCTS GROUP. FURTHER DECREASE IN RELATIVE IMPORTANCE FOR PROCESSED FOODS (GROUP 02) RESULTED FROM REWEIGHTING.