



# TRENDS AND DEVELOPMENTS

## California

1956/57 SARDINE SEASON OFF TO A GOOD START: The total catch of the sardine purse-seine fleet in Southern California through October 19 totaled 23,000 short tons, or 240 percent more than the 6,750 tons landed as of the same date in 1955. However, fishing out of San Pedro in 1955 did not start until November 7, according to a report from the Service's Market News Reporter in San Pedro.

The catch during the night of October 16, the last night of the recent series of dark nights, amounted to 5,500 tons, the best single night's fishing since the night of October 5, 1951, when 7,460 tons were caught. The big catches of October 16 were due to successful scouting by airplanes and the fact that the fleet concentrated near the huge schools located between Del Mar and La Jolla. Of the 75 vessels fishing in that area, one vessel made an all-time record catch for a San Pedro vessel of 230 tons and 27 other purse seiners had catches of over 100 tons each.

Both the fishermen and the canners seem to be satisfied with the ex-vessel price of \$47.50 a ton, and canners are willing to take all the sardines landed. Market conditions appear favorable for the canned sardine pack and present indications are that the catch for the 1956/57 fishing season may equal or exceed the 73,000 tons caught in the 1955/56 season.

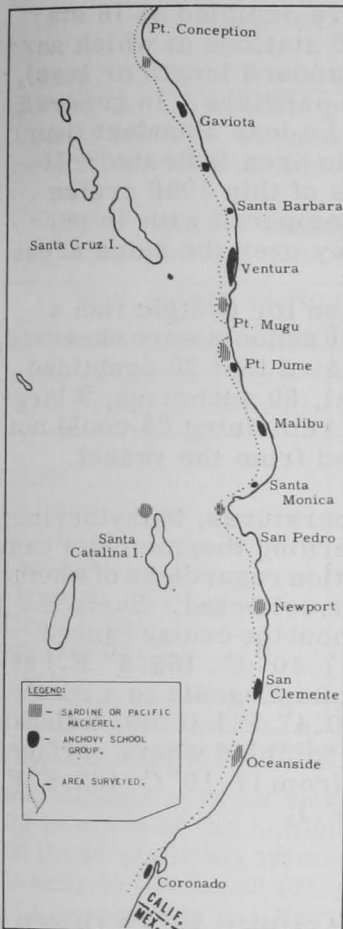
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PERIODIC FLIGHTS TO STUDY PELAGIC FISH DISTRIBUTION (Airplane Spotting Flight 56-7): In order (1) to study pelagic fish distribution, abundance, and behavior in southern California, (2) to become familiar with airplane landing fields and facilities in northern and central Baja California, and (3) to locate areas of fish concentration, the California Department of Fish and Game Cessna 1359D conducted a flight August 22-28, 1956. The inshore area between Pt. Conception, Calif., to Turtle Bay, Baja California, was surveyed.

In southern California (Pt. Conception to San Diego) Pacific mackerel and sardine schools increased in abundance in the inshore area since June 1956 and conversely anchovies decreased in abundance. Commercial fishing operations revealed the presence of sardine and Pacific mackerel schools around the offshore islands but these areas could not be covered on this flight.

Anchovy: As in June, the largest concentration of anchovies appeared in the Pt. Pitas-Ventura regions. In all areas, except near Gaviota, there was a decrease in anchovy concentration since the last flight in June. A total of 550 anchovy schools (5,818,900 square feet of fish) were observed from Gaviota to Coronado, with the largest concentration in the Pt. Pitas-Ventura region.

Sardine and Pacific Mackerel: Schools of Pacific mackerel appear to be more abundant this season than in the past several seasons. Pacific mackerel schools were observed in the Laguna, Newport, and Oceanside areas and were also reported around the offshore islands.



Airplane spotting flight 56-7  
(August 22-23, 1956)

Sardine schools were observed near Pt. Conception, Pt. Mugu, Pt. Dume, and in the Oceanside region. It is still too early to estimate comparative abundance with past seasons but it appears that the distributional pattern is remaining quite similar to that of 1955.

A total of 59 sardine schools (445,000 square feet of fish), 22 Pacific mackerel schools (124,100 square feet of fish), and 87 mixed sardine-Pacific mackerel schools (422,800 square feet of fish) were observed from Pt. Conception to Oceanside.

The purpose of the Baja California scouting was to locate areas of fish concentration and to survey airplane landing fields and facilities. No attempt was made to count and measure schools of fish observed. The section of coast between the California-Mexico border and Ensenada contained several small school groups of "flashing" fish that were probably sardines or Pacific mackerel or both. Anchovies were present in Ensenada Bay, but in fewer numbers than in June. No fish schools were seen in the area between Ensenada and Cape Colnett. The area between Cape Colnett and Sacramento



Airplane spotting flight 56-7  
(August 25-28, 1956)

Reef contained an almost continuous band of anchovy schools close to the beach. Many more anchovy schools were present in this area than previously observed in Baja California.

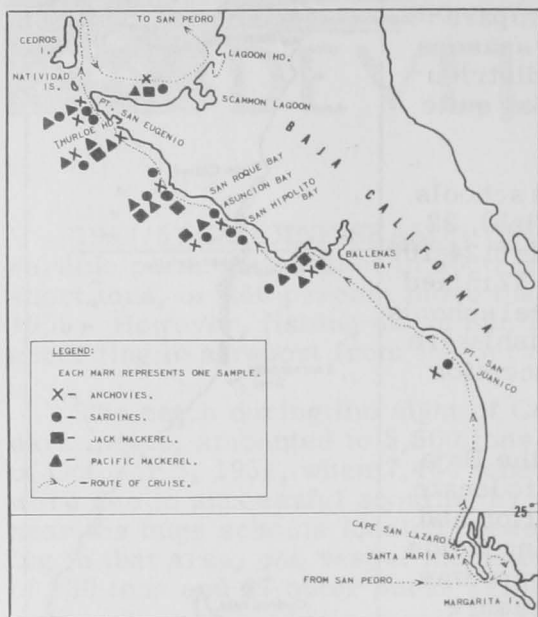
From Sacramento Reef to Lagoon Head, Sebastian Vizcaino Bay, there were several small schools scattered along the coast. These schools were probably sardines but good identification was not possible. From Lagoon Head to Pt. Eugenio many schools of sardines were observed. All these schools were small crescent-shaped surface schools.

Many small schools of unknown identity were observed in the area from Pt. Eugenio to Turtle Bay.

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SURVEY BY "N. B. SCOFIELD" TO ASSESS RELATIVE ABUNDANCE OF SARDINES (Cruise 56-S-4): This was the first of the 1956 survey cruises designed to assess the relative abundance of sardines resulting from the 1956 spawning and the relative abundance of older sardines, Pacific mackerel, and jack mackerel. Since the M/V Yellowfin has been taken out of service, this and subsequent 1956 survey cruises will be carried out by the research vessel N. B. Scofield of the California Department of Fish and Game. The vessel, which sailed July 27 and returned August 16 to Los Angeles Harbor, worked along the coast of Baja California from Point Eugenio to Magdalena Bay and the area on the east side of Cedros Island.

A total of 61 light stations were occupied. Sardines were sampled at 16 stations, Pacific mackerel at 11, jack mackerel at 6. Of the 16 stations at which sardines were taken, 14 yielded 1956 spawned fish (125 mm. standard length or less), and five yielded adult sardines. In general, sardines appeared to be less abundant than the 1955 survey of this area indicated--28 percent of all stations of this 1956 cruise yielded sardines as compared with 45 percent of the 1955 survey over the same area.



N. B. Scofield (Cruise 56-S-4), July 27-Aug. 16, 1956.

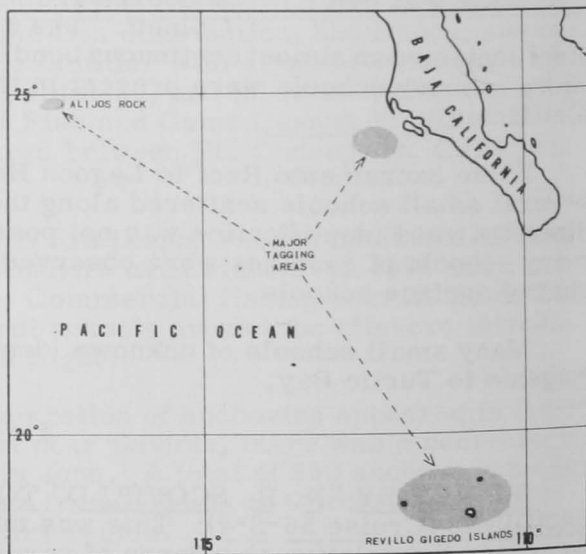
The vessel scouted for pelagic fish a total of 368 miles; 216 schools were observed, of which it was estimated that 20 contained sardines, 20 mackerel, 80 anchovies, 8 large tunalike fish, and the remaining 88 could not be positively identified from the vessel.

Sea surface temperatures, bathythermograph casts, and reversing thermometer casts were taken at each station regardless of whether fish were observed or collected. Surface temperatures throughout the cruise ranged from a minimum of 17.10° C. (62.8° F.) at two miles south of Point Eugenia to a maximum of 26.90° C. (80.4° F.) at Magdallena Bay. Sardines were sampled where surface temperatures ranged from 17.10° C. (62.8° F.) to 26.89° C. (80.4° F.).

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YELLOWFIN AND SKIPJACK TUNA TAGGED AND MEASURED BY CLIPPER "EL SINORE" (Cruise 56-C-4): Tagging and measuring yellowfin and skipjack tuna were the principal objectives of the tuna clipper Elsinore during a cruise conducted by the California Department of Fish and Game. The vessel sailed on July 21, 1956, and returned to San Diego August 18, 1956.

During this cruise 26 yellowfin and 767 skipjack tuna were tagged. To test the effect of color on recovery, tags of three different colors in sequences of five each were used. Nine night-light stations were occupied. Seven series of measurements were made of seven separate schools of tuna (six skipjack and one yellowfin tuna). A total of 43 bottles and 15 packages of frozen specimens were collected. These specimens are presently being analyzed. Limited oceanographic observations were also made.



M/V Elsinore tuna tagging (July 21 to Aug. 18, 1956).



## Canned Fish Consumer Preference Study

**TUNA MOST POPULAR CANNED FISH:** Canned tuna was served at least once during the 12 months prior to July 1, 1956, in 76 percent of all households in the United States. Canned salmon was served in 69 percent, and sardines in 50 percent of the households.

The relative ranking of these three species of fish varies somewhat among regions. Canned tuna was most popular in the West, being served in approximately

Percentage of Households Serving Canned Fishery Products, July 1955-June 1956					
Type of Canned Fishery Products Served	Regions				
	U. S. Total	North east	North Central	South	West
	. . . . . (Percent 1/). . . . .				
Tuna . . . . .	76.1	83.4	71.7	68.9	87.7
Salmon . . . . .	68.8	59.7	75.4	73.6	62.1
Sardines . . . . .	50.3	45.9	51.1	54.6	47.8
Shrimp . . . . .	24.0	26.6	19.4	15.9	46.5
Oysters . . . . .	22.5	14.2	25.3	22.5	32.6
Crab meat . . . . .	16.7	26.4	7.1	12.9	26.9
Mackerel . . . . .	10.0	5.0	9.6	17.3	4.2
Clams . . . . .	8.2	12.3	2.6	4.0	21.1
No. of Households . . .	2,770	734	805	848	383

1/ Percentages total to more than 100 because respondents served more than one product.

88 percent of the homes. Canned salmon was most frequently used in the North Central region where it was more popular than canned tuna, 75 percent to 72 percent, respectively. Canned sardines were used most often in the South where 55 percent of the housewives served them.

Canned shrimp and canned oysters were less widely distributed, with each being served in about 23 percent of the homes on a national basis. The percentage of families using both of these shellfish items was greatest in the West. The use of canned shrimp was lowest in the South (16 percent), while the serving of canned oysters was lowest (14 percent) in the Northeast.

These findings are based on a June 1956 scientific sample survey of 2,700 households distributed throughout the United States. These data on percentage of households serving various kinds of canned fish and shellfish are one part of a large amount of other data obtained on household consumers' preferences for canned fish and shellfish.

Final results of the survey, which is being financed by funds made available by the Saltonstall-Kennedy Act of 1954, are scheduled for publication the early part of 1957. The U. S. Fish and Wildlife Service contracted with the W. R. Simmons and Associates Research, Inc., of New York City to conduct the survey.

Note: Also see Commercial Fisheries Review, August 1956, p. 47.

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**CANNED TUNA PACKED IN OIL PREFERRED BY HOUSEWIVES:** At least nine out of every ten housewives (91 percent) in the United States who buy canned tuna usually purchase tuna packed in oil. Approximately seven percent buy tuna packed in brine and two percent are not aware which type they usually purchase.

A large majority (88 percent) of those housewives who served tuna indicated they had never tasted canned tuna in brine although it has been rather widely distributed in recent years. When asked "If the price were the same for canned tuna packed in oil or in brine, which one would you buy?" sixty-six percent indicated tuna in oil and seven percent indicated tuna in brine. Another twenty-seven percent were not sure which they would prefer. Even though the latter undecided group appears to be housewives usually buying canned tuna-in-oil, a substantial majority of housewives using canned tuna-in-oil desire that product exclusively.



