

TRENDS AND DEVELOPMENTS

Additions to U. S. Fleet of Fishing Vessels

FEBRUARY 1956: A total of 26 vessels of 5 net tons and over were issued first documents as fishing craft during February 1956, according to the Bureau of Customs. This was 2 vessels more than the number reported for the corresponding month of 1955.

U. S. Vessels Issued First Documents as Fishing Craft, February 1956 and Comparisons					
Section	February		Jan.-Feb.		Total
	1956	1955	1956	1955	
 (Number)				
New England	3	5	4	5	18
Middle Atlantic ..	3	-	5	1	13
Chesapeake	3	5	8	9	54
South Atlantic ...	6	2	10	6	65
Gulf	7	5	10	8	103
Pacific	2	4	3	6	117
Great Lakes	-	-	-	-	9
Alaska	1	3	2	7	35
Hawaii	1	-	1	-	3
Virgin Islands ...	-	-	-	-	1
Total	26	24	43	42	418

Note: Vessels have been assigned to the various sections on the basis of registered home ports.

The Gulf area led all others during February 1956 with 7 newly-documented craft followed by the South Atlantic area with 6; the New England, Middle Atlantic, and Chesapeake areas with 3 each; and the Pacific area with 2. The Alaskan and Hawaiian areas reported 1 each.

Compared with the same month of last year, the New England, Chesapeake, Pacific, and Alaskan areas each had 2 less newly-documented craft added to their respective fishing fleets during February 1956. The Middle Atlantic and Gulf areas had a greater number of fishing vessels documented for the first time during February 1956 than during the corresponding month of 1955.

During the two-month period ending with February 1956, a total of 43 fishing vessels was documented for the first time as compared with 42 for the corresponding period of last year.



Cans--Shipments for Fishery Products, January 1956



Total shipments of metal cans for fish and sea food during January 1956 amounted to 4,402 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 4,743 short tons in January 1955. Fish canning in January 1956 was confined largely to tuna.

Note: Statistics cover all commercial and captive plants known to be producing a 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.



Federal Purchases of Fishery Products

CANNED FISHERY PRODUCTS PURCHASED THROUGH MARKET CENTERS, 1953-55: Canned tuna, salmon, and some sardines were the principal canned fishery products purchased for the use of the U. S. Army, Navy, Marine Corps, and Air Force by the Army Quartermaster Corps through its Market Centers. In 1954 canned tuna purchases totaled 3.8 million pounds, but in 1955 they dropped to 2.9

million pounds. Canned salmon purchases climbed from 471, 000 pounds in 1954 to 2.8 million pounds in 1955.

Practically all of the canned tuna and salmon purchased by the Defense Department is procured through its Quartermaster Market Centers, but it is believed that only a portion of the requirements for canned sardines are represented in the table since some canned

sardines and all other canned fishery products are procured locally and no information is available on these local purchases. Therefore, actual purchases of canned fishery products are higher than indicated in the table.

Canned Product	1955	1954	1953
.. (1, 000 Pounds) ..			
Tuna	2, 906	3, 779	1, 298
Salmon	2, 785	471	766
Sardines	143	450	1, 899

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY THE DEPARTMENT OF DEFENSE, FEBRUARY 1956: The Army Quartermaster Corps during February 1956 purchased for the use of the Army, Navy, Marine Corps, and Air Force a total of 1.7 million pounds (value \$0.8 million) of fresh and frozen fishery

Purchases of Fresh and Frozen Fishery Products by Department of Defense (February and the First Two Months-1955 and 1956

QUANTITY				VALUE			
February		Jan. -Feb.		February		Jan. -Feb.	
1956	1955	1956	1955	1956	1955	1956	1955
.(Millions of Pounds) .				.(Millions of Dollars) .			
1.7	1.8	2.8	3.8	0.8	0.8	1.5	1.6

products. This was an increase of 53 percent in quantity and about 14 percent in value as compared with January 1956 purchases. Compared with February 1955, the purchases this February declined about 5 percent in quantity, but the value was up about 13 percent.

Prices paid for these products by the Department of Defense in February averaged about 51 cents a pound as compared with 68.7 cents in January 1956 and 43 cents a pound in February 1955.

Purchases during the first of two months of 1956 totaled 2.7 million pounds (value \$1.6 million)- lower by 28.5 percent in quantity and 1.1 percent in value as compared with the first two months of 1955.

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.



Great Lakes Fishery Investigations

RESEARCH VESSEL "CISCO" OPERATIONS IN 1955: The research vessel Cisco in 1955 completed the hydrographic and fishery study of Lake Michigan started in May 1954. The first two cruises of 1955 in January and March were in the vicinity of Grand Haven and completed operations in the southern half of the lake. The subsequent cruises (III-XI, May-November) covered the northern half of the lake.

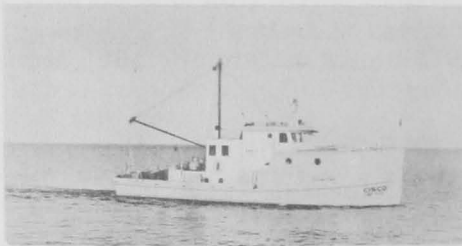
A primary objective of the Cisco operation was to study the chubs (Leucichthys sp.) of Lake Michigan, the only commercially important fish remaining in the deeper portion of the lake since the sea

lamprey destroyed the lake trout. Data for comparing the present chub population with that of the early 1930's was available from records of the research vessel Fulmar which worked Lake Michigan in 1930-32. Gill nets (2 $\frac{3}{8}$ -, 2 $\frac{1}{2}$ -, 2 $\frac{3}{8}$ -, 2 $\frac{1}{4}$ -, and 3-inch stretched measure) made to the same specifications as those used by the Fulmar were fished intensively during Cruise V (July 1955) in the area between Charlevoix and Manistique at depths and stations fished intensively during the same month in 1932. In Cruise VI (August) these nets were fished between Ludington and Manitowoc at depths and stations most heavily fished by the Fulmar in 1930-31.

Preliminary comparisons of the chubs taken in experimental Fulmar-type nets show that the total number of fish is about the same now as it was in the early 1930's. The average length of chubs taken in experimental gangs is about $1\frac{1}{2}$ inches shorter now than in the 1930's. In terms of chubs suitable for commercial use, less than 25 percent of the fish in present catches were over 10 inches long whereas in the 1930's over 60 percent were over 10 inches long.

Increased pressures exerted by the commercial fishery and the sea lamprey are believed to have reduced the average size of the chubs. The commercial catch has increased tenfold from 1940 to 1953. Since small chubs are of little or no market value, the fishermen fish selectively for larger chubs. Sea lampreys, still abundant in Lake Michigan, have only chubs to feed on in their preferred deep-water habitat. They also select the larger chubs. This selectivity has caused the two largest species (*Leucichthys nigripinnis* and *L. johanna*) to become extremely scarce.

