



TRENDS AND DEVELOPMENTS

Additions to the U. S. Fleet of Fishing Vessels

A total of 107 vessels of 5 net tons and over were issued first documents as fishing craft during June 1953--8 more than in June 1952. Washington led with 36 vessels, followed by Alaska with 18 vessels and Florida west coast with 9 vessels, the Bureau of Customs of the Treasury Department announced.

Vessels Obtaining Their First Documents as Fishing Craft, June and July 1953

Section	June		Six months ending with June		July		Seven months ending with July		Total 1952
	1953	1952	1953	1952	1953	1952	1953	1952	
 (Number)								
New England..	4	7	14	17	2	3	16	20	30
Middle Atlantic	1	2	10	18	3	3	13	21	26
Chesapeake ..	11	6	36	33	6	7	42	40	65
South Atlantic .	10	8	50	41	12	10	62	51	89
Gulf	20	20	112	63	24	10	136	73	161
Pacific	43	50	108	159	22	19	130	178	203
Great Lakes ..	-	2	5	6	-	1	5	7	13
Alaska	18	4	35	74	2	2	37	76	88
Hawaii	-	-	-	-	1	-	1	-	-
Total	107	99	370	411	72	55	442	466	675

NOTE: VESSELS HAVE BEEN ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORT.

In July 1953, 72 vessels of 5 net tons and over received their first documents as fishing craft--17 more than in July 1952. Florida led with 18 vessels, followed by Washington with 12, and Texas and California with 9 vessels each.



Cans--Shipments for Fishery Products, January-July 1953



Total shipments of metal cans for fish and sea food during January-July 1953 amounted to 61,818 short tons of steel (based on the amount of steel consumed in the manufacture of cans). Comparative data for 1952 is not available, but it is believed that this year's shipments are larger principally because of the larger tuna pack reported by West Coast fish canneries.

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.

California

NO SARDINES OFF COAST: The California Fish and Game Commission has officially acknowledged that there are virtually no sardines (pilchards) off California's coast, reports a September 2 release from the California Department of Fish and Game. The acknowledgement came at the Commission's August 28 meeting. The Commission at this meeting refused to renew any sardine reduction permits. This was merely acceptance of the fact that California's sardine catch, which once reached over a half-million tons a year, has dwindled to practically nothing.

The Commission has regulatory power over the reduction plants only; it has had no control over the canneries, which take by far the greatest number of the once plentiful California sardines.

The sardine catch for the 1950/51 season, the last good year, was 355,000 tons, of which only 36,000 tons were used for reduction. In 1951/52 the catch fell to 136,000 tons, and only 1,000 tons of this was taken for reduction. In the 1952/53 season, a mere 3,600 tons were taken--hardly a single night's haul in the days when California sardines were plentiful, it was pointed out. Only 11 tons of these were used by the reduction plants.

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OCEANOGRAPHIC DATA AS RELATED TO PACIFIC SARDINE COLLECTED BY "YELLOWFIN" (Cruise 53-Y-6): Data for determining the oceanographic factors responsible for the behavior, spawning success, and survival of Pacific sardine (pilchard) were collected by the California Department of Fish and Game's research vessel Yellowfin on an 11-day cruise completed at Los Angeles on June 14. This was a routine hydrographic cruise of the California Cooperative Oceanic Fisheries Investigations to the coastal and offshore area from San Diego to Pt. Conception and around the Channel Islands, reports a July 13 release from the Department.

The following data were collected on the cruise: 35 hydrographic stations completed; 3 between-station plankton tows taken; hourly BT's (bathythermographs) lowered between offshore stations and half-hourly on the inshore stations; continuous subsurface and surface ocean temperatures recorded; 79 "jog-log" observations (GEK or Geomagnetic Electro Kinetograph) made; fish sampled on one night station; and fish, mammal, and bird observations logged.

No fish schools were seen except sauries. Weather conditions were not severe enough to hamper oceanographical work, but did limit fish sampling to the first night station.

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TUNA TAGGED OFF BAJA CALIFORNIA BY M/V "VIRGINIA R." (Cruise No. C-2-53): A total of 799 yellowfin and skipjack tuna were tagged by the commercial vessel M/V Virginia R. on a 53-day cruise off the west coast of Baja California, completed at San Diego on July 31. The vessel was chartered by the State of California Department of Fish and Game to continue the experimental tagging of yellowfin and skipjack tuna with tag types "F" and "G," reports an August 28 release from that agency.

Almost all of the schools encountered on the cruise consisted of skipjack tuna, with a few small one-pole yellowfin mixed in. In all there were 581 skipjack and 218 yellowfin tagged. Fishing was generally slow, but the vessel was able to maintain a good average from day to day. The tagged fish were taken from about 80 different schools of yellowfin and skipjack.

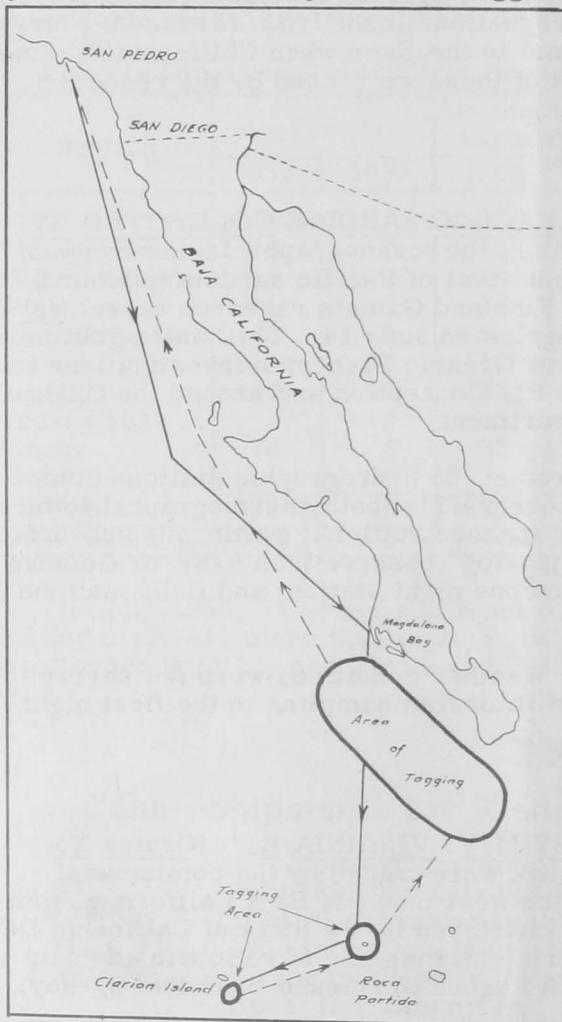
During the first three days of the trip the fish for tagging were caught and passed by a crew member of the vessel fishing in the corner rack on the port side. This proved to be inadequate since by the time the skipjack were picked up from the deck and placed in

the tagging cradle most of them had vibrated themselves into such a frenzy that it was practically impossible to tag the fish and release them in good condition. It was decided to catch the fish on the starboard side. This proved to work reasonably well. The fish could be dropped in or near the cradle as they were brought aboard. Generally, even the skipjack had a brief period of quiescence and if the tag was inserted within 15 to 20 seconds, the fish could be released in good shape. There were some that vibrated immediately and could not be tagged. Practically all of the fish released after the first 3 days of tagging were in excellent condition.