This conclusion is based on opinions given in this survey and is not the result of actual product testing.

The preference for tuna in oil was highest in the West and South and diminished slightly in the Northeast and North Central regions.

These findings are based on a June 1956 scientific sample survey of 2,700 households distributed throughout the United States. This study of type of pack preferences for canned tuna is one part of a broader study of household consumers' preferences for all canned fish and shellfish.

Final results of the survey, which is being financed by funds made available by the Saltonstall-Kennedy Act of 1954 to help the domestic fishing industry increase the demand for fishery products, are scheduled for publication the early part of next year. The U. S. Fish and Wildlife Service contracted with W. R. Simmons and Associates Research, Inc., of New York City to conduct the survey.

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CANNED SARDINES PURCHASED TWO OR MORE CANS AT A TIME: Eight out of ten housewives who purchase canned sardines buy two or more cans at a time. More than 33 percent of the housewives usually purchase two cans. Another 20 percent indicate that they usually buy in units of three. These findings are based on a scientific sample survey of household consumers' preferences for canned fish and shellfish conducted in June 1956 among 2,700 households distributed throughout the United States.



The large number of purchases (81 percent) of more than one can of sardines at a time may be due partially to the pricing policy of retail stores and other factors. No attempt was made in this study to ascertain the effect of such factors on the purchasing pattern.

The tendency toward two-can purchases was almost consistently reported throughout the four geographic regions of the United States.

Table 1 - Percentage of Homemakers Purchasing Canned Sardines, by Number of Cans Purchased at One Time and by Regions

	Regions				
	U. S. Total	North-east	North Central	South	West
	(Percent)				
<u>Number of Cans:</u>					
One can.....	19.3	19.3	20.3	14.2	29.7
Two cans.....	33.4	40.1	31.8	30.2	33.0
Three cans.....	20.2	17.8	24.1	21.4	13.2
Four cans.....	12.4	11.7	10.4	14.9	11.5
Five or more cans.....	13.0	9.9	12.4	17.3	9.3
Don't know.....	1.7	1.2	1.0	2.0	3.3
Total.....	100.0	100.0	100.0	100.0	100.0
Weighted base (number of households which served canned sardines within the last 12 months).....	(1,394)	(337)	(411)	(463)	(183)

Information on the purchasing habits of homemakers may serve as a basis for packaging cans of sardines in handy containers holding more than one can.

This study on sardine purchasing practices is one part of a broader study of household consumers' preferences for canned fish and shellfish. Final results of the survey, which is being financed by funds made available by the Saltonstall-Kennedy Act of 1954, are scheduled for publication the early part of next year. The U. S. Fish and Wildlife Service contracted with W. R. Simmons and Associates Research, Inc., of New York City to conduct the survey.

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**DEVEINED CANNED SHRIMP PREFERRED BY CONSUMERS:** Shrimp which has been peeled and deveined before canning is preferred by a majority of the consumers who buy canned shrimp, according to a recent scientific sample survey of 2,700 households in the United States. Of the housewives that usually buy shrimp, 59 percent buy the peeled and deveined canned shrimp, while only 32 percent buy the regular peeled but not deveined pack. The remaining 9 percent either had no preference or did not know the type of canned shrimp they usually purchase.

Table 1 - Percentage of Consumer Purchases of Canned Shrimp by Area and Type of Pack

	Regions				
	U.S. Total	North-east	North Central	South	West
Number of Households .....	664	195	156	135	178
	..... (Percent) .....				
Households serving canned shrimp within last 12 months .....	100.0	100.0	100.0	100.0	100.0
Type of Pack Purchased:					
Cleaned (deveined) .....	59.4	68.3	64.5	49.3	53.4
Regular (not deveined) .....	31.6	24.3	28.4	34.3	39.8
No preference .....	5.0	6.8	2.6	8.2	2.8
Don't know .....	4.0	0.6	4.5	8.2	4.0


On a regional basis, the preference for deveined shrimp was most pronounced in the Northeast Area where it was preferred by more than 2 out of every 3 users of canned shrimp.

This study on consumers' preferences for canned shrimp is one part of a more general study on household consumers' preferences for canned fish and shellfish conducted in June 1956.

Final results of the survey, which is being financed by funds made available by the Saltonstall-Kennedy Act of 1954, are scheduled for publication the early part of next year. The U. S. Fish and Wildlife Service contracted with W. R. Simmons and Associates Research, Inc., of New York City to conduct the survey.



## Cans--Shipments for Fishery Products, January-July 1956



Total shipments of metal cans during January-July amounted to 65,120 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 55,195 tons in the same period of 1955. The increase in this year's shipments is due largely to the heavier pack of canned tuna as compared with the January-July 1955 period (when production was curtailed due to oversupply) and also the increase in the pack of Maine sardines.

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.



## Customs Simplification Act of 1956 Analyzed

The third customs simplification bill (H. R. 6040) was signed by the President on August 2. It will be known as the Customs Simplification Act of 1956 (Public Law 927, 84th Congress). A short analysis of the new law as it appeared in the August 13 Foreign Commerce Weekly follows:

The principal change embodied in this act is in the method of determining the value of the imported goods which are subject to ad valorem duties. In general, the primary basis for determining their dutiable valuation is to be the "export value" of goods. This is to replace the present system, which calls for ascertaining the "foreign value" of the product in question--the price at which it is sold in the country of origin--as well as the "export value," and for the duty to be calculated upon the higher of the two.

Under the amended form of the bill as finally enacted, however, the new system is not to apply to that small fraction of ad valorem imports on which the Treasury finds that the dutiable value would be reduced by 5 percent or more. Consequently, the new valuation provision does not come into effect for any imports until a final list of those exceptional articles is established.

The Bureau of Customs at Washington has started work on a preliminary list of those articles the dutiable value of which would be reduced by 5 percent or more. That list will be published in the Federal Register and in the Weekly Treasury Decisions. Interested businessmen then will have

60 days to suggest reasons for their belief that specified additions should be made to the preliminary list, which will be investigated by Treasury before the final list of exceptions is issued.

For goods subject to ad valorem duties other than those included on the final list of exceptions, the general change in the basis of valuation is to become effective on entries for consumption beginning the thirtieth day following the publication of that final list.

Other than dutiable valuation, the only change of direct commercial interest is with regard to conversion of a foreign currency into U. S. dollars for customs purposes. In general, the Secretary of the Treasury is authorized to use for the entire quarter of a year that rate of exchange which is first certified for that quarter by the Federal Reserve Bank of New York, unless the rate on any particular day varies from that certified rate by more than 5 percent.

Most of the act's other sections deal with obsolete provisions of customs law which the Treasury regarded desirable to have repealed.



## Federal Aid Funds Apportioned to States for Sport Fish and Wildlife Restoration Work

State programs to restore and develop the sport fishery and wildlife resources in the 48 states will move at an accelerated pace during fiscal year 1957 with a foundation of \$21,062,000 in Federal aid funds, the Secretary of the Interior announced October 7, 1956. This is about \$2 million more than in 1956.



On the basis of one dollar from the state for every three of Federal funds, \$28,083,000 will be available to state conservation departments for their restoration programs during fiscal year 1957.

The combined Federal Aid in Fish and Wildlife Restoration program is administered by the Fish and Wildlife Service under the terms of the Pittman-Robertson Act for wildlife and the Dingell-Johnson Act for sport fishing. As prescribed in the two Acts, investments are made in restoration activities so that benefits will go to the hunters and anglers who seek recreation and food from the Nation's fields and streams.

This year the various state fish and game departments will receive \$16,236,000 for their wildlife restoration projects and \$4,826,000 for their sport fishery activities.

The amount available for sport fishery projects represents a drop of \$101,400 below the 1956 total of \$4,927,400.

The revenue for the Federal share of the sport-fish restoration program comes from the 10-percent excise tax on fishing rods, creels, reels, artificial lures, baits, and flies, paid by the manufacturers of these products. Collections from this source during the year ended June 30, 1956, amounted to \$5,149,918. From this total is taken the annual apportionments of \$75,000 to Alaska, \$25,000 to Hawaii, \$10,000 each to Puerto Rico and the Virgin Islands, and the cost of administering the Act by the U. S. Fish and Wildlife Service.



## Federal Purchases of Fishery Products

### PORTIONS INCLUDED IN FRESH OR FROZEN FISH FEDERAL SPECIFICATION:

The Army Quartermaster Corps has announced a revision, effective October 1, 1956, of Federal Specification PP-F-381d "Fish; Fresh (Chilled) and Frozen," to include formed fish portions as an item for purchase by the Armed Forces.

The revision may well result in an expansion of production by the domestic fish fillet block industry to supply the 4 $\frac{3}{4}$ -ounce (3 inches by 3 $\frac{3}{4}$  inch) portions now allowed for purchase. In the announcement of the specification revision the Quartermaster Corps stated that on any contracts awarded for fish portions, the contractor agrees that there will be delivered only such unmanufactured articles, materials and supplies as have been mined or produced in the United States, and only such manufactured supplies as have been manufactured in the United States substantially all from supplies mined, produced or manufactured, as the case may be, in the United States.

Though the specifications require the size portions indicated for use by the Armed Forces, the domestic fish block producer can supply sizes suited to other specific needs. For example, school-lunch (Type A) portions usually contain two ounces of cooked fish protein. Institutional purchasers of fish portions usually specify that the product be four ounces in weight.

The following is a quotation from the notice of revision:

"When F.S. PP-F-381d, "Fish; Fresh (Chilled) and Frozen," 3 Sept 54, is cited in this contract, the following changes to the specification will apply:

(1) Page 1, paragraph 1.3 add the following:  
Form VI - Portions."

(2) Page 4. Add the following paragraph:  
"3.3.2.6. Form VI. - Portions shall be prepared from fresh skinless fish fillets handled in the applicable manner specified in 3.3.1 and 3.3.2. The skinless fillets shall be formed into: (a) portions measuring 3 by 3 $\frac{3}{4}$  by  $\frac{3}{4}$  inches (approximately 4 $\frac{3}{4}$  ounces) or (b) into portioned blocks measuring

Apportionments of Federal Aid Funds to States for Sport Fishing and Wildlife, Fiscal Year 1957

State	Sport Fishing	Wildlife
Alabama	\$ 66,666.23	\$287,788.29
Arizona	84,628.46	361,637.73
Arkansas	91,850.01	277,294.93
California	241,300.00	777,565.54
Colorado	113,759.81	485,842.98
Connecticut	48,260.00	81,180.00
Delaware	48,260.00	81,180.00
Florida	94,200.28	227,370.97
Georgia	101,101.06	401,083.13
Idaho	84,885.44	330,805.48
Illinois	170,857.14	446,687.62
Indiana	118,403.23	355,643.56
Iowa	96,156.64	351,096.20
Kansas	79,415.49	326,022.58
Kentucky	86,116.99	252,880.49
Louisiana	62,360.98	268,480.05
Maine	52,533.56	189,789.26
Maryland	48,260.00	108,447.85
Massachusetts	48,260.00	90,494.35
Michigan	241,300.00	811,800.00
Minnesota	241,300.00	507,335.81
Mississippi	52,494.07	239,533.43
Missouri	131,570.42	369,988.96
Montana	114,342.85	494,980.53
Nebraska	78,841.23	308,928.94
Nevada	68,888.10	315,453.71
New Hampshire	48,260.00	81,180.00
New Jersey	48,260.00	121,636.01
New Mexico	81,346.07	371,304.37
New York	157,763.52	670,174.92
North Carolina	82,053.76	339,320.34
North Dakota	50,859.24	248,832.20
Ohio	162,996.28	475,076.23
Oklahoma	103,394.13	287,483.11
Oregon	103,599.65	410,673.56
Pennsylvania	141,976.16	638,190.89
Rhode Island	48,260.00	81,180.00
South Carolina	69,354.44	174,306.71
South Dakota	63,949.04	303,717.90
Tennessee	140,219.71	355,843.83
Texas	220,773.17	811,800.00
Utah	73,599.13	322,936.60
Vermont	48,260.00	81,180.00
Virginia	81,849.34	325,287.43
Washington	97,344.46	349,256.80
West Virginia	48,260.00	213,517.95
Wisconsin	207,390.99	486,128.61
Wyoming	80,218.92	337,660.15



9 by 3 1/4 by 3/4 inches and scored on the top and bottom surfaces into 3 equal portions of the length (every 3 inches), or other sizes or portions or portioned blocks as specified. In the frozen portioned block, the portions shall remain attached at the location of the score by the remaining attached strip (about 1/8-inch thick) of frozen fish so that the portions can be easily separated by bending the blocks. The portions shall be handled and processed in such a manner that they will effect a solid piece of fish flesh, and the pieces of fish comprising the portions will not fall apart or disintegrate when cut, thawed, or cooked."