The smallest chub (*L. hoyi*), commonly known as the bloater, is avoided by the fishermen and sea lampreys alike because of its size. It was preyed upon to a large extent by the lake trout now absent from the lake. Consequently, the bloater is three times as abundant now as it was in the early 1930's. Other species (*L. alpenae*, *L. zenithicus*, *L. reighardi*, *L. kivi*, *L. nigripinnis*, and *L. johanna*) which were less subject to predation by the lake trout are now used more heavily by the commercial fishery and sea lamprey. They have decreased to about one-third of their former abundance.



Cisco, research vessel of the Service's Great Lakes Fisheries Investigation.

The total weight of chubs taken in Fulmar-type nets was 20 percent less in 1954-55 than in 1930-32. Although these nets did not sample the smallest fish, which may be more abundant now than before, it appears that the lake may be supporting fewer pounds of chubs now than it did in the 1930's. Chubs of the same length weigh more now than they did in the 1930's, which indicates that presently there is probably more food available per pound of fish.

Materials were also collected for a complete study of the distribution and biology of the present chub populations and to establish a base abundance index that can be used for future reference. Experimental gangs of nylon gill nets with mesh sizes ranging from 2 to 4 inches were set at depths between 25 and 135 fathoms at representative locations in northern Lake Michigan. Otter-trawling collected chubs both on the bottom and at middepths. Vertical distribution of chubs was determined by sitting 1- and 2-inch mesh gill nets obliquely from

the surface to the bottom. This life history material will be used to evaluate further changes in the chub population that have resulted from the sea lamprey's upset of the biologic community and the increased selective commercial fishing effort for chubs.

Although the collection of chubs was the primary objective of most fishing operations, much information was obtained on other species in the lake. Many records were made of the occurrence of the alewife (*Pomolobus pseudo-harengus*), a new species just establishing itself in Lake Michigan. Yellow perch (*Perca flavescens*) were taken in abundance from shallow areas and provided an abundance of material for biological studies.

Young fish in the larval and fry stages collected in plankton nets will provide valuable information on the early life stages of chubs and other species.

A sensitive recording fathometer operated continuously while the *Cisco* was on the lake. Characteristics of bathypelagic records on the fathometer were studied intensively and explored with special trawling and plankton sampling to identify the midwater sound scatterers. Special observations were made of the fathometer responses for different types of bottom formations characteristic of the Great Lakes, and for the presence of fish on and above the bottom.

Hydrographic transects were made across the lake between Ludington and Manitowoc, Frankfort and Sturgeon Bay, Charlevoix and Manistique, and Manistique and Frankfort. Surface water temperature was recorded by a thermograph all of the time the boat was on the lake. On all transects, a bathythermograph cast was made at 5-mile intervals. On the first three transects surface water samples were collected and 20 drift bottles (10 weighted with sand and 10 with metal drags suspended from them) were released at the time of each bathythermograph cast. Also, on the first three transects one station was occupied near each shore and one near the center of the lake where water samples and reversing thermometer temperatures were taken from the surface to the bottom, and a plankton tow was made at 5 meters below the surface. At various times during the year, plankton tows and hydrographic observations were made off Frankfort at various depths over continuous periods ranging from daylight into darkness.

Temperature data is now undergoing careful analysis to determine the general thermal characteristics of the lake and some of the water movements that are reflected in the thermal structure. In general, there is a well-defined thermocline in Lake Michigan from late May until mid-December. Although the depth and thickness of the thermocline can vary greatly at different locations at any one time, its mean depth increases from spring until fall and its thickness tends to reach a minimum during the warmest months. The thermocline is disrupted occasionally by local upwellings, the extent and duration of which depend on the intensity and persistence of conditions (generally winds) that caused them. The thermal structure of Lake Michigan is not as regular as that commonly found in inland lakes. Thermal irregularities are due mainly to water movements that are organized primarily in relation to climatic forces and to the con-

figuration of the basin. Although the lake basin is large compared with most fresh-water lakes, its confinement and irregular configuration seem to minimize the effects of the geophysical forces that are so active in regulating water movements in the ocean.

Nearly 60 percent of the 4,000 drift bottles released during the year had been returned by the end of the year. One objective of the study was to learn which of two methods was best for weighting the bottles. One series of bottles was weighted with sand so that about $\frac{1}{2}$ inch of the bottle was exposed above the water. Another series was weighted similarly with a metal drag attached to the bottle with a wire. Initial observations showed that the bottles weighted with sand washed up on the beach more quickly than those with drags after reaching shore but that their movements were influenced more by the wind because the drags gave added resistance to wind-induced movements.

Reply cards enclosed in the drift bottles asked the finder if a drag was attached to the bottle when it was found. In the first releases, over 50 percent of the bottles had lost their drags before they were found and remarks of the finders indicated that the drags were lost because the wire was broken at the neck of the bottle.

Loss of drags was greatly reduced by introducing a brass ring in the connection at the neck of the bottle to allow the bottle to move freely without bending the wire. The resistance of bottles with drags to being washed up on the beach was eliminated by shortening the wire between the drag and the bottle from 3 feet to 1 foot. With the short

wire both drag and bottle are in the surf when the bottle reaches shore and are washed onto the beach simultaneously. Comparisons between movements of bottles in the lake and observations of dye patches released at 1 and 3 feet below the surface showed that the movement of the bottles would not be changed by the shallower drag attachment.

The bottle with drag suspended by a one-foot wire having a flexible brass ring attachment at the neck of the bottle has been adopted as the most suitable drift element for water movement studies of the Great Lakes. It has no disadvantages over the bottles weighted with sand and has the advantage of being less influenced by direct action of the wind.

Analysis of water collected in 1955 is incomplete but continues to show that the water of Lake Michigan is relatively uniform throughout but has a somewhat greater concentration of chemical constituents near shore.

Special attention has been given to a study of the life history, distribution, and movements of *Mysis relicta* and *Pontoporia hoyi*, two of the more important fish-food organisms in Lake Michigan. *Mysis* was successfully established in a laboratory culture and a study of its life cycle is being continued.

Analysis of zooplankton collected at various depths during daylight and dark is being made to show the distribution of various plankters and what diurnal movements, if any, occur. Extensive collections of bottom organisms have been made but are not yet undergoing analysis.

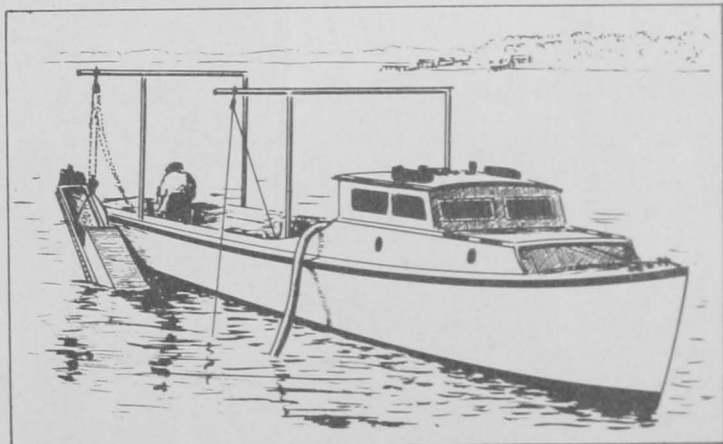
--Stanford H. Smith,
Fishery Research Biologist,
Great Lakes Fishery Investigations,
Ann Arbor, Mich.