By the end of August, 6 tagged skipjack and 1 tagged yellowfin were recovered; all from local fishing grounds.

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TUNA TAGGED BY M/V "DEFIANCE" (Cruise C-3-53): A total of 998 tuna (934 yellowfin and 64 skipjack) were tagged by the commercial fishing vessel Defiance on a 63-day cruise completed at San Pedro on August 8. The vessel was chartered by the California Department of Fish and Game to continue experimental tuna tagging off the west coast of Baja California, Roca Partida, and Clarian Island, an August 28 release from that Agency states. The cruise was also for the purpose of gaining experience in commercial fishing methods and making incidental collections of post-larval fish with a night light.



M/V DEFIANCE TUNA TAGGING CRUISE C-3-53,
JUNE 6-AUGUST 8, 1953.

Three different types of tags were used: type "E" (198 tags), "F" (412 tags), and "G" (388 tags). Eight night-light stations were occupied, but the material is yet to be identified.

Two tags had been recovered by the end of August:

One type "G" on a yellowfin tuna caught by a purse seiner on the same day and in the same area as it was released. The other type "E" on yellowfin tuna also caught by a purse seiner after being at liberty for 44 days in which time it grew 19 mm. ($\frac{3}{4}$ inch). This fish was tagged and released off the east end of Clarian Island and recaptured 38 miles SE. of Cape Tosco, Baja California, a general movement to the N. x NE. of 375 miles.

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FISH AND GAME COMMISSION ACTIONS: The California Fish and Game Commission at its August 28 meeting took the following actions, reports a September 2 release from the Division of Fish and Game:

- (1) Granted permits to three oil companies for continuing seismic exploration off the coast of Santa Barbara. The Commission followed the lead of the State Lands Commission, which previously conducted a detailed hearing on the controversial operations and also issued permits for the explorations.
- (2) It simplified rules for importation of spiny lobsters during the California close season.

(3) Closed the Salton Sea to the taking of shellfish to permit establishment of a sports fishery there.

(4) Fifty-four shrimp fishermen were granted an extension of their permits to allow them to continue fishing through September 30 (the end of the regular season) on the shrimp and prawn beds recently discovered by Department of Fish and Game research teams. This action takes care of a technicality in the law.

(5) Refused to renew any sardine reduction permits.



Federal Purchases of Fishery Products

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY DEPARTMENT OF THE ARMY, JULY 1953: The Army Quartermaster Corps in July 1953 purchased 2,465,620 pounds (valued at \$838,801) of fresh and frozen fishery products for the military feeding of the U. S. Army, Navy, Marine Corps, and Air Force (see table). This was a decrease of 47.0 percent in quantity and 50.6 percent in value as compared with June purchases, but 8.1 percent greater in quantity and 23.6 percent less in value than a year ago.

Army Quartermaster Corps purchases of fresh and frozen fish during the first seven months in 1953 totaled 16,065,538 pounds (valued at \$6,844,252), less by 15.2 percent in quantity and 20.1 percent in value as compared with the similar period a year earlier.

QUANTITY				VALUE			
July		January-July		July		January-July	
1953	1952	1953	1952	1953	1952	1953	1952
<u>Lbs.</u>	<u>Lbs.</u>	<u>Lbs.</u>	<u>Lbs.</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>
2,465,620	2,279,901	16,065,538	18,504,481	838,801	1,097,619	6,844,252	8,568,666

The over-all average price paid for fresh and frozen fishery products by the Department of the Army continued to be much lower than last year. In July the average price was 34.0 cents per pound, compared with 36.5 cents in June and 48.1 cents in July 1952.

In addition to the purchases of fresh and frozen fishery products indicated above, the Armed Forces generally make some local purchases which are not included in the above figures. Therefore, actual purchases are somewhat higher than indicated, but it is not possible to obtain data on the local purchases made by military installations throughout the country.



Florida

ANOTHER "RED TIDE:" Another "red tide," beginning off St. Petersburg, Florida, on September 3, killed a large quantity of fish in an area 5 to 20 miles from shore extending in patches along 60 miles of the coast from Clearwater to Venice, reports the Service's Branch of Fishery Biology. On September 15 dead fish had washed ashore at several points and local citizens were engaged in removing them from the beaches. Fish were dying over a wide area and no indications of a change of conditions to stop the "red tide" were evident.

A tremendous bloom of the micro-organism *Gymnodinium brevis* causes "red tides." Metabolism products of this organism are apparently toxic to fish and other marine organisms. When the *G. brevis* concentration reaches a certain point, fish and other marine organisms die. This results in considerable fish loss and contamination if they are washed ashore.

Cultures of the organism are being observed alive at the Service's Galveston, Texas, laboratory. The Service has been conducting research on "red tide" causes since the large bloom and resultant fish kill of 1947. Water samples from the area most recently infected contained as high as 2,000 organisms per milliliter of water. It is believed heavy river run-off combined with quiet wind conditions produces enriched water and conditions conducive to rapid growth of the organism. A theory has been developed for possible control measures by detecting and poisoning small patches of the organism.

While processing data collected during the November 1952 outbreak of "red tide" off the coast of Florida, the Service's Gulf Fishery Investigations found good evidence that effluents of the Caloosahatchee River are important agents in such blooms. It has been noted that activity of this type is probably due to organic content as well as to physical attributes. Experimental work in tanks has indicated that high light intensity, vitamin B₁₂, and sulfides are some of the requirements for mass growth of dinoflagellates as well as other organisms.

Chemical analyses that have been made by the Geochemistry and Petrology Branch, U. S. Geological Survey, show that significant quantities of titanium and zirconium were present in the "red tide" bloom water--and not in other waters such as Lake Okeechobee, the surface of Sigsbee Deep, and the tidal lagoon at Galveston.



Indonesians to Study Modern Fishery Development Management in United States

Five fishery technicians have arrived in the United States from Djakarta, Indonesia, on Foreign Operations Administration grants for a year's in-service training and advanced instruction under guidance of the Fish and Wildlife Service, Secretary of the Interior Douglas McKay announced September 1.