(3) Page 9. Add the following paragraph:  
"7.2.4.3. Form VI, Portions. Portions of portioned blocks shall be wrapped in approximately 1-, 5-, or 10-pound units. The product shall be completely wrapped in a prefabricated bag. When

more than 1 portion or portioned block is inclosed in the bag, the layers shall be separated by a wax paper insert. The wrapper shall be processed by vacuum, pressure, or heat, or a combination of these conditions so that the wrapper forms a tight, close fit conforming to the surface of the product. The bag shall be string-tied, heat-sealed, secured with pressure-sensitive tape, or closed with suitable metal clips. The bag shall be made of one of the following materials: (a) Polyethylene, not less than .0015 inch thick and having an area yield of not more than 21,500 square inches per pound, (b) A film formed by copolymerizing vinylidene chloride and vinyl chloride. The film shall be not less than .0015 inch thick. For domestic shipment, the packaged product shall be packed in accordance with 5.2. For overseas shipment, not more than 60 pounds of the product shall be packed in accordance with 7.2.5.2."

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FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY THE DEPARTMENT OF DEFENSE, AUGUST 1956: The Army Quartermaster Corps in August

QUANTITY				VALUE			
August		Jan.-Aug.		August		Jan.-Aug.	
1956	1955	1956	1955	1956	1955	1956	1955
..... (1,000 Lbs.) .....		..... (\$1,000) .....					
2,860	2,322	18,275	17,458	1,403	1,030	9,108	7,470

1956 purchased 2,860,000 pounds (value \$1,403,000) of fresh and frozen fishery products for the use of U. S. Army, Navy, Marine Corps, and Air Force. This was 10.2 percent less in quantity and 15.1 percent less in value than the purchases in July 1956

and 23.2 percent more in quantity and 36.3 more in value than purchases in August 1955.

Purchases of fresh and frozen fishery products during the first eight months of 1956 totaled 18,275,000 pounds valued at \$9,108,000--4.7 percent more in quantity and 21.9 percent more in value than purchases for the similar period in 1955.

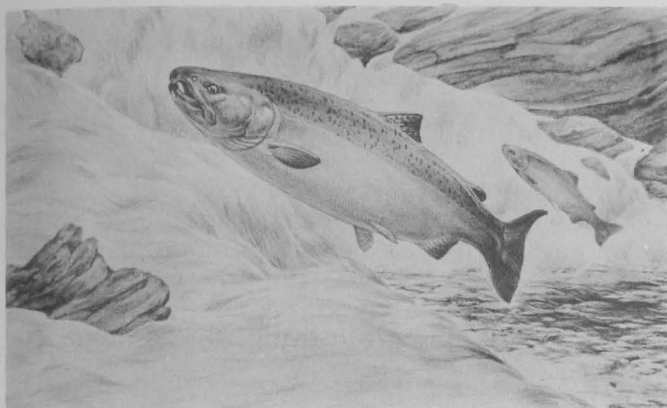
Prices paid for these fishery products by the Department of Defense in August averaged 49.1 cents a pound as compared with 50.7 cents the previous months and 44.3 cents a pound in August 1955.

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



Fish and Wildlife Motif on United States Postage Stamps

The third and last (king salmon) of three stamps issued this year to emphasize the importance of wildlife conservation in America was released at Seattle, Wash., on November 9, 1956.



The original drawing which was used for the king salmon 3-cent stamp.

horizontally with a single outline frame, printed by the rotary process, electric-eye perforated, and issued in sheets of 50. The color of the stamp is green. The printing of 120,000,000 3-cent king salmon stamps was authorized.

The design depicts king salmon on their annual migration upstream to the spawning ground.



## Fish and Wildlife Service

RESEARCH HELPS BRING TOP-QUALITY FISH CLOSER TO CONSUMER'S TABLE: Through research the U. S. Fish and Wildlife Service is pointing up new market goals for the fishing industry, and through technology it is showing ways to move more efficiently ocean-fresh fish to the consumer's table.

Among the possible marketing goals which Service efforts are bringing into focus for the fishing industry are such things as:

A total of 182,000 eating places which do not now serve fish or shellfish;

"Inland U. S. A." where the per capita fish consumption is well below the sea-board average;

The more than 10,000 frozen-food locker plants in the country, many of which do not have fish among the products available for locker customers;

A large but yet indefinite field of in-plant eating places (such as cafeterias in big assembly plants) which is now being studied;

The field of public institutions which is now being studied to determine which ones offer good markets for fish, and the school-lunch program which the Fish and Wildlife Service has aided for years to the mutual betterment of the school child and the industry;

And the largest field of all, the millions of American housewives who daily plan the meals for the family--a field rich in possibilities for greater sales of fish and fish products and a field which is now being given serious and scientific study by the Fish and Wildlife Service.

In technological studies the Fish and Wildlife Service has gone far in showing the industry how fish can be delivered virtually only "hours old" to the customer.

These studies are practically following the fish from the water to the table--on shipboard, in ship storage, in transit, in land storage, and right up to sales display.

The initial step in getting high-quality fish or fish products to the customer begins the minute the fish are taken out of the water, Fish and Wildlife Service technicians say.

Important questions which have been studied include freezing methods, ability of various species of fish to retain flavor and freshness during periods of refrigeration, the effect of breaching upon freezing, the use of protective coverings to insure freshness in frozen fish, the development of "quality standards," and the search now in progress for the "flavor component," that intangible thing which makes fish taste like fish instead of something else.

Success in these programs, figuratively, brings the consumer--regardless of where he is--closer to the water's edge and make it possible to supply him with a product which meets the test of comparison with a fish just taken from its native waters.

One phase of the broad research program is to determine how the merchandising methods of the Nation's 413,000 retail fish products markets measure up to the consumer preference, and there are many facets of both merchandising and preference.

One approach which the Service has taken relates to packaging and portions. If the study of fish portions served in restaurants and other public eating places leads to packaging fresh or frozen fish on an acceptable portion basis, those of the 182,000 restaurants which have deferred serving fish because of handling difficulties might well become a steady market for portion-packaged fillets and other fish products.

To get the data on household consumers' food tastes and buying habits, housewives are being interviewed to determine the factors influencing the use or nonuse of the various species and kinds of canned fish and shellfish.

Studies are also being made of the size of package the housewife wants, her preference on species, and the availability of that species at the time she wants it.

Surveys on easy-to-prepare fish products such as breaded fish sticks or breaded shrimp have shown that the young housewife is more readily attracted to that type of a commodity; that the city dweller is a better customer than his rural cousin; that there is a relationship between the sales of these items and the salary brackets of the citizens, with low-salary families buying them lightly; and furthermore the surveys show that the majority of folks who use these products once become steady customers afterward.

But experience has shown that the customer insists upon uniformly good quality and that if the supply does not meet this particular preference sales are not made. To help the industry meet this quality demand by customers and to help the customers get the product they desire, the Fish and Wildlife Service, through technological studies, has been a leading force in the establishment of "quality standards."

The most recent step in that direction is the establishment of a program for the development of voluntary Federal standards for grades. Although the first standards, those for fish sticks, have been available for use only since August 21, 1956, several fish products companies have adopted these voluntary Federal standards in reply to the consumers' refusal to purchase products below satisfactory quality levels.

Next in the order of expected issuance will be standards for fish blocks (the raw material from which fish sticks are made), for such portion-control-type products as breaded fish squares and breaded shrimp; and frozen fillets of cod, haddock, and ocean perch. These standards will serve as yardsticks for the evaluation of quality for those products offered to the consumer.

In other words the Fish and Wildlife Service is studying or has studied most of the important steps between the fishermen's net and the consumer's table. It is blazing out a trail, so to speak, by setting up techniques whereby the industry can deliver to the consumer the freshest and most flavorful fish product. It is helping the consumer get the product he wants by finding out what he wants and passing that information along to the industry. Finally, it is determining guidelines of quality through which the industry and the consumer share a common confidence.



## "Fish Parade" Promotion by Industry Backed by Interior Department

The "Fish Parade," which is the fishing industry's designation of its 1956 National Fish Week, October 29 to November 2, had the support of the U. S. Department of the Interior. Among the many features of the "Fish Parade" program was the "Shrimp Fiesta" which began October 15 and ended November 3.



The goal of the fishing industry was to develop an increased fall selling season when inventories are normally at their peak. Historically, the big selling season for fishery products occurs during Lent each year.

Because fish is one of the most valuable of protein foods, the All-Industry Fish Week Committee decided that a fall drive to increase the use of fish and shellfish would be beneficial to the industry and the consumer alike.

The 1956 drive for a big fall selling season was described by industry spokesmen as the most ambitious coordinated sales effort ever attempted by the fishing industry in this country. Not only were practically all segments of the American fisheries engaged in the drive, but wholesalers, distributors, and retailers throughout the Nation joined in the effort to make the fall sales campaign the most successful in history. Many State and local officials also join in the drive.

In pledging the support of the Department of the Interior to the industry's sales effort, Fish and Wildlife Service Director John Farley said:

"The fishing industry is important to the national health, safety, and interest. It renders valuable service to the people of this country by providing a large proportion of the Nation's food supply, as well as large quantities of meal for the feeding of livestock and of fish oils and fish liver oils for food, medical, and industrial uses.



"During 1955, 4.6 billion pounds of fish were produced in the United States and Alaska. Of this approximately 56 percent was used as food and 44 percent was used in the manufacture of byproducts or as bait. From these data it can be seen that fishery products are an important source of the Nation's supply of animal protein.

"The Department of the Interior, through the Fish and Wildlife Service, has a direct responsibility to the fishing industry and to the people of this country. Therefore, not only do I gladly pledge support to this magnificent effort but I also say very proudly that the Department of the Interior does not confine its efforts to one week in the year but that it works diligently in this field, through research, education, market promotion, and otherwise every week in the year. And I do not hesitate to add that we will endeavor to do even more for the fishing industry and the consumers in the future than we have done in the past."



## Florida

**AIRBOAT GILL-NETTING:** Airboat gill-netting in Lake Okeechobee is a new twist in an old fishery. An enterprising mullet fisherman at Okeechobee reasoned that rowing around a school of mullet was too slow and difficult and decided to speed up the operation.

To expedite the plan, a three-foot extension was built on the stern of an airboat hull to house a 220-yard gill net (see fig. 1). The airboat, powered by a 100-horsepower Lycoming aircraft engine, is capable of speeds in excess of 40 miles an hour. The aluminum hull is 15 feet long with a 5-foot beam. The steering mechanism consists of a pair of air rudders behind the propeller and is operated by the driver with a connecting steering stick. The driver steers the boat while sitting in an elevated bucket seat. This is particularly advantageous since schools of fish are more easily seen from this height.

The net is customarily set at full speed. When a school of fish is located, the captain maneuvers into a desired position and a two-pound net anchor is cast overboard. The net anchor is attached to the lead and cork lines of the gill net.

The drag of the anchor pulls the net from the compartment as the boat circles the school. After the boat completes the circle, the fishermen retrieve the net, stowing it in the compartment. In retrieving the net the enclosure becomes smaller, forcing the fish to strike the wall of mesh, thus becoming entangled. The fish are removed by hand and placed in boxes aft of the driver's seat. This operation takes from 30 minutes to one hour, depending on the amount of fish caught.

The net is a typical mullet runaround gill net, 200 yards long, 24 meshes deep,  $4\frac{1}{4}$ -inch stretched mesh, and No. 6 nylon twine. The nylon material takes a minimum of storage space and requires little maintenance.

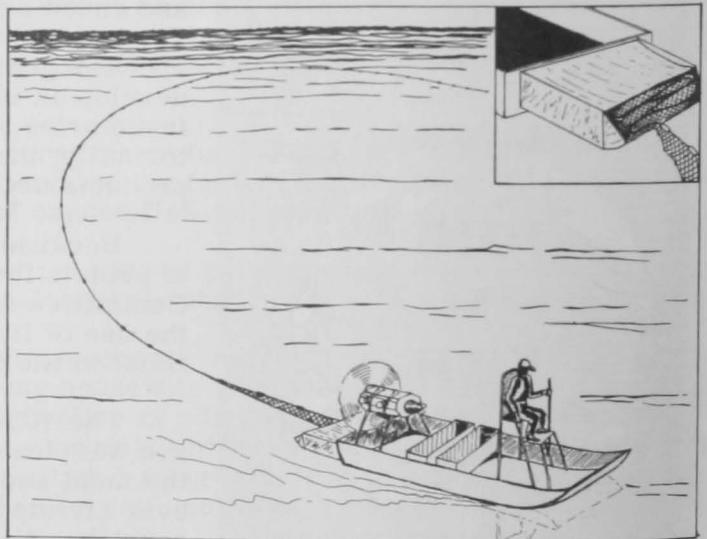


Fig. 1 - Striking run-around gill net from speeding airboat (Inset shows airboat extension with net being set.)



Fig. 2 - Airboat with gill net adaption mounted on trailer for transporting to various fishing grounds.



Fig. 3 - Airboat used in run-around gill-net operation showing extension on stern for net storage.

Other applications of this unique fishing method have not been explored.

--Billy F. Greer & Donald T. Montgomery,  
Fishery Marketing Specialists, Statistical  
Section, Branch of Commercial Fisheries,  
U. S. Fish and Wildlife Service,  
Coral Gables, Fla.



## Fur-Seal Skins

PRICES CLIMB AT GOVERNMENT FALL AUCTION: An increase of 6.3 per cent in prices of United States fur-seal skins marked the semiannual auction of Government-owned furs at St. Louis on October 5, the Secretary of the Interior announced October 14, 1956.