Maryland

NEW CLAM RESEARCH VESSEL OUTFITTED: A hydraulic clam research vessel, the John A. Ryder was recently acquired by Maryland, according to the February 1956 Maryland Tidewater News of the Maryland Department of Research and Education.

The vessel is fully equipped for experimental dredging of soft-shell clams. With a length of 42 feet over-all and a registered tonnage of 8, the boat has dredging equipment, and a motor-driven centrifugal pump of six-inch intake supplies hydraulic power. Living quarters for two are provided in the trunk cabin. Adequate stowage is available for diving gear, photoelectric instruments, and other equipment used in the clam research program.



Hydraulic clam research vessel John A. Ryder.

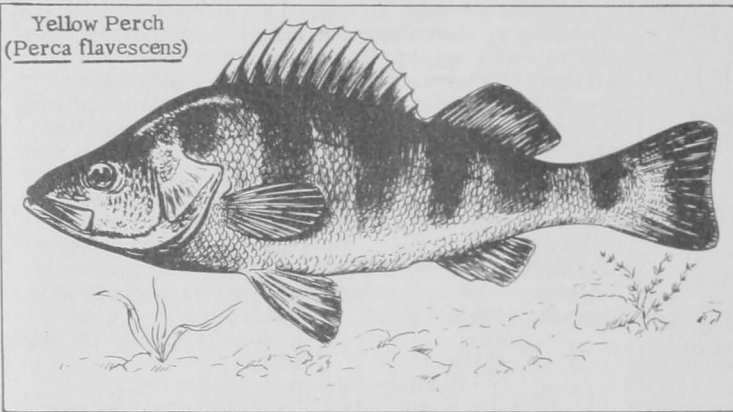
Noteworthy is the fact that the John A. Ryder and the entire complement of dredging and research equipment has been purchased from the Clam Fund, which was earmarked by the 1955 Maryland Legislature for the purpose of clam research, and supported solely through a bushel tax on Maryland's production of soft-shell clams. The boat has been named for a pioneer shellfish biologist who, during the period 1881-1885, made what are believed to be the first published observations on the biology of the soft-shell clam in the Chesapeake area.

Note: Also Commercial Fisheries Review, March 1956, p. 19.

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YELLOW PERCH SPAWNING SURVEY: A survey of spawning areas of yellow perch are being carried out this spring by Maryland's Chesapeake Biological Laboratory as part of a study of the life history of this species in Tidewater Maryland.

Since the exploration by one or two biologists of the many miles of tributary streams would be a monumental task, Maryland Tidewater Fisheries officers, Game and Inland Fish wardens, and the general public are all being asked to cooperate by reporting any evidence of yellow perch spawning in their areas.



Yellow Perch
(*Perca flavescens*)

During late February and early March yellow perch move into upstream areas and spawn over a two- to three-week period. The eggs are extruded in long amber strings which catch on brush and other underwater obstructions. These egg strings may be up to several feet in length and take the form of a hollow tube 2 to 4 inches in

diameter with the walls pleated like accordion bellows. These eggs will hatch in approximately three weeks depending on water temperatures.

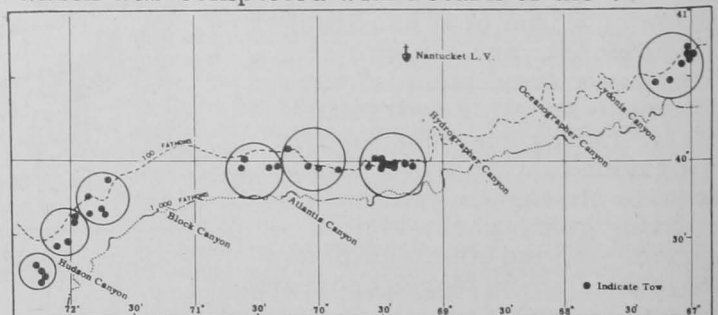
Readers who observe these eggs should send a post card to the Maryland Tidewater News, giving: (1) the date and (2) the exact locations where yellow perch eggs were observed. Information supplied by the public will be followed up by a field biologist, the February 1956 issue of that publication points out.



North Atlantic Fisheries Exploration and Gear Research

NEW RECORD CATCHES OF DEEP-WATER LOBSTERS REPORTED BY "DELAWARE" (Cruise 16): New record catches of deep-water lobsters were established during Cruise 16 of the Delaware, which was completed with return of the vessel to

East Boston on March 9, 1956. On three consecutive tows, numbers 36, 37, and 38, a total of 3,290 pounds of deep-water lobsters was landed. The new individual tow record is number 38, of one hour's duration, with a catch of 177 lobsters averaging 7 pounds each--a total of 1,239 pounds. These tows were made in Area "F" (see chart).



M/V Delaware, Cruise 16 (Feb. 27 to Mar. 10, 1956).

This cruise was one of a series designed to explore the offshore deep-water areas for commercial concentrations of the lobster (Homarus americanus). Gear used was a standard No. 41 otter trawl. Exploration was conducted in six areas, in the 100- to 400-fathom depth range along the edge of the continental shelf, from the vicinity of Hudson Canyon, eastward to the vicinity of Lydonia Canyon. A total of 38 tows was made. In general, catches were small in Areas "A" through "E" but large in Area "F."

Offshore tagging of lobster was continued--105 were tagged and released where caught, and 200 lobsters were turned over to the Commonwealth of Massachusetts and the State of Rhode Island for tagging and release off Scituate, Plymouth, and Narragansett Bay. Among these were 92 large egg-bearing females.

No significant catches of other fish were made.

The Delaware will continue deep-water explorations at the edge of the continental shelf from Hudson Canyon southward on March 19, when the vessel's departure for Cruise 17 was scheduled.