They are the first of a group of 11 Indonesians who will be trained in the United States in various aspects of modern fishery development during 1953/54.

Three of the trainees will receive instructions in Diesel engineering and refrigeration at the San Diego Vocational School. The other two will take in-service training in fishery statistics in Washington, D. C., and Gloucester, Mass., and will study statistical theory and practice at the University of North Carolina's agricultural school, for the purpose of improving Indonesia's methods of compiling fishery statistics.



Lease Bid Received for American Samoa Fish Cannery

The one lease bid submitted for the fish cannery in American Samoa was opened September 14 by the Pacific Division of the Office of Territories, U. S. Department of the Interior. The Government of Samoa had requested offers for lease of the fully equipped cannery on that Island.

As required by the invitation, the bid was for an initial five-year lease. The sole bidder offered to lease the cannery for \$5,000 each year, or \$2.50 per short ton of fish processed, frozen, canned, or stored for eventual shipment, whichever is greater.

The bidder stated his intention, in accordance with the draft contract, to train Samoans in fishing skills and to make available to the Samoans all the employment in the cannery to the extent they can be taught the necessary skills.

The bidder was a California fish cannery. If the bid is accepted, it will go into effect on January 1, 1954. The Department reserved the right to reject any and all bids.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, JUNE 1953, PP. 30-31.



Huge Halibut Presented to President

One of the largest halibut ever caught off the coast of the State of Washington was presented to the nation's First Family on October 1 by the nation's fishing industry. President Eisenhower accepted the huge 200-pound fish from Representative Thor C. Tollefson, chairman of the Fisheries Subcommittee of the House Merchant Marine and Fisheries Committee and Robert M. Meehan who represented the National Fisheries Institute. Tollefson is a Republican Representative from Washington, where fishing is the second largest industry.



The donors brought the seven-foot halibut to the White House in a truck. Strung up on a block-and-tackle, the fish was in full view for President Eisenhower's inspection.

The halibut was caught by commercial fishermen. As soon as they saw the size of their catch, they said: "That's for Ike." The fish was turned over to a Seattle dealer who froze and shipped the halibut to Washington, D. C.

A recipe for broiling halibut steaks--a special one prepared by the National Fisheries Institute--was given the President by Tollefson.

WITH PRESIDENT EISENHOWER (ON THE RIGHT) ARE L. TO R. REP. THOR C. TOLLEFSON, CHAIRMAN OF THE FISHERIES SUBCOMMITTEE OF THE HOUSE MERCHANT MARINE AND FISHERIES COMMITTEE, AND ROBERT M. MEEHAN WHO REPRESENTED THE NATIONAL FISHERIES INSTITUTE.



Maine

DEAD HERRING OFF COAST: Millions of dead herring, totaling about 300,000 pounds, were found in Love's Cove, Maine, on July 18 and 19 and on July 31-August 2, reports the Service's Branch of Fishery Biology. Whiting, harbor pollock, tomcod, and small flounders were dead also. At both kills, 20 to 30 seals were on a ledge at the Cove mouth. Green crabs taken from traps were either dead or lethargic, a condition which indicated oxygen depletion near the bottom.

Disease did not seem to have caused the mortalities. A large school of immature herring (britts), possibly pursued by whiting, pollock, tomcod, and seals, probably entered the Cove on July 18 and 19 on an ebbing tide. Because oxygen was depleted at low tide, most of the fish died. Occurrence of a second kill two weeks later, when the tidal cycle was the same, substantiates this theory.



New England Tuna Explorations

POOR TUNA FISHING REPORTED BY "MARJORIE PARKER" (Cruise No. 2): Only 600 pounds of bluefin tuna were caught in the Gulf of Maine by the Service-chart-ered exploratory fishing vessel Marjorie Parker on a 25-day cruise. This cruise, the second of the season, was completed on August 25 at Portland, Maine. Adverse weather was encountered on part of the trip.

During the first stages of the trip the vessel operated in the northeastern sector of the Gulf of Maine, working 15 long-line stations at distances from 50 to 150 miles offshore, covering Cashes Ledge, Fippennies Ledge, and the northern edge of Georges Bank. From August 18 to August 25 explorations were carried on in the South Channel, Southwest Georges Bank, and Pollock Rip Lightship areas at distances of 120 to 180 miles from Portland, Maine.

Floating long lines, surface troll lines, and drift trammel nets were fished, but long lines were principally used. Fishing results were poor. Blue sharks were abundant, fouling long lines and impeding fishing operations. A total of 210 sharks was captured on the long-line gear.

Surface troll lines caught four tuna with an average weight of 45 pounds. Only one school of tuna was observed during the trip and a set of 20 baskets (460 hooks) made near the school was unsuccessful. Trammel net fishing at night also failed to produce tuna. A total of 250 baskets (5,000 hooks) was fished, with an average rate of 20 baskets (400 hooks) per station.

The Marjorie Parker was scheduled to depart Portland, Maine, August 28 on Cruise No. 3, and return on or about September 10. Using long lines, surface troll lines, and drift trammel nets, the vessel was to fish in the offshore waters, southeast of Georges Bank in the area between 65°40'-66°20' W. longitude and 40°50'-43°00' N. latitude.



New York

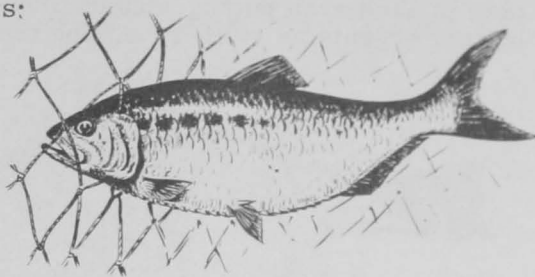
HUDSON RIVER SHAD CATCH DECLINED IN 1953: The 1953 Hudson River shad catch in New York waters amounted to 456,858 pounds, 17.5 percent less than the 553,262 pounds caught in 1952, according to preliminary figures supplied by the Service's Fishery Marketing Specialist in that area. Fishing was conducted under special shad gill-net permits issued by the State of New York.

The breakdown of the 1953 catch is as follows:

Stake nets (90 licenses): roe shad 91,318 pounds (22,629 fish); buck shad 50,284 pounds (17,929 fish). Total value to the fishermen: approximately \$26,000.

Drift gill nets (109 licenses): roe shad 171,636 pounds (42,019 fish); buck shad 143,620 pounds (59,540 fish). Total value to the fishermen: approximately \$35,000.