Fur buyers examining fur seal skins prior to auction.

A total of 26,890 skins, products of the sealing industry administered by the Department of the Interior's Fish and Wildlife Service on the Pribilof Islands, brought \$2,714,852. This compares with 27,017 skins sold for \$2,519,994 at the April 17 sale. The grand average for all skins sold for the account of the United States Government was \$100.96; at the April sale it was \$93.27.

The grand average at the October 1955 sale was \$94.14.

The sale was well attended by United States, Canadian, and European buyers who commented favorably on the quality of the skins offered. Bidding was spirited because few skins are in the hands of dealers at the present time.

Of the Alaska skins, 17,555 were dyed "Matara" (brown), 419 were "Safari" brown (a lighter brown), and 8,916 were blacks. The Matara skins brought an average of \$97.26, an increase of 5.5 percent over the April auction. The Safari skins sold for an average of \$76.81, an increase of 18.3 percent. The black skins averaged \$109.38, an upward change of 7.25 percent over the April price of \$103.18.

In addition to the United States skins, 3,699 Cape of Good Hope fur-seal skins were sold for the account of the Government of the Union of South Africa at an average of \$34.33, an increase of 20.1 percent from the last sale. A total of 414 Uruguay fur-seal skins were sold for the Government of Uruguay at an average of \$48.78, a slight increase over the April price of \$45.12.

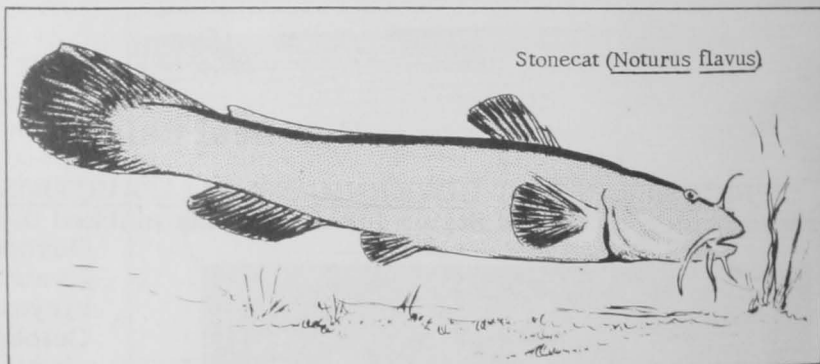
Prior to the auction an announcement was made that the Pribilof Island fur seal take for 1956 would amount to approximately 122,000 skins.

The next auction is scheduled tentatively for April 5, 1957, at which time the normal quota of United States skins to be offered for sale will be increased by about 3,000.



## Great Lakes Fishery Investigations

M/V "CISCO" TRIES TO LOCATE SUMMER GROUNDS OF WALLEYE IN LAKE HURON (Cruise 5): An attempt to locate summer grounds of the walleye (*Stizostedion vitreum vitreum*) outside of Saginaw Bay proper was the principal mission of Cruise 5 (August 21-September 2, 1956) of the M/V Cisco, the research vessel of the Service's Great Lakes Fishery Investigations. This cruise, like Cruise 3, was confined to Saginaw Bay and immediately adjacent waters in Lake Huron.



Stonecat (*Noturus flavus*)

Nylon gill nets (mesh sizes  $2\frac{1}{4}$ ,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3, and 4 inches) were set off Harbor Beach and Grindstone City in 7 to 10 fathoms of water. It is believed that some of the walleye present in the lower end of the Bay during spawning season spread into Lake Huron proper at other seasons. Eight walleye were taken off Harbor Beach and 2 off Grindstone City. Several white suckers (*Catostomus commersoni*), long-nose suckers (*Catostomus catostomus*), and yellow perch (*Perca flavescens*) were caught in both nets. In addition, the nets off Grindstone City took 10 stonecat (*Noturus flavus*).

Nets of  $2\frac{1}{2}$ -inch mesh were set obliquely from surface to bottom in 26 fathoms and 13 fathoms off East Tawas. A set of  $3\frac{1}{2}$ -inch mesh gill net was also made at 13 fathoms. The  $3\frac{1}{2}$ -inch net took 20 white suckers, all but one at or just above the bottom. Sixteen white suckers, 2 longnose suckers, and 4 yellow perch were caught in the shallow  $2\frac{1}{2}$ -inch set, practically all near the bottom. A lone perch at midlevel represented the total catch in the deep set.

A bull net (300 feet long, 120 meshes deep,  $2\frac{1}{2}$ -inch mesh) was set over a 34-fathom bottom with the float line just at the bottom of the thermocline (60 feet). Two lake herring (*Leucichthys artedi*), 6 longjaws (*Leucichthys alpenae*), and 2 smelt (*Osmerus mordax*) were caught in this net.

Much difficulty was encountered in trawling operations this cruise. Trawls were repeatedly damaged and two of them were badly torn. In addition, on several occasions the nets became heavily loaded with mud. In the few successful hauls completed, only small numbers of perch, smelt, and forage fish were taken.

Seine collections were made in two locations along the northwest shore and two areas along the southeast shore of Saginaw Bay. It was hoped that walleye fingerlings could be located, but none were found. However, fingerlings of perch, large-mouth black bass (Micropterus salmoides), smallmouth black bass (Micropterus dolomieu), black crappies (Pomoxis nigro-maculatus), and bluegill (Lepomis macrochirus) were taken.

Hydrographic transects were run from Bay City to East Tawas, East Tawas to Harbor Beach, East Tawas to Oak Point, and Hat Point to Au Sable Point. Surface water temperatures were nearly constant over the area covered, ranging mostly from 18 to 20° C. (64.4-68° F.). A low of 16.8° C. (62.2° F.) was recorded in Lake Huron, and a high of 23.2° C. (73.8° F.) was recorded near the mouth of the Saginaw River in Saginaw Bay. The epilimnion is thick in deeper water, ranging from 60 to 90 feet between upper and lower limits.

An all-night study of the vertical migration of Mysis relicta was made in 55 fathoms in mid-southern Lake Huron. A photometer was used to study light conditions from the time the organisms migrated up in the evening until they moved down in the morning.

\* \* \* \* \*

LAKE HURON INVESTIGATIONS CONTINUED BY M/V "CISCO" (Cruise 6): Saginaw Bay and part of southern Lake Huron was the area where the Service's research vessel Cisco operated during Cruise 6 (September 11-24, 1956).

The usual oblique sets of gill nets were made off East Tawas in 13 and 26 fathoms, but the deeper set was of no value since the gang was dragged 5 miles by strong currents before it was recovered. A single bloater (Leucichthys hoyi) represented the total catch in the shallow gang, which was lifted before the current had moved it.

Two bull nets (each 300 feet long and 120 meshes deep) were set in 33 fathoms off East Tawas, one on the bottom and the other with its float line in the thermocline and its lead line just below the thermocline. The bottom net contained 117 bloaters, 125 Leucichthys alpenae, 4 L. reighardi, and 57 smelt. The midwater set caught 2 bloaters, 36 L. alpenae, 1 L. reighardi, 5 smelt, and 2 alewives. Thus it appears that L. alpenae move up to midlevels more than do L. hoyi.

Since several days were lost to weather, trawling was done only in one area. Drags in 6 to 8 fathoms off East Tawas produced mostly perch (Perca flavescens) and small alewives (Pomolobus pseudoharengus).

Nylon gill nets containing 300 feet each of 2-, 2 $\frac{1}{4}$ -, 2 $\frac{1}{2}$ -, 2 $\frac{3}{4}$ -, 3-, and 4-inch mesh were set in 25 fathoms off Harbor Beach and in 50 fathoms in midlake between Harbor Beach and Goderich. The shallow set took 135 bloaters, 22 L. reighardi, and a few each of L. alpenae, L. artedi, and smelt; the 50-fathom set 65 L. alpenae, 65 L. kiyi, 46 L. hoyi, 16 L. reighardi, and several L. zenithicus and L. artedi.

Hydrographic transects were run from Bay City to East Tawas, East Tawas to Harbor Beach, Harbor Beach to Goderich, East Tawas to Oak Point, and Hat Point to Au Sable Point. Surface-water temperatures dropped rapidly under the influence of cold winds toward the end of the cruise. The highest temperature recorded was 19.2° C. (66.6° F.) and the lowest 11.4° C. (52.5° F.).



## Market for Frozen Foods Increases 50 Percent in Year

Prepared frozen foods now constitute more than a third of all frozen foods marketed in the United States, after a remarkable increase of nearly 50 percent in 1955. Manufacturers of these convenience foods looked for a further substantial increase in 1956--perhaps 35 percent over the 1955 total.

Agricultural products have gained most in this relatively new field of merchandising, but the fishing industry has also chalked up an impressive record. Fish sticks sprang into national prominence in 1954 in the path of breaded shrimp. Other prepared fish specialty items soon appeared in grocers' display cases.

Housewives welcome the freedom from unpleasant odors and waste and the certainty of well-prepared meals with a minimum of effort. So they are buying more and more of the many attractively-prepared frozen foods.

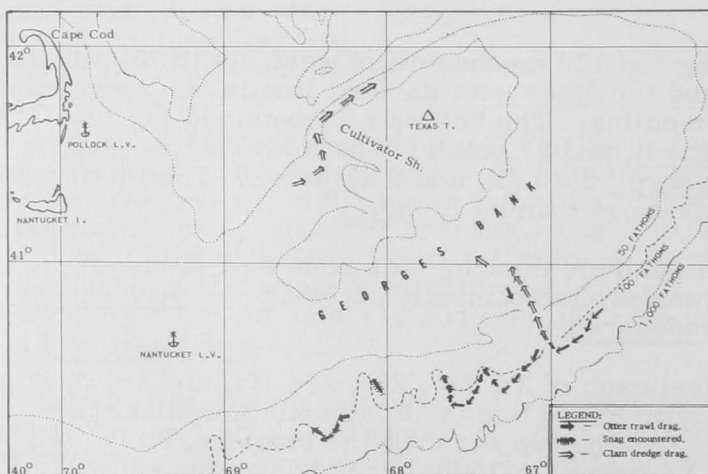
What is behind all this revolutionary change in marketing? The answer is advertising and promotion. Tempting color spreads in magazines arrest the attention and make fishery products inviting to young and old. Users of television, radio, and newspaper advertising continually keep their products' merits before consumers.

Those who pack these new prepared frozen food specialties have assumed a heavy responsibility to the consuming public. Most packers show a keen sense of awareness to the need for adherence to highest quality levels to insure repeat business. Government-sponsored voluntary standards of quality for fish sticks which are now in effect promise to exert a strong stabilizing influence on sales of this product.



## North Atlantic Fisheries Exploration and Gear Research

**DEEP-WATER TRAWLING FOR OCEAN PERCH BY M/V DELAWARE (Cruise 26):** Deep-water exploratory trawling for ocean perch along the edge of the continental shelf, south of Georges Bank,



M/V Delaware (Cruise 26) September 25-October 6, 1956.

al shelf, south of Georges Bank, by the Service's exploratory fishing vessel Delaware revealed no commercial concentrations of trawl fish during this 11-day trip. Previous operations by the Delaware during deep-water lobster exploration in this same area gave indications of possible commercial concentrations of ocean perch (Sebastes marinus). This cruise was undertaken in order to more thoroughly map the bottom and commercial fishing potential of this deep-water area during the early fall months.

A total of 22 otter-trawl tows and 14 dredge stations were made despite rough weather resulting from the aftermath of hurricane Flossy. No significant catches of commercial species were made. Operations were conducted with a trawl net on the southern edge of Georges Bank from 100 to 350 fathoms of water. One net and a set of ground cables were lost after hanging up on an unknown bottom obstruction.

A total of 14 dredge stations produced indications of ocean quahogs (Artica islandica) and sea scallops (Pecten grandis). This minor phase of the operation was conducted as a preliminary exploratory operation incidental to the major objective of the cruise. About 1,500 pounds of lobsters were caught incidental to the fish-trawling operation. About 150 pounds were landed at the Service's East Boston Fishery Technological Laboratory for freezing tests.

Systematic offshore tuna reconnaissance will be conducted by the Delaware during Cruise 27. The vessel was scheduled to depart from East Boston on October 16, 1956. Additional information on the fall migrations of bluefin school tuna found during the summer in the New England area was the primary objective of the three-week cruise. Plans called for exploration in the oceanic area south of Georges to the center of the Gulf Stream.

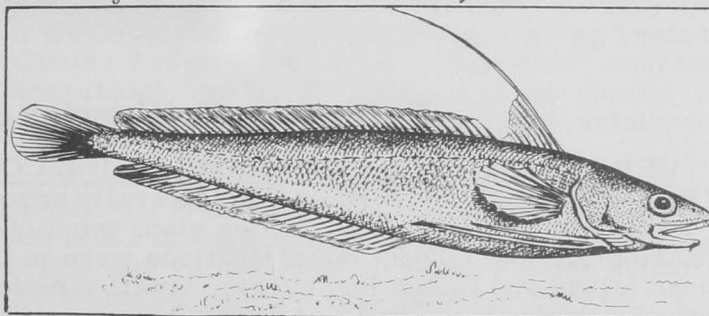
The Delaware was to make observations both visually and electronically with "fish finder" equipment for detection of subsurface schools. Trolling gear was to be used if any surface pelagic fish schools were sighted.