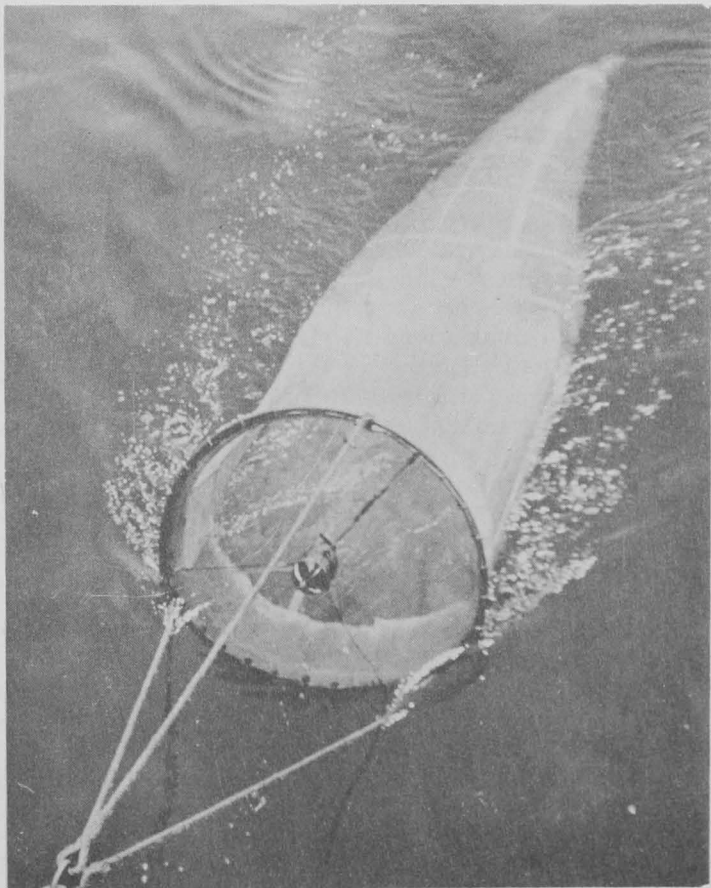


North Atlantic Fishery Investigations

DISTRIBUTION OF HADDOCK EGGS AND LARVAE ("ALBATROSS III," Cruise 71): To determine the distribution of haddock eggs and larvae, temperature and salinity, and the general circulation pattern in the Gulf of Maine and Georges Bank area was the purpose of Cruise 71 of the Service's research vessel Albatross III. The vessel left its home port of Woods Hole, Mass. February 20 and returned on March 2.

Operations were conducted on Georges Bank and Browns Bank, and in the Gulf of Maine. Approximately 2,000 miles of continuous plankton tows were made at the surface and 10 meters with Hardy Plankton Recorders. A total of 183 bathythermograph lowerings, 100 salinity samples, and 12 surface tows with the standard meter net were made; and 5 samples of eggs were hatched out for identification purposes. A total of 720 drift bottles were released throughout the area.

Haddock, cod and plaice eggs; herring, cod, and blenny larvae were found. Haddock eggs were found only on Northern Edge of Georges Bank along with cod. Only 2 eggs were found on Browns Bank and these were cod.



Plankton nets are used to capture samples of eggs and larvae.

North Carolina

FISHERY TRENDS, 1955: In North Carolina during 1955 landings of shrimp, menhaden, hard crabs, and bay scallops increased but those of food fish, soft crabs, hard clams, and oysters dropped as compared with 1954. The table is a summary of the North Carolina landings of fish and shellfish for 1954 and 1955 as reported by

Species	1955	1954
Shellfish:		
Oysters (bu., state) . . .	111,520	126,782
Shrimp (lbs., heads off).	5,777,300	5,202,049
Clams (bu., U.S.)	6,653	48,332
Crabs, soft (doz.)	6,402	37,971
Crabs, hard (bbls.)	76,299	43,646
Bay scallops (gal.)	7,536	5,315
Finfish:		
Food fish (lbs.)	27,472,138	32,003,874
Menhaden (lbs.)	178,602,600	136,007,500

the North Carolina Department of Conservation and Development.

Shellfish: The shrimp fishing season in North Carolina waters opened on May 11, 1955. The total catch increased over that for 1954 and a better price prevailed during the early months of the season. During August 1955

a very severe hurricane completely disrupted fishing activity for two full weeks, and in September two more hurricanes completely demolished several fish houses along the coast and damaged many others. All three storms occurred at the height of the shrimp fishing season and the catch was greatly curtailed. Prices on the whole averaged better than for the 1954 season.

The catch of hard crabs was good in 1955 and the ex-vessel prices in the spring were the highest on record. For the early spring season the price varied from 10 to 12 cents a pound, with some bringing as high as 14 cents a pound ex-vessel. The increase in price over former years was due to a severe shortage of crabs in the Hampton-Newport News area of Virginia. The Virginia market normally controls prices in North Carolina.

The soft crab production declined drastically due largely to the good market for hard crabs. During the soft crab season the price of hard crabs was at its peak. Therefore, most of the fishermen turned their attention to that fishery. Production in 1955 was only about one-sixth of that for the year 1954.



Live crabs ready for steamer.

The hard clam fishery was depressed during 1955. The severe hurricanes of the past two years apparently had an adverse effect on the production.

Oyster production dropped from 126,782 tubs in 1954 to 111,500 tubs in 1955. It is felt that most of this loss should be attributed to the three hurricanes of 1955.

The catch of bay scallops was fair. Approximately one-third more bay scallops were produced in 1955 than in 1954, and ex-vessel prices ranged from \$4.00 to \$4.50 a gallon ex-vessel.

Finfish: The alewife season in the Albemarle County area was very good from the catch standpoint. However, the price dropped from \$15.00 a thousand fish in

March to \$2.00 a thousand in April. Finally there was no market at all except for the fish-meal processing plants. This fishery was depressed due to poor demand and unless some new ways are found to process and market the fish, future marketing prospects are poor.

The year 1955 showed the highest menhaden catch since 1949. In November the fish were large with heavy oil content, but in December the fish were very small with a low oil content.

The production of other food fish was less, on the whole, than it was in 1954. Again, as in former recent years, it would seem that this was due to some extent to the fact that many fishermen turned to the more profitable shrimp fishery. The fall spot season was very poor as compared to former years, but the quality was better than for any other year in history. The mullet catch was not high as compared to other years. These last two species were no doubt affected greatly by the three disastrous hurricanes which hit in the middle of the season.



North Pacific Exploratory Fishery Program

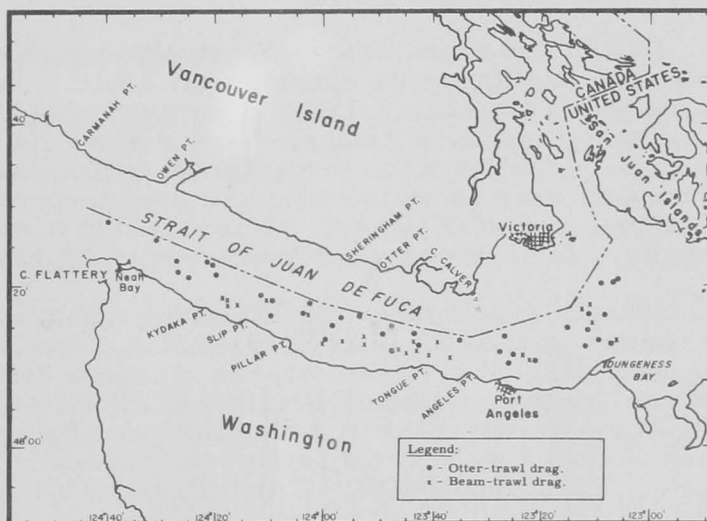
BOTTOM FISH EXPLORATION IN STRAIT OF JUAN DE FUCA BY "JOHN N. COBB" (Cruise 25): To determine the trawlability of the bottom and the species and quantities of bottom fish available to commercial fishing methods at this season were the chief objectives of Cruise 25 (February 15-March 9) of the Service's exploratory fishing vessel John N. Cobb.