The appearance of a large quantity of menhaden in the Raritan Bay area was believed responsible for the poor catch of shad in that area. The 1953 catch in the Raritan Bay area was considerably under that of a year ago.

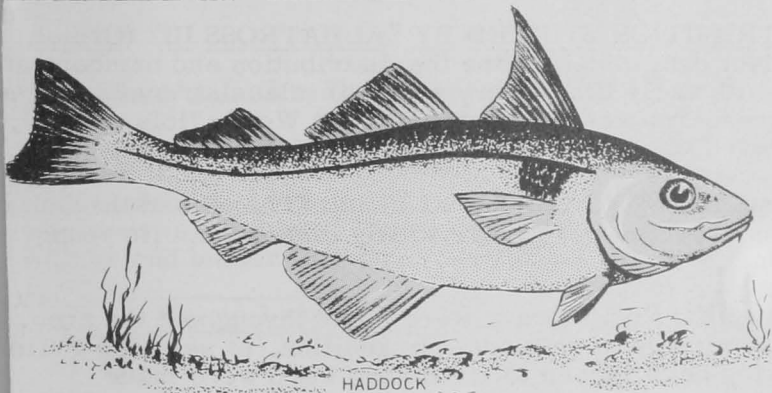


SHAD



North Atlantic Fishery Investigations

EFFECT OF COD-END COVER UPON HADDOCK ESCAPEMENT TESTED BY ALBATROSS III" (Cruise No. 52): The effect of the trawl cod-end cover upon the escapement of haddock was tested by the Albatross III, the Service's research vessel operating in the Northwest Atlantic, on Cruise No. 52. The vessel, which sailed from Woods Hole, Mass., on July 20 and returned on July 29, fished on the southwest and southeast parts of Georges Bank.



Fishing was conducted only during daylight hours. An ideal concentration of fish was found after some searching. Of a to-

tal of 28 completed tows, 11 good pairs were obtained for studying the effect of the cod-end covers. Cod ends of 6½-inch mesh (knot centers) constructed of 45-yard, 4-thread manila twine were used.

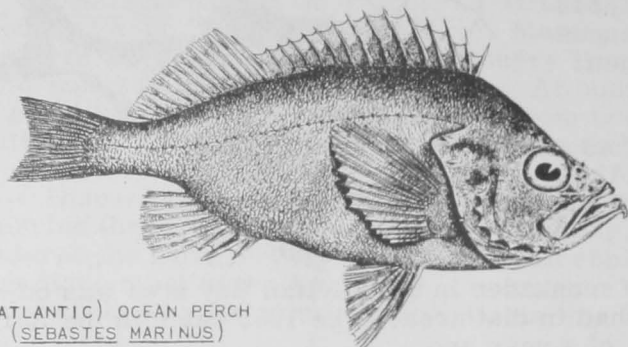
The appropriate sizes of haddock were taken in sufficient abundance to provide very good results.

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OCEAN PERCH DISTRIBUTION STUDIED BY "ALBATROSS III" (Cruise No. 53): In order to study the distribution of ocean perch (Sebastes) and to collect biological and physical data of the habitat in which they are found, the Service's research vessel Albatross III left Woods Hole, Mass., on August 10 and returned to port August 21, 1953. The vessel operated in the Gulf of Maine and the southern edge of Georges Bank and Nantucket shoals.

A total of 34 trawl tows was made and about 1,500 ocean perch were sexed and measured; also, 29 BT drops were made, and 4 hydrographic stations were occupied. Approximately 120 bottom photographs were taken, accompanied by bottom scoop sam-

ples in each area photographed. The pictures obtained were clear and sharp with many bottom organisms visible. A line trawl was set 5 times and the one-meter plankton net was towed once.



(ATLANTIC) OCEAN PERCH
(SEBASTES MARINUS)

ing, white hake, and ocean perch. An experimental vertical line trawl was fished several times at night--whiting and hake were caught, but no ocean perch.

Efforts to tag ocean perch proved fruitless. Even the ocean perch brought to the surface from shallow depths of 35-40 fathoms were badly blown and unable to return to the bottom.

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ZERO-AGE HADDOCK DISTRIBUTION STUDIED BY "ALBATROSS III" (Cruise No. 54): A 13-day cruise to collect data to determine the distribution and numbers of zero-age haddock in connection with early life history and year-class strength studies was completed by the Service's research vessel Albatross III at Woods Hole, Mass., on September 14. The area covered was Georges Bank and the Gulf of Maine.

Zero-age haddock were found in a very limited area (South Channel and the Gulf of Maine) while yearling fish of other species were more widely dispersed. No young haddock were found off the bottom.

Sixty-seven 20-minute tows with a No. 36 trawl were made throughout the area. One-hundred bathythermograph lowerings were made. In addition, at selected stations horizontal tows with a 1-meter ring net attached to the towing warp were made.

Further analysis of the distribution of zero-age haddock will have to await the completion of a similar sampling of the Southern New England Banks.



North Pacific Exploratory Fishery Program

SALMON RESOURCES ADJACENT TO ALEUTIAN ISLANDS INVESTIGATED BY "JOHN N. COBB" (Cruise No. 16): An investigation of the salmon resources in the shore waters adjacent to the Aleutian Islands, Alaska, was conducted by the John N. Cobb on an extended cruise which was completed on August 8. The vessel, one of the Service's exploratory fishing vessels, sailed from Seattle on May 18.

The investigation was part of the preliminary salmon research by the Service in connection with the International Convention for the High Seas Fisheries of the North Pacific Ocean. Objectives were to gain as much knowledge as possible concerning salmon in offshore waters, and to test and evaluate the effectiveness of various types of fishing gear for catching salmon on the high seas. Since it was necessary to obtain samples of salmon from as large an area as possible, the John N. Cobb changed fishing looms frequently.

Gill nets, trolling gear, floating long lines, and a trap were fished, but only gill nets proved successful as a means of catching salmon. The gill nets used were 1

fathoms to a shackle, 75 meshes deep, and made of $5\frac{1}{4}$ -inch (stretched mesh) linen netting. As a rule, either 5 or 10 shackles were fastened together and set as a string.

Fishing operations commenced on June 9 and ended on July 28. From June 9 to July 17 the vessel operated in the Pacific Ocean from Unalaska Island to near Agattu Island at distances from 15 to 60 miles offshore. From July 17 to July 28 operations were carried on in the Bering Sea from Umnak Island to Kiska Island at distances from 5 to 45 miles offshore. During the trip approximately 1,200 salmon were taken and frozen for additional study in the Service's Seattle laboratory.