This is the first in a series of exploratory fishing surveys to the northwest central area of the North Atlantic and the operation is a continuation of the Service's program to evaluate both the inshore and possible offshore potential of New England's tuna resources.



## North Atlantic Fisheries Investigations

TWO-YEAR-OLDS PREDOMINATE IN RED HAKE POPULATION (M/V T-79, Cruise 6): Two-year-olds are now the predominant members of the red hake population in the local fishing areas worked by boats from Pt. Judith, R. I. Some three-year-old fish were taken in 40 fathoms, very few were seen elsewhere. This shift from three-year-old fish which were the predominant members of the catch at the beginning of the summer indicates a very high mortality rate at this age, especially in view of the fact that there is no evidence at this time that the older fish abandon the grounds and move out in any numbers. These were the findings of Cruise 6 (September 12-15, 1956) of the Service's research vessel T-79.



Squirrel Hake (Red Hake), Urophycis chuss

Red hake has a marked periodicity in feeding rhythm during the day. They were found to have consistently full stomachs in midmorning, with little evidence of any digestive action. In early afternoon, the stomachs were still full but the contents showed considerable evidence of digestive action. By late afternoon, the stomachs had been almost entirely emptied and the intestines were full of macerated material.

The food in red hake stomachs will be analyzed for species present and the data compared with the material collected by the bottom plankton sampler and the bottom grab.

Surface water temperatures were in the lower sixties (F.) at all stations. Bottom temperatures were in the lower forties (F.) A fairly well developed thermocline was present at all stations.

The purpose of the cruise was: (1) to sample species composition of fishes on various grounds; (2) to determine diurnal periodicity of feeding habits of the commoner species of fish; (3) to determine the abundance of and the species of the various common bottom organisms; and (4) to tag skates and some other species of fish if they are sufficiently abundant on the grounds fished.

Five fishing stations and eight hydrographic stations were occupied. The fishing stations were local fishing areas for boats from Pt. Judith with the exception of the last, a relatively deep-water station. A series of BT casts was made from Block Island Sound out to 150 fathoms.

\* \* \* \* \*

UNDERWATER TELEVISION EQUIPMENT TESTED UNDER TOW BY VESSEL "T-79" (Cruise 7 and 9): The Service's research vessel T-79 on the afternoon of October 5, 1956 (Cruise 7) tested underwater television equipment under tow in Falmouth Harbor. The television camera with attached stabilizing fins and 43-pound depressor was towed at speeds up to  $2\frac{1}{2}$  knots. The equipment performed well under tow. A  $35^{\circ}$  to  $40^{\circ}$  cable angle was obtained at approximately  $2\frac{1}{3}$  knots.

Another cruise (No. 9) on the afternoon of October 16 was made to test underwater television equipment off Naushon Island. Operations consisted of bottom viewing and towing while under way. Bottom organisms were clearly observed at depths of 36 feet while the vessel was at anchor. Camera launching and handling techniques were improved during this cruise. The camera with appropriate stabilizing devices was towed at slow speeds. Plans are now being developed to view commercial trawling operations with techniques devised on this cruise.



## North Atlantic Herring Research

HERRING EXPLORATION ALONG MAINE COAST AND BAY OF FUNDY BY M/V "METACOMET" (Cruise 6): Generally schools of herring brit were found to be present in appreciable quantities along most of the Coast of Maine from Portland to Eastport. The largest concentrations were in the Passamaquoddy Bay-Grand Manan Island and Casco Bay areas. Small sample lots were taken, where practicable, of 0 year-class "brit" or larger herring that could become available as sardines during the fall months by the M/V Metacomet, a Fish and Wildlife Service chartered exploratory fishing vessel. During Cruise 6 (August 18-30, 1956), the vessel was scouting most of the major bays, sounds, and rivers along the Coast of Maine from Casco Bay to Eastport and the Canadian waters of the Bay of Fundy around Grand Manan Island, the Wolves Islands, the northwestern shore of Nova Scotia from Digby Gut to Petite Passage, and St. Marys Bay.

The samples were obtained by making short tows with a British Columbia-type midwater trawl with a small mesh liner in the cod end. The tows were made to determine the species of fish located by the depth-sounder, the size of herring if present, and the percentage of herring infected by various disease and parasitic organisms characteristic of the species. The latter determination is being carried on at the Boothbay Harbor biological laboratory.

In the general area of Passamaquoddy Bay good showings of herring were recorded by the depth-sounder and sampled in the St. Croix River, St. Andrews Bay, Western Passage, Friar Roads, the eastern shore of Deer Island, Grand Manan Channel, and between East Quoddy Head and The Wolves. Very few fish were

located by the depth-sounder in Cobscook Bay or South Bay. There was only one fair-size school of fish noted on the depth-sounder between the Wolves and Digby, Nova Scotia. Scattered surface schools were recorded off Digby and from Digby southwest along the shore of Digby Neck to Petite Passage. No fish were recorded in Lower St. Marys Bay or between Briar Island and Grand Manan Island.

A few scattered schools were located by the depth sounder near Cutler Bay and in Machias, Englishmans, Chandlers, Western, Pleasant, and Narraguagus Bays. Fair showings were recorded on the sounder in Frenchmans Bay, where several samples were taken.

Only a few very scattered small schools were found in Penobscot Bay and Blue Hill Bay, except for one good school of brit recorded and sampled in the Union River. Very few fish were recorded in the Muscongus Bay area or Johns Bay. Good showings of fish were recorded in the Damariscotta River near East Boothbay and Plummers Point, and scattered fish were observed between this river and the Sheepscot. Samples were taken near Ebenecock Bay and Barters Island in the Sheepscot River. Scattered schools were recorded off Seguin Island, Cape Small, and in the outer waters of Casco Bay.

In the Casco Bay area very good concentrations of herring were recorded and sampled near the mouth of the New Meadows River and in Hussey Sound. Other large schools, quite apparently herring brit, were recorded in Portland Channel, Broad Bay, and Middle Bay.

\* \* \* \* \*

MIDWATER TRAWL GEAR TESTED BY M/V "METACOMET" IN GULF OF MAINE (Cruise 7): In order to gain more information on the possibility of catching herring and herringlike fish in commercial quantities in Gulf of Maine waters, the M/V Metacomet, a Fish and Wildlife Service chartered exploratory fishing vessel, tested midwater trawl gear during Cruise 7 (September 5-15). The trawl used was the first type designed by W. A. Barraclough and W. W. Johnson at the Pacific Biological Station at Nanaimo, British Columbia, Canada, and used successfully to catch herring in British Columbia waters during winter months.

Fish were sounded and tows made at the Isles of Shoals, Boone Island, Ipswich Bay, and on the north, east, and south sides of Cape Cod. Tows were made through large solid schools of fish on several occasions, the largest of these being schools of bluebacks (Pomolobus aestivalis)--a species closely related to the herring--in Ipswich Bay. All tows were made during the night.

The largest catches were of 2 to 3 bushels of bluebacks approximately  $8\frac{1}{4}$  inches, standard length. It was noted as the net was being hauled aboard that a large portion of these small catches were in the body of the net rather than in the cod end. This indicates that these fish were probably swimming along inside the net.

Since the net was towed directly through waters where large solid schools were located with the depth sounder without catching any appreciable quantities, it appears that the fish can detect the approaching net by sight, sound, or water pressure and are able to avoid it. Once the fish become frightened by the net they are likely able to swim as fast or faster than the net (towing speed approximately 3 knots) and escape capture.

Water temperatures are relatively high during this season and the fish are near their peak of activity. It is significant that the best successes with this type of net have been obtained during cold winter months when the fish are relatively inactive. Another midwater trawl test is being planned for the winter season.



Cruise 8 of the Metacomet was scheduled to begin September 24 and end October 12. Two types of gear were to be tried out: (1) a 125-fathom half-ring lampara seine for fishing sardine-size herring; and (2) a small-size midwater trawl. The seine was to be tried out as a method of catching sardines in open waters. The smaller midwater trawl was to be tried in order to attain a higher towing speed and to allow taking samples in shallower water than is possible with the larger trawl.

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LAMPARA SEINE, MIDWATER TRAWL, AND DEPTH INDICATOR TESTED BY M/V "METACOMET" (Cruise 8): Tests of three items of fishing gear and apparatus were conducted by the Service's chartered exploratory fishing vessel Metacomet during Cruise 8: (1) a modified lampara seine, (2) a small midwater trawl, and (3) an air-pressure depth indicator.

The lampara seine tried was patterned after a West Coast tuna bait seine with modifications to allow easier setting and partial pursing while hauling. The midwater trawl tested was patterned after the original Barraclough and Johnson trawl as described in Bulletin No. 104 of the Fisheries Research Board of Canada except that all measurements were cut in half and  $\frac{3}{4}$ " mesh was used in the last two sections of the cod end. The depth indicator was used to ascertain the depth of the bottom of this net as it was being towed beneath the water surface. Testing was carried out in inshore waters between Portland and East Penobscot Bay from September 26 to October 12, 1956.

Several sets with the lampara seine were completely unsuccessful.

In using the small midwater trawl, it was hoped that the higher attainable towing speeds would result in larger catches. Short trial tows with the small midwater trawl were made in Casco Bay and Penobscot Bay on echo-sounder recordings of fish. Catches were made of up to 215 pounds of herring, averaging approximately  $2\frac{3}{4}$  to 4 inches. Indications to date are that midwater trawls will be useful during the seasons of higher water temperatures only as a tool for sampling schools of small herring. The large catches reported taken with this gear in other areas have been made during winter months.

The depth indicator was tested by lowering it vertically into the water to measure depths and by using it attached to the footlines of the midwater trawl when towing over fish located by the echo-sounder. The pressure indicated depths corresponded with the measured depths in the vertical test and fish were taken in the midwater trawl when the indicator showed the net to be moving through a stratum occupied by fish as shown by echo-sounder recordings. Both types of tests substantiate the accuracy of the depth readings indicated.

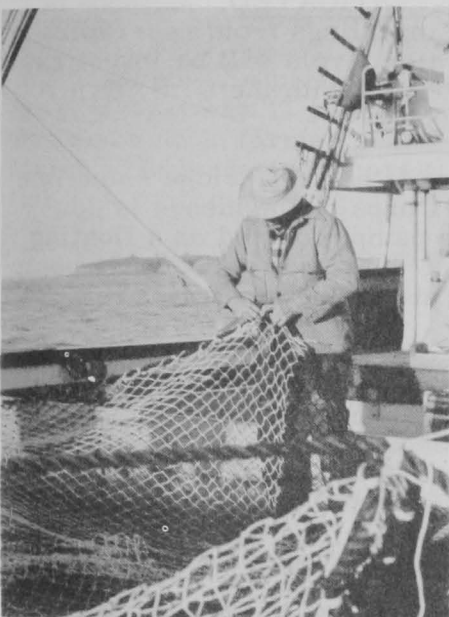
Cruise 9 of the Metacomet was to be devoted to purse-seining operations. The vessel has been equipped with purse-seining gear and a  $1\frac{1}{2}$ -inch mesh purse seine for this cruise. The objectives of the cruise are: (1) to learn if a purse seine can be set and successfully handled in open waters with a New England dragger-type vessel and (2) to attempt to catch sardine-size herring with this type of gear. The cruise was scheduled to start October 19 and end on or about October 27.



## North Pacific Exploratory Fishery Program

BOTTOM FISH SURVEY IN WATERS OFF SOUTHEASTERN ALASKA BY M/V "JOHN N. COBB" (Cruise 29): A search for bottom fish in waters off Southeastern Alaska is the purpose of Cruise 29 of the Service's exploratory fishing vessel John N. Cobb. The vessel was scheduled to leave Seattle on October 1 and return on November 16.

The bottom-trawling exploration was to be concentrated on the continental shelf and slope from Dixon Entrance northward to the southern end of Baranof Island.



Mending otter-trawl net aboard the Service's exploratory vessel John N. Cobb. Exploring new grounds means frequent tear-ups.

Commercial-size otter trawls were to be used, and extensive echo-sounding was to be carried out to determine the extent of suitable bottom. It was planned that trawling was to be conducted out to depths of 200 fathoms or more to determine species and quantities of marketable trawl fish present in these waters at this time of year.

Commercial fishermen have requested exploration of these grounds because it has become necessary for them to go farther from port in recent years in order to bring in good catches. It is thought that species such as Pacific Ocean perch, cod, and "sole" may be present off Southeastern Alaska in quantities sufficient to support profitable fishing. Navigation charts indicate that a considerable part of the bottom is rocky, but certain places with sand or mud bottom appear to be satisfactory for trawling.

The vessel was also to carry shrimp beam trawls, and a limited amount of exploration for shrimp in promising inshore areas was planned, primarily during periods of bad weather when offshore trawling would not be practical.



## Oregon

EXPERIMENTAL FISHING FOR DOVER SOLE: Experimental fishing to find the most economical methods of catching young Dover sole in offshore waters is being conducted by two biologists of the Oregon Fish Commission.