Commercial species of bottom fish were found to be at a low level of abundance in the Strait of Juan De Fuca at this season of the year, according to results of this 24-day exploration. The vessel completed a total of 61 drags on the United States side of the Strait.

A total of 38 otter-trawl drags and 23 beam-trawl drags were made at depths from 44 to 149 fathoms between Cape Flattery and Dungeness Spit. Rough bottom caused considerable gear damage, as was expected, but a number of places were found with suitable trawling bottom which may be more productive at other seasons.

Most of the otter-trawl catches were predominantly scrap fish (dogfish, ratfish, skates, and turbot), totaling several thousand pounds in some drags. The largest catch was 4,500 pounds an hour. Up to 350 pounds of large ling cod and 400 pounds of true cod were taken with the otter trawl. Small numbers of rockfish, petrale sole, English sole, Dover sole, and pollock were present in the catches.

Three species of commercial shrimp--pink (Pandalus borealis), side stripe (Pandalopsis dispar), and spot (Pandalus platyceros)--were taken in the beam trawl in very small quantities. Catches ranged from 1 to 31 pounds per 1-hour drag. Stomach analysis showed that the true cod were feeding heavily on pink shrimp.



M/V John N. Cobb, Cruise 25 (February-March 1956).

Although shrimp were found to be present over the entire area covered, no apparent concentrations were found.



North Pacific Oceanographic Survey

JACK MACKEREL RANGE EXTENDED: In August 1955 oceanographic research vessels from the west coast of the United States and Canada, the Hawaiian Islands, and Japan participated in a coordinated collecting expedition over the northern Pacific Ocean (NORPAC). While some time may elapse before data collected on this expedition are completely analyzed, some interesting results are available, according to the U. S. Fish and Wildlife Service Branch of Fishery Biology.

Fish and Wildlife Service biologists state that as a result of the NORPAC expedition knowledge of the range of jack mackerel has been greatly extended. This fish is of considerable commercial importance in California. Eggs and larvae collected on this expedition indicate the species spawns as far seaward as 1,200 miles off the Oregon coast. Prior to this expedition, eggs and larvae had been routinely collected 200 to 300 miles off the California coast and on occasion about 450 miles west southwest of Point Conception, Calif. The offshore extent of routine collections and not the distribution of fish determined these distances. Since eggs and larvae had been taken at almost all of the westernmost collecting stations during the spawning season, it was obvious that the spawning area in the past extended beyond these limits. Small numbers of eggs and larvae were collected also a little farther north than in previous years.

During this expedition the Service's exploratory fishing vessel John N. Cobb obtained a similar range extension for adults. Previously known from as far north as the Queen Charlotte Islands in British Columbia, adults were taken on this expedition in the Gulf of Alaska, which is some 200 miles farther north. They extended about 500 miles to the west, almost to Kodiak Island. The westernmost adults in the Gulf were about 700 miles directly north of the eggs and larvae collected 1,200 miles west of Oregon. This extended adult distribution agrees with the spawning range extension revealed by the egg and larvae distribution.

When attempting to explain the mechanisms responsible for fluctuations in the catch of species, such as the jack mackerel, it is essential to know the full extent of its spawning range, as well as its entire range. In considering the area that must be explored to accomplish this, cooperative cruises like NORPAC are the most practicable solution. The extensive data collected in this fashion augment the knowledge of several agencies, each of which may be investigating some particular biological or physical aspect of the ocean. The advent of NORPAC indicates a trend toward such cooperative surveys.



Oysters

CANNED OYSTERS INDUSTRY STANDARDS: Oyster canners of the Gulf and Atlantic Coast areas met in New Orleans February 28 and adopted industry standards for canned oysters. The definitions adopted by formal resolution of all of the 28 canners represented at the meeting were:

(1) **Definition - Whole Oysters:** For purposes of classifying canned oysters for grading, a whole oyster shall be defined as: "Any oyster consisting of a stomach section, a portion of the eye, or adductor muscle, and a major portion of the mantle." Some mutilation and cutting shall not be considered as a bar to classification as a whole oyster.

(2) Tolerance: The term "Oysters" shall be used to describe the canned product when it contains oysters, as defined, and not more than 15 percent broken oysters (pieces of oysters) by weight.

(3) Definition - Broken Oysters: The term "Broken Oysters" shall be used to describe the canned product when it consists of broken oysters or a mixture of broken and tiny oysters.

The canners also voted that February 28, 1956, be the date for adoption of these standards; that a copy of the resolutions be sent to the Food & Drug Administration, Department of Health, Education and Welfare, Washington, D. C., and New Orleans, La.; that wide and thorough publicity be given to these standards.

In addition, the group voted that on or about June 1, 1957, a new industry-wide meeting of the oyster packers shall be called to consider the revision of present temporary oyster standards and for the adoption of permanent standards for oysters as based on additional experience gained during the coming two oyster packing seasons.



Packing oysters.



Public Eating Places Survey

REASONS FOR NOT SERVING FISH OR SHELLFISH: The preliminary results of a U. S. Fish and Wildlife Service sample survey showed that of the 23,000 out of 150,000 restaurants and cafeterias which did not serve fish or shellfish meals, almost half said there just wasn't "sufficient demand." Some 20 percent of the restaurants and cafeterias in the "no-fish" group said they served a "specialty of the house"--obviously not fish or shellfish. Another 10 percent didn't have suffi-

Table 1 - Reasons Given by Public Eating Places for Not Serving Fish or Shellfish by Type of Establishment, 1955

Reason For Not Serving Fish or Shellfish	Totals		Restaurants		Cafeterias		Restaurants or Cafeterias in Hotels		Drug or Proprietary Stores		Other ^{1/}	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
No storage space	13,309	7.0	2,157	10.3	150	22.3	64	5.2	1,746	6.6	9,192	6.5
Insufficient demand	46,196	24.4	10,366	49.4	148	22.1	532	43.4	2,244	8.6	32,906	23.4
Sell only specialty	61,676	32.5	4,421	21.1	299	44.5	104	8.5	10,030	38.2	46,822	33.3
Too much work involved	4,613	2.4	819	3.9	75	11.1	-	-	298	1.2	3,421	2.4
Can't get fish in form wanted	596	0.3	521	2.5	-	-	-	-	-	-	75	0.1
No food or meals served	51,791	27.3	-	-	-	-	-	-	10,672	40.5	41,119	29.3
Don't know how to cook and serve	223	0.1	75	0.4	-	-	-	-	-	-	148	0.1
Too costly to serve	3,409	1.8	967	4.6	-	-	-	-	223	0.8	2,219	1.6
Strong odor	898	0.5	75	0.4	-	-	79	6.5	223	0.8	521	0.4
Difficult to handle	1,422	0.7	391	1.8	-	-	-	-	-	-	1,031	0.7
Fish doesn't keep	671	0.4	298	1.4	-	-	-	-	223	0.8	150	0.1
Other reasons	3,871	2.0	671	3.2	-	-	446	36.4	669	2.5	2,085	1.5
No answer	1,041	0.6	223	1.0	-	-	-	-	-	-	818	0.6
Total serving no fish or shellfish	189,716	100.0	20,984	100.0	672	100.0	1,225	100.0	26,328	100.0	140,507	100.0

^{1/} Includes drinking places, lunch counters, and refreshment stands.

cient storage space. Less than 5 percent pointed out the difficulty of handling or cooking, keeping quality, or odor; and only 10 percent indicated "too costly" or "involved too much work."