Catches of salmon varied considerably in individual gill-net sets, ranging from 0 to 18 per 100-fathom shackle in Pacific Ocean sets, and from 1 to 28 in Bering Sea sets. Salmon catches consisted of 32 percent red, 3 percent silver, 26 percent pink, and 39 percent chum salmon in the Pacific Ocean fishing; and 2 percent red, 1 percent silver, 3 percent pink, and 94 percent chum in the Bering Sea fishing.

Weights, measurements, and other information concerning the salmon caught will be determined from the samples brought to Seattle.

This exploration was carried out as a joint operation by the Service's Branch of Commercial Fisheries and the Branch of Fishery Biology. A biologist from the Fisheries Research Institute at the University of Washington also accompanied the vessel.



Ohio's Lake Erie Commercial Fisheries Production, 1952

The total catch of fresh-water fish by Ohio's commercial fisheries of Lake Erie amounted to 21,246,640 pounds in 1952, a 14 percent increase over the 18,700,118 pounds landed in 1951, reports a recent bulletin from the Ohio Department of Natural Resources (see table). This increase was due mainly to the large rise in blue pike landings and lesser increases in landings of carp and catfish.

Ohio's Lake Erie Commercial Fisheries Production, 1952 and 1951

Species	1952	1951	Species	1952	1951
	Lbs.	Lbs.		Lbs.	Lbs.
Blue pike	5,530,995	1,867,055	Sturgeon	6,047	10,039
Bullheads	58,280	43,750	Suckers	586,576	516,850
Burbot	229,749	178,295	White bass	764,463	943,996
Carp	2,108,355	1,558,814	Whitefish	213,114	375,254
Catfish	1,492,209	1,258,403	Yellow perch	1,555,995	2,396,695
Cisco	20,641	92,445	Yellow pickerel ...	4,839,833	5,418,135
Goldfish	100,306	125,647	Buffalofish	8,343	2,323
Mooneye	14,352	20,918	Miscellaneous	1,049	552
Sauger	203,208	388,033			
Sheepshead	3,513,125	3,502,914	Total	21,246,640	18,700,118

In 1952 blue pike was the leading species landed by Ohio's Lake Erie commercial fisheries and comprised 26 percent of the total; followed by yellow pickerel, 22 percent; sheepshead, 17 percent; carp, 10 percent; yellow perch, 7 percent; and catfish, 7 percent. The leading item in 1951 was yellow pickerel, 29 percent; followed by sheepshead, 19 percent; and yellow perch, 13 percent.



Pacific Oceanic Fishery Investigations

UNEXPLOITED TUNA RESOURCE CLOSE TO HAWAII FOUND BY "JOHN R. MANNING" (Cruise No. 16): Evidence of an unexploited and potentially valuable commercial tuna resource close to the Hawaiian Islands was gathered by the research vessel John R. Manning on a 6-week cruise completed at Kauai on August 31. The vessel, operated by the Service's Pacific Oceanic Fishery Investigations (POFI), caught over 200 yellowfin tuna (about 10,000 pounds) by a small amount of experimental long-line fishing gear in only 5 days of fishing. The vessel operated along the 155th and 160th meridians in the equatorial region south of Hawaii. Remarkably good fishing for yellowfin tuna was found between 2 and 4 degrees north of the equator on 155° W. longitude, and in the vicinity of Christmas Island. A number of albacore were also taken and this species would undoubtedly be a profitable secondary product of a yellowfin fishery in those waters.

Several promising innovations in tuna long-line gear were tested during the cruise with the object of developing a type of line more efficient than that now used by Hawaiian and Japanese fishermen. These experiments included the substitution of hemp for the usual more expensive cotton line, variations in the spacing of the hooks along the main line, and a new method of attaching the branch lines to the main line designed to reduce tangling. It was found that tangling, ordinarily a time-consuming and troublesome feature of long-line fishing, can be virtually eliminated, and it is thought that the new method will enable fishermen to operate more gear and catch more tuna. The results of the hook-spacing experiments indicate that the most efficient arrangement is approximately 10 hooks to each 1,000 feet of main line.

Twelve stations were fished on 155° between 10° N. and 4° S. latitude. In addition, 3 stations were fished between 155° and the vicinity of Christmas Island. At each of these stations 50 to 60 baskets of long-line gear were fished, of which 30 had 6 hooks per basket of gear; and varying numbers (usually 20 and 10) of the baskets had 11 and 21 hooks, respectively. The best fishing occurred between 2° and 4° N. latitude in the oceanic areas, and in the vicinity of Christmas Island. The 5 consecutive stations within these limits yielded the following catches of yellowfin: six-hook baskets 11 per hundred hooks, 0.6 fish per basket; 11-hook gear, 9 per hundred hooks, 0.7 per basket; 21-hook baskets, 9 per hundred hooks, 1.8 per basket. The catches of the 21-hook gear are, however, not comparable to the catches on the other gear as the experimental design of this preliminary trial does not permit direct comparison. These catches indicate a very marked concentration of yellowfin tuna, a concentration that should support a United States fishery.

Fishing was not spectacular along 160° between 3° S. and 9° N. latitude. As on 155°, the best fishing occurred in the south equatorial current north of the Equator.

The catches of the 3 types of gear mentioned indicate that the 11-hook baskets are more efficient than the 6-hook baskets. Because of the increased hauling time of the 21-hook gear, this type does not appear suitable for commercial use. A swiveling arrangement that virtually eliminates time and energy-consuming tangles was given a thorough test on this cruise. Its eminent success indicates an improvement that should permit a crew to fish more gear per day, improving the prospects for United States exploitation of the resource.

Three baskets of gear made of factory-tarred Italian hemp line were fished each day. Towards the end of the cruise this gear became too slick to be pulled with the Japanese line hauler, indicating it is not a suitable material for this type of line fishing.

Scientific findings of the expedition included the capture of a variety of mackerel shark hitherto known only from the Atlantic, and the discovery of evidence that yellowfin tuna were actively spawning in the area where the best fishing was found. The scientists collected samples of scales and vertebrae from over 400 tuna, and will attempt to read the annual rings in these specimens in order to gain information on the age and growth rate of the fish.

Several days were spent at Christmas Island exploring possible sites for the installation of devices to automatically record seasonal changes in the temperature of the ocean around the island, which lies in the heart of the rich equatorial fishing grounds. The results of this reconnaissance will be used in planning the possible future establishment of a small field station on Christmas Island.

The seven tons of yellowfin and albacore landed by the John R. Manning were delivered to a Kauai cannery for processing. POFI scientists will keep a constant check on these fish as they pass through the cannery in order to evaluate their quality in comparison with tuna from Hawaii and West Coast fishing grounds.