The biologists, stationed at the Commission's Astoria research laboratory, have been testing the effectiveness of a "try net" for possible use in an extensive study of the early growth of Dover sole scheduled to begin next summer. The biologists want to determine if the net can be used practically from a vessel smaller than the normal otter trawler. Through cooperation of the state police, the biologists have been doing their experimental fishing aboard an offshore patrol boat regularly used in law-enforcement work.

The "try net" is a miniature replica of otter-trawl nets used commercially in Oregon waters. It was developed originally by Gulf Coast shrimp fishermen for use in locating commercial concentrations of shrimp. A try net was used successfully by the Commission during a 1951 study of the early growth of English sole in Yaquina Bay, but was not tested in deeper water off the coast.

If the try net will efficiently catch the young flatfish, it will probably be used to obtain monthly samples of Dover sole during the growth study. Fish caught will be measured and examined to determine sex, if possible. "Ear bones" or otoliths and scale samples will be taken from some of the fish captured and will be examined microscopically to find out when the first growth ring is laid down. Such information is necessary for proper management of the Dover sole fishery, the biologists explained.

\* \* \* \* \*

FINGERLING FISH PASSAGE AT DAMS TO BE INVESTIGATED: Methods of collecting downstream migrant salmon and steelhead fingerlings from reservoirs at high dams having little or no spill and fluctuating water levels will be investigated by the Fish Commission of Oregon under a \$73,000 contract with the U. S. Army Corps of Engineers.

The study will be initiated at Lookout Point reservoir near Oakridge sometime next spring. In the meantime, for the experiment the Corps of Engineers is constructing a "fingerling collector" consisting of a large pump mounted on a floating platform. Capable of discharging up to 50 cubic feet of water per second, the pump will be used to create water currents with the hope of attracting small fish to a trap installed on the float.

It is a common assumption among fisheries workers that migrant fingerlings can detect and follow water currents in lakes. In nature young sockeye salmon, which spend a part of their lives in lakes, must find obscure outlet streams that will carry the young fish to the ocean. Previous research has shown that the majority of young migrants are concentrated at or near the surface in reservoirs, particularly if there is a surface outlet. The big question is whether or not sufficient numbers of young fish can be attracted by artificially-created currents.

At the time Lookout Point and Detroit dams were constructed fish passage facilities were omitted because no practical method of getting young fish out of the reservoirs was at hand. Perfection of a fingerling collection system might make it possible to bring these large reservoirs into production of salmon and steelhead.

When field tests of the fingerling collector are started next spring, approximately 100,000 blueback (sockeye) salmon fingerlings will be released in Lookout Point reservoir. The bluebacks were obtained as eggs from the U. S. Fish and Wildlife Service hatchery at Leavenworth, Wash., but are being raised at the Fish Commission's Oakridge salmon hatchery.

The fingerling collector will be operated at various locations within a 500-foot radius of the north shore of the reservoir to determine where fingerlings can be collected most efficiently. Test gill nets will be set to assist in locating concentrations of fish near the face of the dam.

The Lookout Point fingerling passage study is part of an extensive research program financed by the Corps of Engineers to investigate hydroelectric development problems affecting fish. Under the same program, the Oregon Fish Commission is currently studying possible delays in upstream fish migration at Columbia River main stem dams and is conducting research on the size and migrational habits of salmon and steelhead runs in the Snake River system.

\* \* \* \* \*

NORTHWEST ALBACORE TUNA CATCHES SAMPLED: With the return of commercial quantities of albacore tuna to the Oregon coast this year, the Oregon Fish Commission albacore biologist sampled albacore catches daily and interviewed boat

skippers to obtain all available information on the elusive "chicken of the sea." The last good catch of albacore in Oregon waters was in 1950. During the "lean" years, the Oregon biologist had to rely upon samples of California catches of albacore landed at Astoria by local boats late in the season.

About 1,500 tuna were to be sampled this past fall to determine the size make-up of local catches. The biologist also took scale samples and cut the tails of the first 20 fish in each sample to obtain the 33rd vertebra used in aging albacore.

"Cutting the tails off the fish is the easiest part of aging the fish," claims the biologist. The tails are boiled to obtain the vertebra for close examination. Growth rings on the vertebra reveal the age of the fish.

The size of albacore taken off Oregon this year steadily decreased. The average weight was 17 pounds when fishing started but dropped to 12 pounds. This was common in former years of albacore fishing off Oregon, according to the biologist. The largest albacore seen by the biologist was a 45-pounder. Even 30-pound fish are scarce in Oregon catches.

The Oregon Fish Commission biologist participated in a seven-week research cruise this summer that definitely established the fact that albacore were present in Oregon waters this year. The Oregon biologist stated that albacore could have been off Oregon last summer, but none were caught or sighted last season.



## Pacific Oceanic Fisheries Investigations

EXPLORATORY TUNA FISHING AROUND MARQUESAS ISLANDS BY M/V "CHARLES H. GILBERT" (Cruise 30): A 51-day exploratory tuna fishing cruise to the Marquesas Islands was completed by the Service's research vessel Charles H. Gilbert when she returned to Honolulu on September 26, 1956. The principal purpose of the cruise was to explore the tuna fishing potential of the waters around the French colony which, except for Easter Island, is the outpost of Polynesia closest to the present fishing grounds of the California tuna fleet and therefore of considerable interest to the Mainland tuna industry.

A total of 20 days were spent long-line fishing, 16 days on the open seas east of the group, and 4 days in inshore waters. Catches were generally low. The best daily catches of each species were 20 yellowfin, 14 albacore, and 7 bigeyed tuna. Some of the big-eyed taken were unusually large, the heaviest one weighing 370 pounds. The best albacore catches were made at the most southerly locations fished around the islands.

The vessel also spent 12 days in scouting for schools of tuna at the surface, intending to fish them with pole-and-line using Marquesan sardines as live bait, the fishing method that California fishermen would employ were they to move into this area. Few schools were found, however, in this Southern Hemisphere winter season, and those that were sighted were composed of small skipjack, weighing about 5 pounds, and "wild" and unresponsive to the attempts made to fish them. Only one yellowfin tuna was taken at the surface, on a trolling line. Four 40- to 60-pounds dogtoothed tuna, a species not found in Hawaiian waters, were caught while trolling over banks.

Fishing was conducted by the vessel around all of the 11 islands of the Marquesas group, and the party landed at Taihohae, the French administrative center, and at Taipi Valley. The bait resources at these two places were surveyed and samples of the sardines were taken for experimental fishing in Marquesan waters



and for introduction into the Hawaiian area. The vessel brought back to Oahu 21 buckets, or about 2,500 fish, alive and released them in Hanauma Bay. If this introduction is successful and the Marquesan sardines manage to adapt themselves to Hawaiian conditions and increase, they may help ease the critical shortage of live bait in the Hawaiian skipjack (aku) fishery.

\* \* \* \* \*

GOOD ALBACORE FISHING FOUND NORTH OF HAWAII BY M/V "JOHN R. MANNING" (Cruise 32): Prospects for development of a fishery for the valuable albacore tuna in central Pacific waters north of the Hawaiian Islands have been considerably brightened by the excellent catches made on the most recent exploratory fishing cruise in that area by the U. S. Fish and Wildlife Service research ship John R. Manning. The vessel returned to Honolulu September 12, 1956, from a trip of nearly 2 months which took the vessel all the way to the Aleutian Islands where she delivered to a local cannery 4 tons of albacore captured by gill-netting and trolling. Although Hawaii has at present a well-developed local fishery for skipjack, which is canned as "light-meat" tuna, and a smaller long-line fishery which delivers yellowfin and big-eyed to the fresh fish market, the higher-priced albacore is not now landed in the Islands in significant quantities. Development of a Hawaii-based fishery for this species would make an important contribution to the fishing industry of the Territory.

The vessel's explorations covered the area between the longitudes of  $175^{\circ}$  W. (roughly north of Midway Island) and  $145^{\circ}$  W. (northeast of the main Hawaiian Islands). The greatest abundance of albacore was found in the western part of this area, between  $43^{\circ}$  N. and  $47^{\circ}$  N. latitudes, with a marked falling off in the catches east of  $160^{\circ}$  W. Surface trolling with six lines was done during the day, and sets of gill nets and trammel nets of various mesh sizes were made during the night. Gill-netting was much more productive than trolling, with approximately 500 albacore taken in the nets as compared with 100 on the trolling lines. Net catches ran as high as 89 fish a day, although only 8 of the 12 nets used had meshes of a size suitable for the albacore encountered on this cruise.

Exploratory fishing was supplemented with studies of the albacore's environment through collection of plankton, measurement of water temperatures and transparency, and observation of sea birds and marine life. Considerable numbers of large squid and of such small pelagic fishes as pomfret and saury were seen and specimens were collected. Experiments in night trolling with luminous lures and in live-bait fishing using sand launces collected in the Aleutians were attempted but without success. Eighty-six albacore were marked with plastic tags and released alive in order to study their migrations and growth rate. Earlier recaptures of such tagged fish have indicated a possibility that the stocks of albacore which support large commercial fisheries off the North American and Japanese coasts may migrate across the Pacific north of Hawaii.

Interesting sidelights of the voyage include the capture in the gill net of five salmon and one fur seal, which were turned over for study to Fish and Wildlife Service representatives in the Aleutians.

The Service's John R. Manning has been operating to the north of Hawaii, surveying the abundance of albacore tuna between longitude  $175^{\circ}$  W. and  $145^{\circ}$  W. Her survey is being coordinated through the Albacore Steering Committee with similar surveys between  $145^{\circ}$  W. longitude and the Pacific coast by the U. S. Fish and Wildlife Service exploratory fishing vessel John N. Cobb, and the Brown Bear of the University of Washington, the latter cooperating with the Oregon Fish Commission.

The results reported by the John R. Manning fit well with those obtained by the John N. Cobb which caught no albacore along 145° W. The results are also completely compatible with the picture developed during last summer's surveys. During 1955 albacore tuna appeared most abundant to the west, became very scarce or disappeared in the general vicinity of 145° W., and were located in fair numbers again off the coast of Oregon and northern California by the John R. Manning.

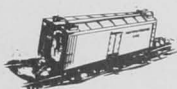
Fragmentary reports from the Pacific Coast indicate that some commercial operators followed the leads provided by the research vessels this summer and last summer and fished for albacore off Oregon with some success.



### Transportation Rates

**RAILWAY EXPRESS SEEKS INCREASE IN EASTERN TERRITORY:** The Railway Express Agency in August 1956 filed another petition with the Interstate Commerce Commission seeking an increase of 15 percent on all less-carload charges on shipments within Eastern Territory. This territory covers the area bounded by Mackinaw City (Mich.), Chicago, St. Louis, Paducah, Cincinnati, Norfolk, and Eastport (Maine). The Agency states it is asking for surcharge on traffic in this area to eliminate huge passenger-train deficits, which include express traffic.

This action follows a recent announcement of several Eastern lines that first-class rail fares will be increased 45 percent and coach fares 5 percent in order to reduce passenger deficits.



### Reclamation to Build Fish Screen to Save Young Fish on Delta-Mendota Canal, California

A unique "fish screen" will save millions of young salmon, striped bass, shad, and catfish from the turbulence of the world's second largest pumping plant--the Bureau of Reclamation's Tracy Pumping Plant on the Delta-Mendota Canal in central California. The Secretary of the Interior announced on October 27, 1956, details of a \$988,116 contract for constructing the facilities.

A commercial and sport fishery resource estimated to be worth \$10,000,000 annually will be protected by the fish diversion and collecting facilities, said the Commissioner of Reclamation.

Existing temporary fish screens will be replaced by a louver-type diversion that "leads" the fish to safety. The novel design of the new facilities was developed after long and intensive study by Bureau of Reclamation engineers and Fish and Wildlife Service biologists, with the assistance of the California State Department of Fish and Game.

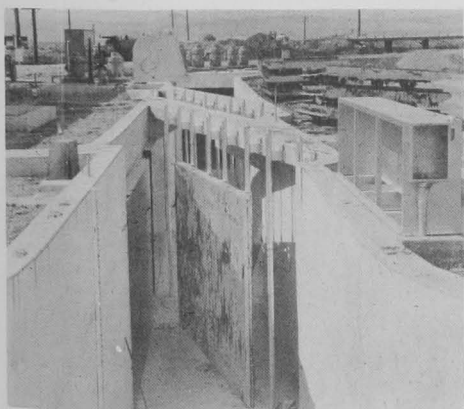


Fig. 1 - Looking downstream on secondary louvers with traveling screen unit and pumping plant in background.

biologists, with the assistance of the California State Department of Fish and Game.