Of approximately 35,000 drug and proprietary stores with fountain service, the survey indicated about 16,000 or 46 percent of them constitute a potential market for increasing consumption of fish and shellfish since they reported serving food other than fishery products. Of these 16,000 establishments, 64 percent indicated

"serve only specialty of the house" and 14 percent reported "insufficient demand" by the public as reasons for not serving fish meals. The more important reasons given by establishments classified as "other," consisting of drinking places, lunch counters, and refreshment stands, were "no meals served," "sold only specialty of the house," or "insufficient demand," in the order listed.

Regionally there are striking differences in the reasons for not serving fish and shellfish. Despite the closeness of establishments in the Northeast region to the source of fresh fish supply, over 40 percent of the public eating places in the region gave "insufficient demand" as the reason for not serving fish and shellfish meals in contrast to 20 percent of the establishments in the North Central, South, or West. The difference is primarily due to the high proportion (50 percent) of drinking places, lunch counters, and refreshment stands in the Northeast region, which are more likely not to serve fish in the first place.

When the establishments which do not sell fish or shellfish meals are classified according to the annual dollar volume of business, "sell only specialty" was an important reason (averaging about 35 percent) common to all. In category of eating places with sales of \$100,000 or more, only 10 percent said "insufficient demand" was the reason for not serving fish and shellfish. In establishments whose sales volume was under \$100,000, about one-third said "insufficient" was why they didn't serve fishery products.

Final results of the survey, which is being financed by funds provided by the Saltonstall-Kennedy Act of 1954, are scheduled for publication later this year. The U. S. Fish and Wildlife Service contracted with the Bureau of the Census to conduct the survey.

This study on reasons for not serving fish and shellfish in eating establishments is one part of a broader study of fish and shellfish consumption characteristics in public eating places. The findings are based on a nationwide scientific sample survey of approximately 4,500 establishments during the month of May 1955. The results were projected for the number of public eating places known to be operating in the United States.



Rhode Island

Rhode Island Fish and Shellfish Landings, 1954-55				
Principal Species	Quantity		Value	
	1955	1954	1955	1954
	.(1,000 Lbs.)		.(\$1,000)	
Fish:				
Butterfish	2,126	1,396	189	143
Cod	799	1,071	50	57
Flounders:				
Gray sole	61	132	5	11
Lemon sole	21	26	4	5
Yellowtail	1,448	1,681	155	152
Blackback	1,454	1,282	109	103
Dab	232	253	19	24
Fluke	2,152	2,374	420	388
Other	8	4	1/	1/
Haddock	320	372	17	20
Herring, sea	653	1,052	17	22
Menhaden	14,341	17,945	179	223
Scup	5,903	5,715	273	250
Sea bass	437	298	46	30
Tilfish	1,181	1,067	79	67
Whiting	3,257	2,793	72	68
Other fish:				
For food	632	993	65	129
For reduction	73,401	58,901	626	509
Total Fish	108,436	97,355	2,325	2,201
Shellfish:				
Lobsters	284	282	129	118
Clams, hard, public beds	4,949	4,495	1,913	1,701
Scallops, bay	133	32	100	28
" sea	219	62	119	27
Other shellfish	831	835	69	50
Total Shellfish	6,416	5,706	2,330	1,924
Grand Total	114,852	103,061	4,655	4,125

1/ Less than \$1,000.
Note: Mollusks (clams, conchs, oysters, and scallops) reported as pounds of meats instead of weight in shell.

FISHERY LANDINGS, 1955: Landings of fishery products in Rhode Island during 1955 amounted to almost 115 million pounds, valued at over \$4.6 million ex-vessel. This was an increase of nearly 12 million pounds (11.4 percent) in quantity and \$530,000 (12.8 percent) in value over 1954. Fish (including menhaden) for reduction and other industrial purposes (87.7 million pounds) was the leading item based on quantity and comprised 76.4 percent of the total landings in 1955. Hard clams, the most valuable single product landed in 1954 (ex-vessel value, \$1.9 million) made up 41 percent of the total ex-vessel value.

The month of May in 1955 led all other months in landings with nearly 19.7 million pounds, followed by June (15.0 million pounds), and September (15.3 million pounds).

Although the 1955/56 crop of Narragansett Bay oysters is about exhausted, future prospects for the

Oyster industry in Rhode Island are brighter than they have been for several years. The current shortage of 4- and 5-year old oysters in Narragansett Bay is largely due to damage done by hurricanes which had wreaked havoc in the leased oyster beds of the bay and in the Warren River. More damaging than any of the hurricanes was a heavy windstorm that swept across Long Island Sound in November 1950, destroying about 80 percent of the seed oysters. The 1950 loss has been felt continuously since then although there is now some optimism about the future of the industry on reports of a good 1955 "set" of seed oysters in and around Norwalk and Bridgeport, Conn.



Salmon

FIRST KNOWN ATTACK BY LAMPREY: The first known attack by a Pacific species of young lamprey on a coho salmon fingerling has been reported to the Fisheries Research Board of Canada Biological Station at Nanaimo, the Canadian Trade News (January 1956) announces.

The fingerling, about 3.5 inches long, was picked up in the Skeena River with a 6.4-inch lamprey firmly attached to it. When the lamprey was removed, a deep flesh wound was revealed.

The young coho was assumed to be on its seaward migration. Examination of the lamprey by Dr. V. D. Vladykov, of the Quebec Department of Game and Fisheries, showed it was a fresh-water species and predaceous on fishes.

This species of lamprey has been reported in British Columbia from Cultus Lake, Fraser River, and Cowichan River.



South Atlantic Exploratory Fishery Program

DEEP-WATER RED SHRIMP CAUGHT IN SOUTH ATLANTIC BY "PELICAN" (Cruise 1): The first deep-water red shrimp taken by a vessel fishing in the Atlantic off the southeastern United States were brought in to Jacksonville, Fla., by the Pelican on March 9th. The Pelican is under charter by the U. S. Fish and Wildlife Service and is carrying on a deep-water shrimp exploration program with funds provided by the Saltonstall-Kennedy Act of 1954.