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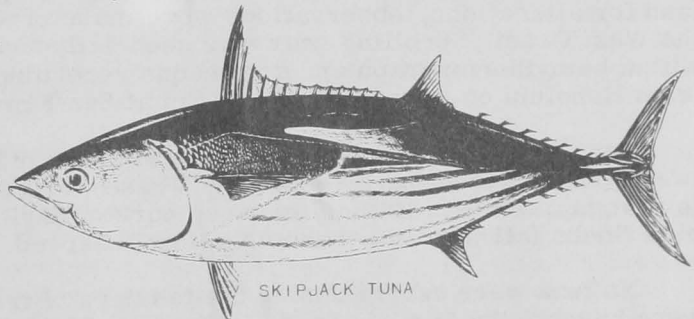
"CHARLES H. GILBERT" SCOUTS FOR TUNA IN HAWAIIAN WATERS (Cruise 11): Quantitative scouting for surface schools of skipjack and other tuna in Hawaiian waters was carried out by the Charles H. Gilbert, a research vessel of the Service's Pacific Oceanic Fishery Investigations (POFI) on a 34-day cruise completed at Honolulu on April 30. The vessel also executed weekly hydrographic sections on a line running north and south between Oahu and Molokai.

A systematic scouting for surface schools of skipjack and other tunas was carried out in Area I north of Oahu and in Area II south of Oahu. A total of 47 bird flocks were sighted in Area I, a scouting distance of 360 miles, while in Area II 58 flocks were seen in 720 miles of scouting. Several of the schools attended by bird flocks were investigated by means of actual live-bait fishing and surface trolling in order to determine the kind of fish schools, the sizes of fish in the schools, and the approximate size of the schools. A few good traces of fish schools were obtained on a depth recorder.

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SKIPJACK TUNA CONCENTRATIONS DISCOVERED OFF HAWAIIAN ISLANDS BY "CHARLES H. GILBERT" (Cruise 13): Many large schools of skipjack or striped tuna (aku) were observed concentrated in areas both to the north and south of the Hawaiian Islands by the Charles H. Gilbert on a 38-day cruise completed at Honolulu July 12.

Following a regular search pattern designed to furnish data for estimating the quantities of tuna present in the vicinity of the islands, the vessel encountered more skipjack schools per unit of area north of the Islands than immediately to the south of them, with an especially heavy concentration of fish extending east and west of a point some 50 miles northeast of Oahu. Farther to the south, however, two other widely separated areas of tuna abundance were found at 100 and 200 miles south of Honolulu. All of these concentrations were outside the area regularly fished by the local sampan fleet.



In contrast, very little activity was noticed in inshore areas to the south of the islands, with a notable scarcity of fish schools south of Molokai and Lanai. Generally, the greater numbers of schools were sighted on the scouting runs made in the east to west direction, with lesser numbers on the west to east runs, the latter being caused by less favorable scouting conditions when running upwind or possibly because of the easterly movement of the tuna schools. The north-south runs showed no significant differences in the number of sightings with the direction of the vessel.

A part of this cruise was devoted to the testing of chemical and visual attractants at sea, using various combinations of tuna extract and artificial bait on skipjack schools. The tuna extract alone failed to obtain any noticeable response from the skipjack, which appeared to be neither attracted nor repelled by it. Artificial bait of various kinds such

as cellophane strips, tin-foil squares, aluminum-foil strips, and tin strips were tried as possible visual attractants of skipjack. These materials were chummed alone or together with extract. Shiny materials, such as tin-foil squares and tin strips attracted the fish momentarily, in some cases even getting the fish away from feeding on the remaining live bait (chumming with live bait was stopped just before chumming with artificial bait). The momentary response was probably caused by the resemblance of the glittering material to live bait, but the fish were seen to turn away from the material after approaching it once. Stomachs were examined of the fish which were caught from the school on which tin strips were tested, and in 2 out of 17 stomachs, 1 strip apiece was found.

Chumming of dead bait (nehu) from the forward well deck occasionally brought response from the fish, which followed the bait as it sank. The skipjack soon returned to the surface when live-bait was chummed.

No noticeable response was obtained with calcium carbide pellets, which effervesced as they slowly sank. In all cases the fish soon departed from the vessel and had to be rechummed with live bait before further tests could be carried out on them.

Three weekly hydrographic sections were executed in Kaiwi Channel as a continuation of the survey started during Cruise 11 of the Charles H. Gilbert and carried through during Cruise 12.

Completion of this cruise marks the end of the third month of weekly scouting trips in a research program planned by the Service's Pacific Oceanic Fishery Investigations and the Territory Division of Fish and Game to supply information for the ultimate expansion of the local tuna fishery. The program will be continued by the Hugh M. Smith. The cruises of the Charles H. Gilbert have involved, in addition to fish scouting, weekly investigations of the physical and chemical changes in the sea water which might be related to tuna abundance.

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"CHARLES H. GILBERT" SCOUTS FOR TUNA BETWEEN HAWAII AND WEST COAST (Cruise 14): In conjunction with returning the Charles H. Gilbert to the mainland for alterations, observations were made of surface fish schools between Hawaii and the West Coast. Trolling gear was used daily and water temperature data were collected with a bathythermograph and continuous recording thermometer. The vessel departed from Honolulu on July 16, and arrived at San Francisco on July 26.

Very few scattered birds were seen in the offshore area (50 miles from land) between Honolulu and San Francisco. These were mainly black-footed albatrosses, noted followers of ships. During the five hours of daylight after leaving Honolulu, only three bird flocks (all with tuna schools) were observed.

No tuna were caught during the ten days of trolling. Three mahimahi (C. hippurus) were caught, the last at 32° N. latitude on 135° W. longitude. The small catch may be partially attributed to the speed of the vessel (average for trip 9 knots) which was considerably above the optimum trolling speed of 6 to 6½ knots.

The continuous recording thermograph indicated the passing of about 4 to 6 "fronts." Two, and possibly three, were located in the area between 25°30' N. to 26°30' N. latitude on 147° W. to 145° W. longitude.

Generally the cruise was handicapped by moderately rough seas and complete overcast on 7 of the 9½ days, limiting the range of visibility.

The Charles H. Gilbert will be at a California shipyard for the balance of 1953.

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HYDROGRAPHIC AND BIOLOGICAL DATA AROUND HAWAIIAN ISLANDS COLLECTED BY "HUGH M. SMITH" (Cruise 21): A 2,500-mile, 69-station hydrographic cruise, part of the Service's Pacific Oceanic Fishery Investigations' program to study

conditions governing the Hawaiian skipjack tuna fishery, was completed on August 26 by the Service's research vessel Hugh M. Smith. Oceanographic and biological investigations were carried on in an area of 86,000 square miles surrounding the Hawaiian Islands; data were collected which will help to determine seasonal changes in local waters and aid in explaining fluctuations in the local skipjack catch.