The fish protective device will consist of a row of vertical louvers extending approximately 340 feet diagonally across a concrete channel 83½ feet wide and 25 feet deep. The minute baby fish, averaging an inch long, are carried tail first

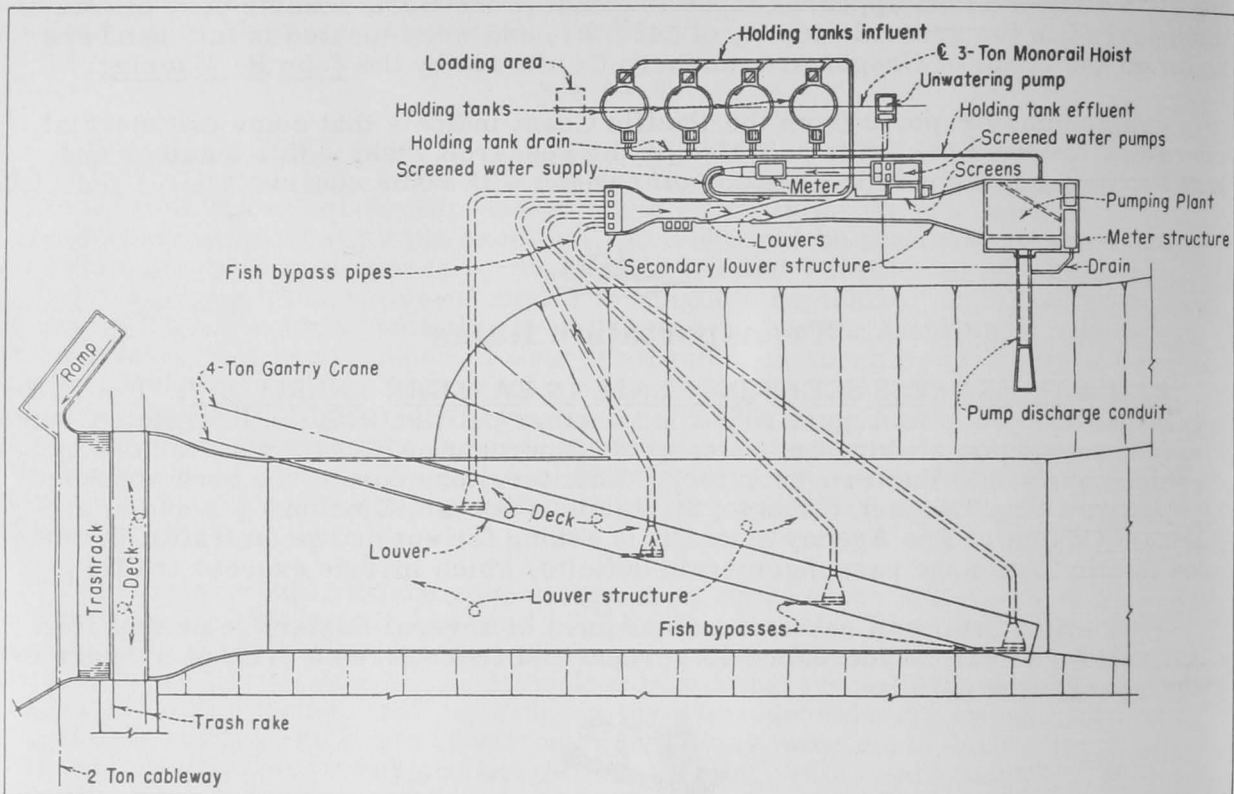


Fig. 2 - Sketch plan -- Tracy Fish Collecting Facility.

down the channel by the current, but as they approach the louvers they swing to one side to avoid the disturbing eddies and sounds made by the slats placed at an angle to the current. The fish keep moving over until they are siphoned into a bypass that carries them to a holding tank.

From holding tanks, the young fish are to be counted and trucked 40 to 50 miles to an area where they can swim safely to the sea.

The Tracy Pumping Plant, which draws water from the Delta area of the San Joaquin and Sacramento Rivers at the head of San Francisco Bay, lifts 4,600 cubic-feet-per-second of irrigation water 197 feet into the Delta-Mendota Canal which carries it 120 miles to supply Central Valley lands.

The Delta, with its maze of channels, is the most important spawning and rearing area for striped bass and shad on the Pacific Coast. Young king salmon are found in great numbers in the waters of the Delta where they loiter on their way to the ocean. Catfish are an important sport fish taken in large numbers and spend their life cycle in the Delta waters.



Fig. 3 - General view of construction of holding tanks, secondary louver, and pumping plant areas for the Tracy Pumping Plant on the Delta-Mendota Canal in Central California.

Salmon, striped bass, and shad are anadromous fish. That is, they spawn in fresh water but spend their adult lives in the ocean. The young fish descend the rivers to the sea, carried by and following the major flows of water. Thus, the major diversion of the Delta-Mendota canal operating at full capacity would be nearly as great an attraction to these young fish as would the combined river flows to the ocean. Fish experts believe the great pumps of the Tracy plant would kill a major portion of fish entering the canal, and the fishery resource--of considerable importance to California--would be seriously damaged.

Devices to protect fish are included wherever necessary on all features of the Central Valley project, which provides irrigation water for 634,000 acres and produces 2,226,370,000 kilowatt hours of power annually from its multipurpose dams. Planned release of cool water from major dams such as Shasta, Keswick, Nimbus, and Folsom, helps maintain conditions favorable to salmon.



## Saltonstall-Kennedy Act Fisheries Projects

FISH AND WILDLIFE SERVICE REPORTS PROGRESS MADE: Progress which the U. S. Fish and Wildlife Service has made with Saltonstall Kennedy Act funds in the fields of research, exploration, technology, marketing, and education on behalf of the fishing industry and the consumer is detailed in a report to Congress just released by Secretary of the Interior Fred A. Seaton. The report describes the accomplishments in the fiscal year ending June 30, 1956, and outlines the projects which are being undertaken during the current fiscal year.

The additional funds made available as the result of the amendment to the Saltonstall-Kennedy law by the Fish and Wildlife Act of 1956 will be allocated in the near future in light of the advice of the American Fisheries Advisory Committee which met in Chicago on October 11 and 12.

The report divides the Saltonstall-Kennedy work into two categories--Fishery Biological Research for which \$1,385,000 was allocated for fiscal year 1956 and \$1,376,500 for fiscal year 1957; and Commercial Fishery Studies, with \$1,426,000 allocated in fiscal year 1956 and \$1,418,500 available for fiscal 1957. The balances were absorbed by administrative expenses.

Research on Alaska salmon, the Pacific sardine, the North Atlantic trawl fishes, herring, Gulf of Mexico fishes, striped bass, menhaden, and a phase of the ocean research program took \$1,041,000 in the past fiscal year; \$1,063,700 is allocated to the same group of projects for the current year. The money for oyster research in the Gulf, mid-Atlantic, and New England areas is the same for each year, \$75,000, with each fishery getting \$25,000. The big Pacific Oceanic studies which are based at Hawaii and which are to define the location of albacore tuna stocks in waters north of Hawaii had \$234,000 in 1956 and have \$227,000 in 1957.

The Commercial Fishery Studies include exploratory fishing and gear research, fishery technological studies, commercial fishery statistics, commercial fishery economic studies, and fishery education and market development.

The exploratory fishing and gear research work includes a Maine sardine program (coordinated with the biological work on the sardine and North Atlantic explorations for new fishing grounds) and South Atlantic exploration primarily for valuable offshore shrimp (which are being located in commercial quantities). The total allocated was \$299,000 for fiscal 1956 and \$304,000 for fiscal 1957.



The fishery technological studies include research on the handling of the southern oyster, development of voluntary standards for fishery products, development of a chemical index for the nutritive value of fish meal, creating of new uses for fish oil, improvement in the quality of skipjack tuna, and a Great Lakes survey. All of these programs will be carried on through fiscal 1957 except the Lakes (\$15,000) survey which was completed in 1956. The amount allocated was \$464,000 in 1956 and \$5,000 less in 1957.

The commercial fishery statistical program has been allocated \$200,000 for each year. The economic studies which dealt primarily with fish consumption and economic surveys of certain segments of the fishing industry used \$148,000 in 1956 and have \$138,000 for 1957.

Fishery education and market development include such projects as creating new markets for underutilized fish, test kitchen activities to develop recipes for cooking fish, increasing the sale of fish to frozen food lockers, exhibits at national conventions, promotion of the use of fish in school lunch programs, production and distribution of motion pictures relating to the fishing industry, special market studies, preparation of market aids, and the issuance of numerous publications. For this work \$315,000 was spent in 1956 and \$317,500 is allocated for the current fiscal year.

The Alaska salmon research is concentrated on problems for which answers are needed urgently in the management of the fisheries. The studies are being made in Bristol Bay, considered the most critical management area in the Alaska fishery. Methods of counting downstream migration to be used for the prediction of the runs, methods of counting adult escapement, and general problems concerning the migration routes are among the items being studied.

The Kvichak River system, the largest red salmon stream in Alaska, is the scene of a project which includes a survey of the spawning grounds, a determination of the age and size of the fish commercially taken, the age and size of those which escape, and counts of salmon heading for the sea for their long tenure in the open waters.

There are two predator studies being made--one relating to the extent of predation on salmon runs by fish, bird, or mammal predators and another study to determine whether or not the sea lions and hair seals of western Alaska prey upon salmon. There are studies on counting salmon in small streams, counting salmon by the use of towers which give the observer a place of vantage, and another study on counting the fingerling red salmon in Bristol Bay. Still another project deals with the effect of logging upon salmon streams.

In the Gulf of Mexico much of the work has been done on shrimp and on red tide investigations, but menhaden and sponges have also come in for research and study.

One important goal in the ocean research is to "reach a scientifically sound understanding of what the weather does to change conditions in the sea and what these changes in the sea will do to the numbers, distribution, and fishery yield of the ocean fish populations." Fish and wildlife biologists believe that when this understanding is reached with sufficient correctness to assure predictions, a new door will be opened to more efficient fishing and to make the various fisheries safe from overexploitation.

In the area of exploratory fishing and gear research, extensive information has been obtained on bottom trawling; offshore stocks of shellfish and pelagic fish were explored; the possibility of a shrimp industry off Nova Scotia was studied; midwater and otter trawls and lampara seines were tested; the possibilities of a new red

shrimp industry in the South Atlantic brought some optimistic results; and considerable laboratory work on gear development was accomplished.

One of the fields of technological research concerned the discovery of new uses for fish oils. One result of this work is the "breaking down" of certain chemical components of fish oil. This could open the way to the creation of many new products, just as did somewhat similar work on coal. Other technological projects included freezing studies, storage, new uses for fish meal, and scales.

The market and economic studies were designed primarily to learn where the fish distribution and utilization pattern was weak and to find out why. Among the projects were many consumer surveys which develop information to help the fish producer better meet the needs and desires of the customer.

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AMERICAN FISHERIES ADVISORY COMMITTEE RECOMMENDS STEPPED-UP RESEARCH PROGRAM: The American Fisheries Advisory Committee, at its fourth meeting held in Chicago on October 11 and 12, 1956, urged immediate implementation of a greatly expanded and balanced program of technological, biological, economic, and marketing research and services to be financed with the additional money now available under the Fish and Wildlife Act of 1956, U. S. Fish and Wildlife Service Director John L. Farley reported October 23.

The Service Director presided over the meeting as Acting Chairman.

The Saltonstall-Kennedy Act which was passed in 1954 to promote increased production and marketing of domestic fishery products was due to expire on June 30, 1957. The Fish and Wildlife Act of 1956, approved by the President on August 8, 1957, extended the provisions of the Saltonstall-Kennedy Act on a permanent basis. The limitation of \$3 million annually for research has been removed and the entire amount of 30 percent of gross customs receipts on fishery products now becomes available on an "annual accrual" basis.

The Committee reaffirmed its previous recommendations regarding the use of a series of criteria for judging project proposals on a broad national basis which were developed at its first meeting in April 1955. It recommended continuance of contract research where a specific type of specialized research can best be done by universities or private research organizations. The Committee expressed concern over the ability of industry to outbid the Service in recruiting and holding highly-trained technicians.

The 16 members of the Committee who attend the meeting were: Harold R. Bassett, Salisbury, Md.; Lawrence Calvert, Seattle, Wash.; James S. Carlson, Boston, Mass.; Chris Dahl, Petersburg, Alaska; Mark L. Edmunds, Garibaldi, Ore.; David H. Hart, Cape May, N. J.; Leon S. Kenney, St. Petersburg, Fla.; Donald P. Loker, Terminal Island, Calif.; J. Richards Nelson, Madison, Conn.; Moses Pike, Eastport, Me.; H. F. Sahlman, Fernandina Beach, Fla.; Thomas F. Sandoz, Astoria, Ore.; Arthur Sivertson, Duluth, Minn.; Lawrence W. Strasburger, New Orleans, La.; Earl B. Webster, Brownsville, Tex.; and Alphonse J. Wegmann, Pass Christian Isles, Miss.

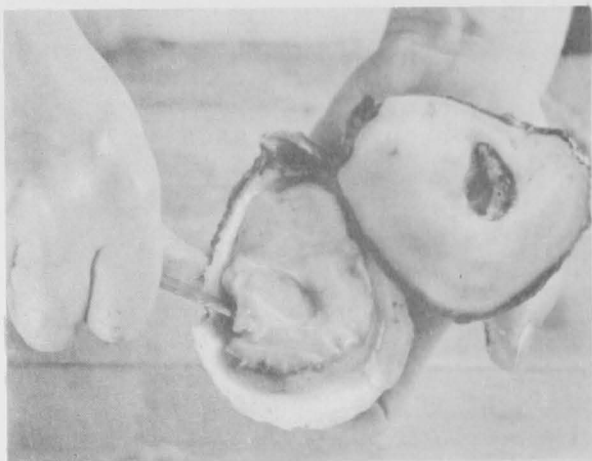


## Shellfish Sanitation Workshop

The Shellfish Sanitation Workshop, which is primarily a meeting of State Public Health officials with officials of the U. S. Public Health Service, was held in Washington, D. C., August 27-28, 1956.