The Pelican's first exploratory cruise started March 1, but weather permitted only two days of trawling at depths of 1,000 to 1,500 feet off Fort Pierce and Daytona Beach, Fla. Deep-water red shrimp were taken in 8 out of the 9 drags made in this area with exploratory nets. The Pelican will continue fishing with



Cruise 1 of the Service's exploratory fishing vessel, the Pelican.

the larger 100-foot commercial nets for the remainder of the month in this general area to determine if the small catches already made can be increased.

Although the deep-water red shrimp are not yet being fished commercially, evidence that they form an unutilized resource of considerable magnitude in the Gulf of Mexico has been shown by explorations of the U. S. Fish and Wildlife exploratory fishing vessel Oregon. Their presence off the Atlantic coast is of special interest to the fishing industry because they may be sought by specially-rigged shrimp vessels during the season when shrimp are not available in inshore waters.



U. S. Foreign Trade

FISH-OIL EXPORTS IN 1955 AGAIN AT RECORD HIGH: Fish-oil exports from the United States reached a record 71,316 short tons in 1955, an increase of about 1 percent from the previous high of 70,817 tons in 1954. Western Europe was again the largest importer of United States fish oils, although the exports to that continent were down approximately 5 percent from 1954. This decrease was due to the almost 8-percent drop in exports to the Netherlands. In contrast, exports to Canada were up about 50 percent from the previous year, states the March 5 issue of Foreign Crops and Markets of the Department of Agriculture.

U. S. Fish-Oil Exports by Country of Destination, Average 1935-39, Annual 1952-55

Country of Destination	1955 ^{1/}	1954 ^{1/2/}	1953	1952	Average 1935-39
. (Short Tons)					
NORTH AMERICA:					
Canada	11,251	7,511	2,108	488	458
Cuba	83	126	87	100	155
Mexico	81	118	114	122	45
Other	1	-	1	3	71
Total	11,416	7,755	2,310	713	729
SOUTH AMERICA:	56	148	63	38	96
EUROPE:					
Belgium-Luxembourg	1,098	-	764	8	8
France	9	-	7	149	19
Western Germany	10,503	10,481	36,155	6,232	126
Italy	106	85	28	220	15
Netherlands	40,260	43,692	8,913	11,967	15
Norway	6,140	1,102	1,606	-	10
Switzerland	646	5,797	3,115	3,140	15
United Kingdom	881	1,376	299	-	77
Other	23	27	23	43	15
Total	59,666	62,560	50,910	21,759	300
ASIA:					
Philippines, Republic of	-	233	860	546	66
Other	55	51	37	20	24
Total	55	284	897	566	90
OTHER	68	70	53	3	19
Grand Total	71,336	70,817	54,233	23,079	1,234
^{1/} Preliminary	^{2/} Revised				

SHRIMP IMPORTS, 1955: United States imports of all shrimp (fresh, frozen, canned, and dried) from all countries in 1955 reached the record total of 54.2 million pounds as compared with 41.5 million pounds for the same period in 1954. United States shrimp imports from Mexico for 1955 totaled 45.8 million pounds as compared with 34.9 million pounds for the same period in 1954.



Shrimp boats waiting for unloading or re-icing.

Mexico again was the principal supplier of shrimp to the United States. In 1955 there was a considerable increase in shrimp imports from Mexico principally because towards the latter part of the year landings on Mexico's west coast were excellent and showed a reversal of the downward trend which had been reported the past few years.

More and more countries are seeking to increase their shipments of frozen shrimp to the United States. Panama, the second most important supplier, increased its exports to the United States in 1955. Norway, Costa Rica, Japan, and Ecuador also stepped up their shrimp exports to the United States.

United States, Shrimp ^{1/} Imports (Fresh, Frozen, Canned, and Dried), 1954-55					
Country of Origin	1955	1954	Country of Origin	1955	1954
	(1,000 Lbs.)			. (1,000 Lbs.) .	
Mexico by			Peru	385	446
Customs Districts:			Iceland	49	26
New Orleans	2,683	1,317	Sweden	2	5
Galveston	-	5	India	127	112
Laredo	13,855	12,049	British Honduras . . .	-	2
El Paso	20	119	Argentina	-	528
Arizona	28,388	19,834	Spain	-	52
San Diego	612	813	Korea	-	15
Los Angeles	194	545	Netherlands	-	23
San Francisco	36	121	Turkey	10	30
Washington	-	81	West Germany	7	3
Puerto Rico	25	4	Nicaragua	8	1
Mexico Total	45,813	34,888	Denmark	6	-
Panama	4,224	3,663	Bahamas	30	-
Canal Zone	40	-	Pakistan	4	-
Norway	222	153	Surinam	3	-
Costa Rica	141	43	United Kingdom	1	-
Hong Kong	29	-	Australia	20	-
Japan	906	439	British Guiana	1	-
Canada	102	58	Italy	-	2
Cuba	70	113	Egypt	-	2
Colombia	364	391	Chile	1	-
Ecuador	1,603	548	Grand Total	54,168	41,543

(Continued in opposite column)

^{1/} Mostly frozen.

Note: Also see Commercial Fisheries Review, April 1955, p. 50.

GROUND FISH FILLET IMPORTS UP IN FEBRUARY 1956: Imports of groundfish (including ocean perch) fillets during February 1956 totaled 11.0 million pounds compared with 8.5 million pounds imported during February of last year, according to the U. S. Fish and Wildlife Service. This represents an increase of 29 percent. The gain was primarily due to a 2.5 million-pound increase in the imports of fillets from Canada. Denmark and the Netherlands also exported more groundfish fillets to this country during February 1956 than during the corresponding month of last year. Imports of Icelandic groundfish fillets during February of the current year (809 thousand pounds) were 20 percent below the 1.0 million pounds reported for the same month of 1955. Imports of fillets from Norway, the United Kingdom, and West Germany were also lower.

Canada continued to lead all other countries exporting groundfish and ocean perch fillets to the United States with 9.4 million pounds during February 1956--85 percent of the total groundfish fillet imports during the month.

Total groundfish and ocean perch fillet imports into the United States during the first two months of 1956 amounted to 26.5 million pounds compared with 21.5 million pounds during the same period of 1955. Canada, with 19.2 million pounds, led all other countries exporting fillets to this country during the above period, followed by Iceland (5.1 million pounds), and Norway (1.2 million pounds).



Washington

PACIFIC HERRING MIGRATIONS: Further evidence of the migration of herring between the State of Washington and British Columbia feeding and spawning grounds has been obtained by the Washington State Department of Fisheries from herring tagged in 1955 among the San Juan Islands and at Holmes Harbor on Whidbey Island.

A total of 33 metallic tags inserted in the body cavity of herring caught and released in 1955 have been picked up by magnetic detectors sampling British Columbia catches from the lower east coast of Vancouver Island since November 1955.