Surface trolling and the direct observation of fish schools were also carried out, and in a further effort to aid the skipjack (aku) fishing fleet, reports of fish sightings were broadcast twice daily by short-wave radio.

The goal of this POFI program is to obtain sufficient understanding of the habits of the skipjack tuna and the oceanographic conditions influencing their distribution to permit expansion of the present localized and highly seasonal fishery.



States Get Over \$4 Million Federal Aid for Fish Restoration

An upsurge in the purchase of sport fishing equipment during fiscal year 1953 (ending June 30), attributed in part to the growing popularity of spinning tackle, has made the sum of \$4,299,916 in Federal Aid funds available for apportionment to the 48 states for sport fishery restoration projects during fiscal year 1954, the Secretary of the Interior announced recently. This is an increase of \$1,791,389 over last year's apportionment of \$2,508,527.

These Federal funds become available to the states under the terms of the Federal Aid in Fish Restoration Act of August 9, 1950, better known as the "Dingell-Johnson Act." This program, now in its third year of operation, is enabling the states to create new public fishing lakes, restore many unproductive waters, and put research findings to better use.

The revenue for the program comes from the 10 percent excise tax on fishing rods, creels, reels, and artificial lures, baits, and flies, paid by the manufacturers of those products. Collections from this source during the year ended June 30, 1953, totaled \$4,556,615. From this total is taken the annual apportionments of \$75,000 to Alaska, \$25,000 to Hawaii, and \$10,000 each to the Virgin Islands and Puerto Rico, and the cost of administering the act by the U. S. Fish and Wildlife Service.

To provide a fair distribution of Federal funds, each state's share is based on the relation of the number of its fishing license holders to the total in all States, and the ratio of each state's area (including coastal and Great Lakes waters) to the area of the entire country. The Act also states "that no State can receive less than one percent nor more than five percent of the total apportioned to all States." This provision allows the small States enough working capital to finance comparatively big projects, while the large States will be able to receive only the maximum amount. On this basis California, Michigan, and Minnesota are given the maximum apportionment of \$214,996 each, while Connecticut, Delaware, Louisiana, Maryland, Massachusetts, New Hampshire, New Jersey, Rhode Island, and Vermont will receive the minimum of \$42,999.

To obtain the benefits of the Federal grants, the states submit project proposals to the Fish and Wildlife Service. Acting for the Secretary of the Interior, the Service reviews these proposals to learn whether they are substantial in character and design, within the meaning of the Act. When a project is approved, the State game and fish departments proceed to carry out the plans, spending their own funds. The states then submit reimbursement claims for 75 percent of the costs of the project, either periodically or at the completion of the work. The remaining 25 percent of project expenditures is financed out of regular state funds. All equipment, lands, and structures become the property of the states. All project workers are hired by the states and are state employees.

Apportionments to the 48 states for fiscal year 1954 are as follows:

Alabama	\$52,945	Maine	\$45,421	Ohio	\$153,588
Arizona	68,625	Maryland	42,999	Oklahoma	99,180
Arkansas	78,425	Massachusetts ...	42,999	Oregon	92,832
California	214,996	Michigan	214,996	Pennsylvania....	122,569
Colorado	103,031	Minnesota	214,996	Rhode Island....	42,999
Connecticut	42,999	Mississippi	48,193	South Carolina ..	58,375
Delaware	42,999	Missouri	132,636	South Dakota ...	57,938
Florida	74,495	Montana	103,129	Tennessee	129,713
Georgia	82,803	Nebraska	68,502	Texas	191,741
Idaho	74,353	Nevada	60,690	Utah	58,996
Illinois	141,430	New Hampshire ..	42,999	Vermont	42,999
Indiana	100,096	New Jersey	42,999	Virginia	67,052
Iowa	86,684	New Mexico	75,550	Washington	101,620
Kansas	80,949	New York	146,347	West Virginia ...	44,865
Kentucky	79,195	North Carolina ...	76,016	Wisconsin	192,819
Louisiana	42,999	North Dakota ...	45,125	Wyoming	72,007



U. S. Customs Laws Regarding Landings of Fish From Joint U. S. -Japanese Fishing Operations

The U. S. Customs laws regarding landings of fishery products from joint U. S. - Japanese fishing operations were outlined by the Bureau of Customs in a recent letter to the State Department. The letter comments as follows:

"Reference is made to your memorandum... You ask for the comments of this Bureau with respect to certain of the questions raised... the Bureau's comments thereon are as follows:

"1. Under what conditions can processed fishery products, such as canned crab meat, be landed at an American port if this product has been caught and processed by a United States-Japanese joint fishing company incorporated in accordance with United States laws and regulations? Catcher boats (Japanese) and the mothership (American) would be under United States registry if permitted by United States regulations.

"Section 251, title 46, United States Code, restricts the American fisheries to vessels of the United States properly documented to engage in that trade. A vessel which is engaged in the catching of fish is engaged in the fisheries. Such a vessel also is engaged in the fisheries when it transports its catch to shore. In addition, where one vessel is used to catch the fish and another is used to transport the catch to shore, both vessels are engaged in the fisheries so long as both are under the same ownership or under the same complete control and management.

"The Bureau assumes, and will so treat the subject, that (1) it is intended that the operations of catching, processing, and transportation to port of fish products thereof are to be conducted by means of vessels which, if not under the same ownership, are to be under the same complete control and management, i. e., the said United States-Japanese joint fishing company, and (2) the mothership is to be so documented under the laws of the United States as to entitle it to engage in fishing. The latter would require the further assumption that the company is a citizen of the United States as defined in the documentation laws.

"Catcher boats of foreign build or ownership are not entitled to be documented for the American fisheries nor may any undocumented vessel engage in the American fishery except one of less than 5 net tons which is owned in the United States, or as hereafter stated in this paragraph. The catch of vessels of foreign build, flag, or ownership except as hereafter stated in this paragraph, will not be regarded as products of an American fishery entitled to free entry under paragraph 1730 (a), Tariff Act of 1930, as amended. The employment by an American fishery of citizens of a foreign country who use their own foreign undocumented catcher vessels does not preclude free entry of their catches under paragraph 1730 (a), supra.