Twelve tags were from a group of 8,000 herring released between Orcas and Lopez Islands in the fall of 1955, and nine from another lot of 153 tagged November 7, 1955, off the west coast of San Juan Island.

Eleven fish of 5,000 tagged in Holmes Harbor in April, 1955, also were captured in the Canadian fishery. One showed up from 1,000 herring released March 1955 in Agate Pass, near Bremerton, Wash. The recoveries came from the general vicinity of Active Pass, about 10 miles north of Sidney, B. C.

The tagging project is part of an investigation started three years ago on Puget Sound to determine migration, spawning, and feeding habits, and in particular to define the amount of back-and-forth movement between Canadian and United States stocks of herring.

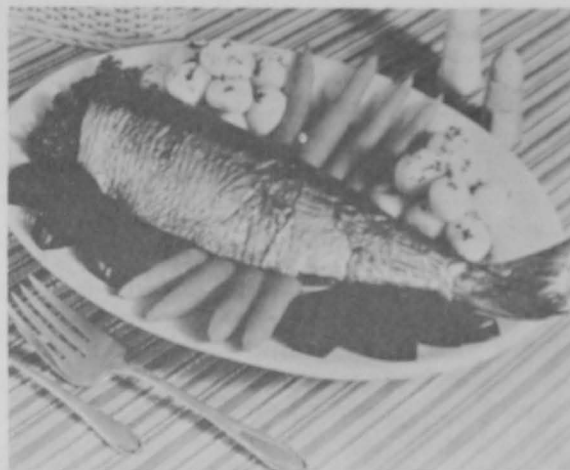


Wholesale Prices, March 1956

Changes in the over-all index for all edible fish and shellfish (fresh, frozen, and canned) between February and March 1956 were slight (113.7 percent compared with 113.1 percent of the 1947-49 average). The index for March 1956 was lower by less than one percent when compared with February 1956, but higher by 12.3 percent than for March 1955.

The very slight increase of 0.4 percent from February to March in the drawn, dressed, or whole finfish subgroup index was due to higher prices for fresh whitefish and lake trout plus a slight increase for frozen halibut. These increases were largely offset by decreases in the ex-vessel price for large haddock at Boston (index down 9.7 percent from February) and lower prices for yellow pike at New York. Compared with March 1955, the subgroup index for March 1956 was higher by about 19 percent due to a better market for all the subgroup items except yellow pike which was down 24 percent.

The fresh processed fish and shellfish subgroup index shows a decline of only 0.9 percent from February to March 1956. The decline was due to lower prices at Boston for fresh small haddock fillets (index lower by 7.7 percent) and a very



Baked shad

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1956 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/} (\$)		Indexes (1947-49=100)			
			Mar. 1956	Feb. 1955	Mar. 1956	Feb. 1955	Jan. 1955	Mar. 1955
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					113.1	113.7	122.3	100.7
Fresh & Frozen Fishery Products:					120.6	121.7	136.5	100.1
Drawn, Dressed, or Whole Finfish:					114.6	114.1	143.5	96.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.08	.09	78.5	86.9	208.2	60.3
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.32	.32	98.0	97.5	89.2	74.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.61	.60	137.6	134.3	135.4	118.0
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.82	.73	204.5	181.0	247.1	167.3
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.80	-	161.8	131.4	141.5	131.4
Lake trout, domestic, No. 1, drawn, fresh . . .	Chicago	lb.	.82	.74	168.0	150.6	131.1	138.3
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.52	.55	123.1	129.0	117.3	161.8
Processed, Fresh (Fish & Shellfish):					126.5	127.6	133.7	104.2
Fillets, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.30	.32	102.1	110.6	217.7	78.3
Shrimp, lge. (26-30 count), headless, fresh . . .	New York	lb.	.77	.77	120.9	121.7	118.5	98.0
Oysters, shucked, standards	Norfolk	gal.	5.62	5.62	139.2	139.2	136.1	117.5
Processed, Frozen (Fish & Shellfish):					112.3	116.5	117.6	96.8
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	102.1	104.7	106.0
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.29	.30	91.0	92.6	92.6	89.4
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	114.8	114.8	114.8	111.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.73	.78	113.0	119.6	121.1	85.6
Canned Fishery Products:					102.4	102.4	102.2	100.0
Salmon, pink, No. 1 tall (16 oz.), 48 can/cs. . .	Seattle	case	21.27	21.70	120.0	120.0	120.0	109.6
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	case	11.80	11.80	85.1	85.1	85.1	93.0
Sardines, Calif., tom, pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	case	7.12	7.12	83.2	83.2	81.7	85.2
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	case	8.45	8.45	89.9	89.9	89.9	76.6

^{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.

slight change downward in fresh shrimp prices. The March 1956 subgroup index was higher by 21 percent when compared with March 1955 due to higher market prices for all the items included in this group.

The processed frozen fish and shellfish subgroup index for March 1956 declined about 3.6 percent from February 1956 because of lower prices for frozen haddock fillets (down 1.7 percent) and shrimp (down 5.5 percent). The subgroup index for March 1956, when compared with March 1955, was higher by 16 percent due almost entirely to higher frozen shrimp prices in 1956. Frozen shrimp prices at Chicago in March 1956, although lower than in February 1956, were higher by 32 percent over March 1955 prices.

The canned fishery products subgroup index for March 1956 was unchanged from that of February 1956 but was 2.4 percent above that for March 1955. Both canned pink salmon and Maine sardines were priced higher in March 1956 compared with the same month in 1955, but these increases were offset by lower California sardine and tuna prices.



WORLD FISHERIES ABSTRACTS

More than 2,500 abstracts, covering every branch of fisheries technology, have now been published in World Fisheries Abstracts, a bimonthly review issued by the Fisheries Division of the Food and Agriculture Organization of the United Nations, Rome.

The periodical, which is now in its seventh year of publication, is published in three separate editions (English, French, and Spanish) and more than 200 periodicals and publications from 31 countries are regularly reviewed in it. The subjects covered include fishing boats, factoryships, fish harbors, fishing gear and methods, fish handling and preparation, packaging, processing plants, fresh and frozen fishery products, ice manufacture, salting, drying, smoking, marinating, canning and other processing methods, byproducts, seaweeds, chemical analysis, and nutritive values of fisheries products.

The abstracts, which are frequently illustrated, are printed in such a way that they may be cut out and filed for ready reference. Nearly 600 of the 2,500 cards refer to fresh and frozen fishery products, more than 400 to fishing boats, nearly 400 to fishing and methods of capture, and more than 200 each to such subjects as salting, drying, and byproducts. There are nearly 200 dealing with canning, etc., and chemical analysis and composition, while some 150 are concerned with handling and processing, and more than 100 with fish and fisheries in general.

Copies of most of the back numbers are also available. Write to the Food and Agriculture Organization, Viale delle Terme di Caracalla, Rome, for further information.