"If catcher boats built in the United States and owned by a citizen of the United States, as defined in section 802, title 46, United States Code, which may include a corporation organized and existing under the laws of the United States or of a State thereof, the president and managing directors of which are citizens and of which at least a controlling interest is vested in American citizens free from trust or fiduciary obligation in favor of alien interests, are documented under the United States flag, they will be entitled as vessels of the United States to engage in fishing and to land their catches or products thereof at a United States port as products of an American fishery entitled to free entry under the provisions of paragraph 1730 (a), Tariff Act of 1930, as amended. Further, the United States-flag mothership will be entitled to transship from the high seas such catches or the products processed therefrom at sea to a port of the United States as products of an American fishery likewise entitled to free entry.

"2. Is the entry of products caught and processed at sea by such enterprise subject to prohibition, restrictions, or import duties at the United States port? These products would be transported from the fishing ground to a United States port by the United States registered carrier.

"The tariff status of fish not entitled to free entry as products of an American fishery may be dutiable or entitled to free entry depending upon the type of fish and the processing to which it has been subjected. For instance, tuna fish, fresh or frozen, is entitled to free entry under the provisions of paragraph 1756, Tariff Act of 1930, while tuna, packed in air-tight containers (canned, not in oil), and tuna packed in oil (canned), are dutiable under paragraphs 718 (b) and 718 (a), respectively. Crab meat, including crab paste and crab sauce, packed in air-tight containers, is dutiable at the rate of 22½ per centum ad valorem under the provisions of paragraph 721 (a), Tariff Act of 1930.

"No quota is in effect at this time on crabs or tuna fish or canned products thereof. Groundfish, namely, cod, haddock, hake, pollock, cusk, and rosefish, excepting such as are entitled to free entry as products of an American fishery, are subject upon entry to tariff rate quotas."



Wholesale Prices, August 1953

WHOLESALE PRICES, AUGUST 1953: Continued light production of edible fishery products caused wholesale prices to again rise from July to August. The over-all edible fish and shellfish (fresh, frozen, and canned) wholesale index for August was 107.8 percent of the 1947-49 average (see table)--5.1 percent higher than in July and 8.0 percent above August 1952, the Bureau of Labor Statistics of the Department of Labor reports.

August prices for all varieties in the drawn, dressed, or whole finfish subgroup were higher than a month earlier, except western halibut and yellow pike at New York City which were lower. The largest increase (64.9 percent) was for large drawn offshore haddock at Boston where continued light landings caused ex-vessel prices to rise. The largest price drop (8.3 percent) was for western halibut at New York City because the supply was liberal. Compared with August 1952, all items under this subgroup were priced higher this August except western halibut at New York and lake trout at Chicago which were quoted lower. The drawn, dressed, or whole finfish index for August was 19.9 percent higher than the previous month and 19 percent higher than in August 1952.



Prices in August for fresh processed fish and shellfish were down 2.1 percent principally due to a 12.7-percent drop in shrimp prices at New York City because shrimp

supplies had improved considerably. Offsetting the drop in shrimp prices, small haddock fillet prices at Boston were up 25.4 percent over a month earlier and 32.7 per-

Table 1 - Wholesale Average Prices and Revised Indexes for Edible Fish and Shellfish, August 1953 and Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^a (\$)		Indexes (1947-49 = 100)			
			Aug. 1953	July 1953	Aug. 1953	July 1953	June 1953	Aug. 1952
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned)								
Fresh and Frozen Fishery Products:								
Drawn, Dressed, or Whole Finfish:								
Haddock, large, offshore, drawn, fresh	Boston	lb.	.14	.09	144.0	87.3	87.1	95.5
Halibut, Western, 20/80 lbs., dressed, fresh or frozen	N.Y.C.	"	.31	.33	94.4	102.9	95.9	96.0
Salmon, king, lge. & med., dressed, fresh or frozen	"	"	.50	.49	112.1	110.7	108.4	108.5
Whitefish, mostly Lake Superior, drawn (dressed), fresh	Chicago	"	.47	.46	116.5	112.8	88.0	106.6
Whitefish, mostly Lake Erie pound or gill net, round, fresh	N.Y.C.	"	.55	.45	111.2	91.0	104.1	99.1
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	"	.58	.53	117.8	107.6	106.5	119.9
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	N.Y.C.	"	.57	.61	132.5	143.6	105.5	123.1
Processed, Fresh (Fish and Shellfish):								
Fillets, haddock, sml., skins on, 20-lb. tins or frozen	Boston	lb.	.35	.28	117.4	93.6	91.9	88.5
Shrimp, lge. (26-30 count), headless, fresh	N.Y.C.	"	.69	.79	109.1	124.9	117.0	88.5
Oysters, shucked, standards	Norfolk area	gal.	4.75	4.50	117.5	111.3	111.3	123.7
Processed, Frozen (Fish and Shellfish):								
Fillets:								
Flounder (yellowtail), skinless, 10-lb. pkg.	Boston	lb.	.31	.31	108.7	108.7	108.7	124.4
Haddock, sml., skins on, 10-lb. cello-pack	"	"	.24	.22	89.3	82.8	79.0	83.7
Ocean perch, skins on, 10-lb. cello-pack	Gloucester	"	.20	.21	95.1	101.1	103.5	108.3
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	"	.69	.87	106.5	133.4	119.6	99.5
Canned Fishery Products:								
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	case	18.95	18.95	100.4	100.4	104.4	104.4
Tuna, light meat, solid pack, No. 3 tuna (7 oz.), 48 cans per case	Los Angeles	"	14.80	14.80	92.4	92.4	92.4	90.5
Sardines (pilchards), Calif., tomato pack, No. 1 oval (15 oz.), 48 cans per case	"	"	9.25	9.25	108.0	108.0	108.0	109.4
Sardines, Maine, keyless oil, No. 1 drawn (3 1/2 oz.), 100 cans per case	N.Y.C.	"	7.20	6.70	76.6	71.3	71.3	63.3

^aREPRESENT AVERAGE PRICES FOR ONE DAY (MONDAY OR TUESDAY) DURING THE WEEK IN WHICH THE 15TH OF THE MONTH OCCURS.

cent above a year ago. The fresh processed fish index this August was still 10.2 percent higher than for the same month in 1952.

The over-all frozen processed fish and shellfish index for August was 10.2 percent under July and 1.4 percent below a year ago. Shrimp prices tumbled (20.2 percent) again from the previous month due to increased production. Ocean perch fillet prices were also down (5.9 percent), while haddock fillets increased (7.9 percent) due to lighter landings at Boston. Frozen flounder fillets sold the same as in July. Compared with August 1952, prices of haddock fillets and shrimp were up while those for flounder fillets and ocean perch fillets were down.

Maine sardines, the only canned fishery product item to show a price change from July to August, went up 7.4 percent; all others remained the same. Compared with August 1952, pink salmon prices were lower, and tuna and Maine sardine quotations were higher.