The objectives of the meeting were: (1) the consideration of revisions for the Manual of Recommended Practices for Shellfish; (2) the development of a workable market index of quality for shellfish; and (3) the formation of an advisory committee that would work with the U. S. Public Health Service and eliminate some of the administrative difficulties presently encountered in carrying out such projects as the manual revision.

The proposed changes for the present draft of the Manual of Recommended Practices were discussed and it was felt that approval by those present represented sufficient authority to allow publication of the manual with the changes agreed upon for use during this oyster season.



The two items of greatest importance to the oyster industry approved for the Manual were the provisions to eliminate galvanized returnable containers effective December 1960 and the provision to eliminate dip buckets for use by shuckers. It was agreed, however, that a container with flowing water could be used by the shuckers for washing their hands while in the process of shucking.

The second day's session was devoted to several technical papers relating to the bacteriological examination of shellfish. One of the papers referred the determination of the uptake and concentration of coliform organisms from waters of known or controlled concentration.

The second day's session was devoted to several technical papers relating to the bacteriological examination

Another paper presented by a representative of the Canadian Department of National Health and Welfare gave the procedure used by Canada for inspection of shellfish imports from the United States. Since there is no market index standard, the Canadians, without any definite basis for the decision, selected an arbitrary maximum of 2,400 coliform per hundred milliliter as defining acceptable oysters. A second class, "acceptable on condition," was defined as shipments with coliform most probable number (MPN) between 2,400 and 160,000. These were accepted but required notification of the U. S. Public Health Service for investigation and remedial action as necessary. An unsatisfactory report or no report led to suspension of future shipments from this shipper. The third class, rejected, consisted of any oysters with MPN in excess of 160,000. They notice a marked geographical difference in the shipments within these groups. Ninety percent of "Northern" oysters could meet the acceptable 2,400 MPN, but only 15 to 45 percent of "Southern" samples met this standard. "Southern" in this case meant Maryland, Virginia, and Delaware.

The next report was given by a representative of the New York City Health Department. This group has applied a standard of 2,400 MPN as a maximum acceptable level, but have attempted to preserve a flexible method of application, and to investigate before excluding any shipper from the New York market. He also indicated the feeling of a need for control measures, but uncertainty about, or dissatisfaction with, the selected level.

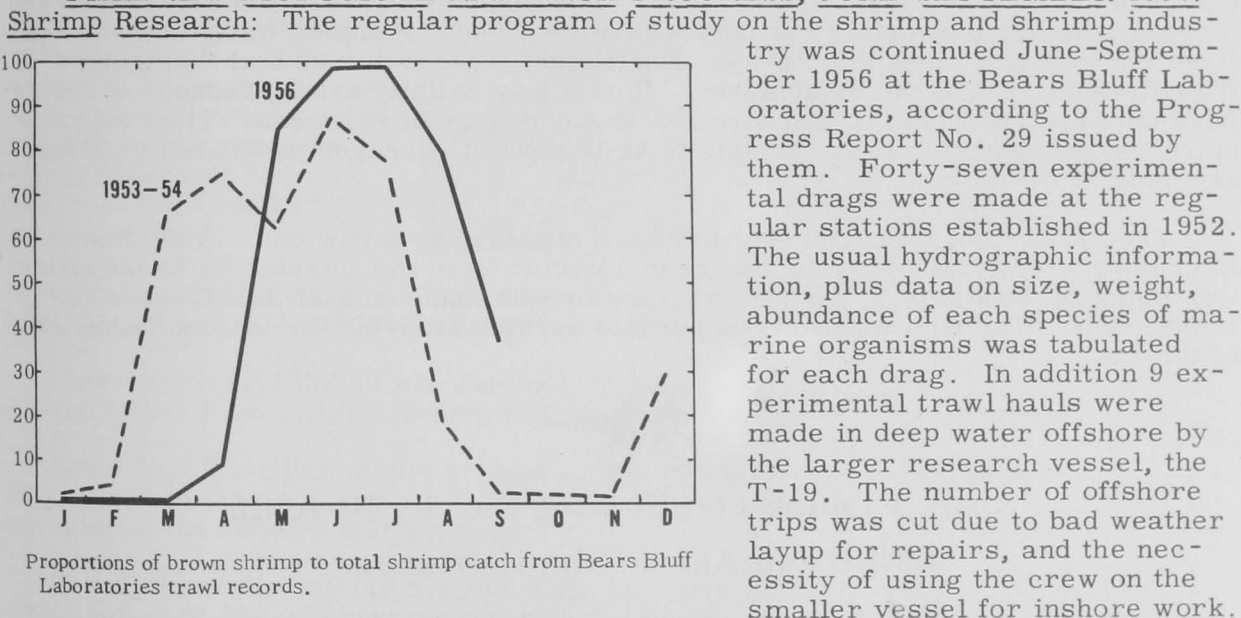
The afternoon session was given over to a discussion of the morning papers and an attempt to reach an acceptable limit which would permit a reasonable percentage of Chesapeake Bay oysters to be shipped interstate. The market index finally adopted was similar to the Canadian code. The only difference was a compromise, increasing the upper limit for Group 1 acceptable oysters to a coliform MPN of 16,000. The other limits of the Canadian code were retained as is.

It was decided to table any further action on the appointment of an advisory committee until a meeting of the same group in 1957, since the two more important objectives, approval of the manual and establishment of an interim market index, had been satisfactorily acted upon.



## South Carolina

### FISHERIES BIOLOGICAL RESEARCH PROGRESS, JUNE-SEPTEMBER 1956:



Records gathered by both research vessels clearly indicate that the shrimp fisheries was almost entirely dependent on the brown shrimp during the period covered by this report. Ordinarily by mid-July and August the relative proportion of brown shrimp drops off as the white shrimp enter the commercial catch. This year in July and August, the brown shrimp accounted for more than 90 percent of the catch. A few white shrimp began to make their appearance in September. The graph indicates the relation of brown to white shrimp in 1956 as compared with laboratory records for the years 1953 and 1954 combined.

A close study of the landings of shrimp from the several hundred commercial fishing boats along the South Carolina coast this year has not been undertaken by Bears Bluff, but from casual interviews with commercial fishermen indicates the relative abundance of white shrimp is decidedly below that of the past few years. This is not universally true along the coast and apparently in a few areas (Georgetown and Charleston) white shrimp are abundant.



Records of the Laboratories' vessels indicate that white shrimp were almost 15 times more abundant in July 1953 and 1954 than they were in 1956; 9 times more in August; and 9 times more in September.

Although no clear-cut reason is apparent for these differences, there are several indications which tend to show that a deficiency of rainfall in the past two years plays an important part in this shortage.

Facilities for Research Improved: An indication of the changes in salinity in inshore environment of South Carolina marine fisheries were noted by a researcher at the Laboratories in July-August 1956. The researcher pointed out that "As a result of the long drought in South Carolina, sea water has filled the streams and moved far up in the rivers and creeks, making formerly low salinity streams into estuaries almost as salty as the ocean." The far-reaching importance of such changes influenced The Agricultural Society of South Carolina to grant the greater portion of the necessary funds to Bears Bluff Laboratories to undertake a long-range study on the influence of salinity on marine fisheries. A 535-foot 6-inch well has been sunk in the Laboratories' yard. The County of Charleston will deepen and increase the holding capacity of the fresh-water lake. Pumping water into the lake from the well will allow the storage of sufficient fresh water so that "irrigation" of the salt-water ponds can be achieved. In this way salinity can be reduced in the experimental ponds from full sea strength to any degree of saltiness. Thus the mechanical and engineering requirements of an important research program are already accomplished.

The old 40-foot research boat has been replaced by a new one. A 40-foot cabin cruiser with a Diesel engine has been obtained from the Charleston Transportation Depot of the Army. The official transfer was made August 22. Conversion is in progress. The boat will soon be put into service studying the marine fisheries of the State.



## Sport Fishing and Hunting Survey Reveals \$3 Billion Annual Expenditures

A total of 25 million American anglers and hunters (1) spent nearly 3 billion dollars for 500 million days of sport, (2) drove their automobiles more than 10 billion miles; and (3) spent an average of \$114.42 apiece in the pursuit of these recreations in 1955.

Those facts are among the findings of the first national survey of fishing and hunting ever conducted in the United States. The survey was made under the direction of the U. S. Fish and Wildlife Service at the recommendation of the International Association of Game, Fish and Conservation Commissioners as a basis for a better understanding of the recreational value of hunting and fishing in terms of financial outlays and individual participation, Secretary of the Interior Fred A. Seaton said September 15, 1956.

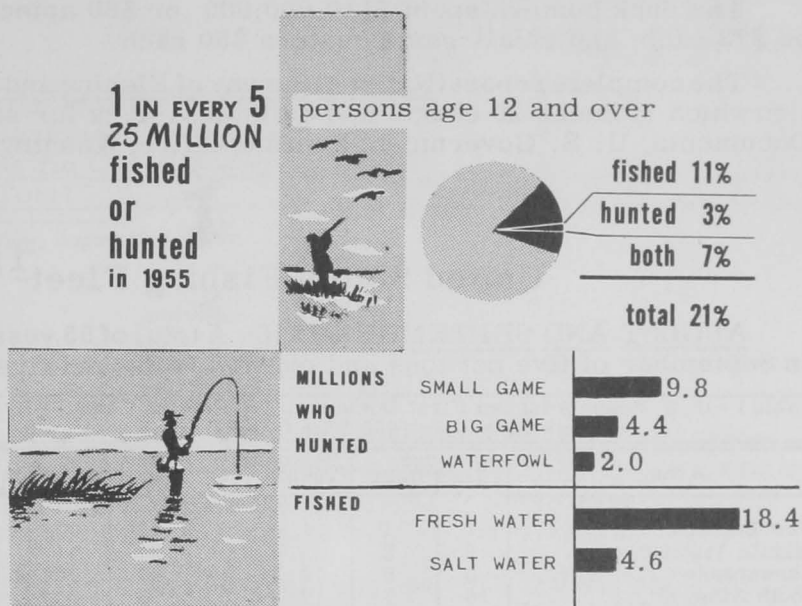
This project cost \$134,000 and was financed through Federal aid funds which are derived from the Federal excise tax on sporting arms and ammunition and on fishing rods, reels, creels, artificial lures, baits, and flies.

The data obtained in the survey pertain to the calendar year 1955 and to persons 12 years old and older. The information is the result of the work of 300 interviewers working in 250 places in the 48 states. About 20,000 homes were contacted in a representative cross section of the Nation and 6,220 anglers and 3,108

hunters interviewed. The survey was carried out by Crossley, S-D Surveys Inc. of New York on a sample scientifically designed to give the national picture.

The survey showed that: (1) one American household out of every three had at least one member who hunted or fished or who did both; (2) one house in every two in the rural areas and one out of every six in the big cities have at least one person who casts a line or draws a bead; (3) one out of every five Americans 12 years old or older either hunted or fished.

Hunting and fishing appeal to all age groups from 12 years to 65-plus but seems slightly more popular in the age groups, 12-17 and 35-44. Hunting appeal holds relatively steady through the groups from 12 years to 44 years and then the number of nimrods begins to decline.



Of the 118,366,000 individuals aged 12 and over in the United States the survey found that 24,917,000 hunted or fished or did both.

There were 13,133,000 who fished only; 4,104,000 who hunted only; and 7,680,000 who did both. Five million women fished and nearly half a million hunted.

More than 7 million anglers--mostly salt-water fishermen, women and youths--did not need to obtain a license to fish. (In nearly all coastal States, salt water fishing does not require a license.)

Fresh-water fishing (18,420,000 anglers averaging 18 days apiece) and small game hunting (9,822,000 hunters averaging 12 days apiece) are the most popular of the fish and game sports.

Nearly 4.5 million big-game hunters averaged seven days apiece in quest of their quarry; nearly 2 million sought out the waterfowl on the many marshes; and more than 4.5 million anglers sought their catches in the salt-water sport fisheries.

The 24,917,000 who hunted and fished spent \$2,851 million in pursuit of this sport, an average of \$114.42 apiece. Of the total amount, \$1,282,300,000 was spent for equipment; \$1,298,800,000 for food, lodging, and transportation on hunting and fishing trips; \$81,300,000 for the various licenses including duck stamps; and \$188,600,000 for all other expenses. The individual spent an average of \$51.46 for equipment; \$52.13 on trips; \$3.26 for licenses; and \$7.57 for miscellaneous expenses.

The 20,813,000 anglers spent slightly more than \$1,914,000,000, while the 11,784,000 hunters spent \$936,687,000. The average fisherman spent \$91.98 and the average hunter spent \$79.49. More than 7 million of these individuals both hunted and fished which accounts for the general average of \$114.42 per person spent in 1955 for this type of recreation.

There was wide variation in expenditures on a regional basis. The salt-water fisherman on the Pacific Coast--1,137,000 of them--spent \$156 each while their salt-water counterparts on the Atlantic and Gulf Coasts spent \$91 each. The average of all salt-water anglers was \$107 per person while the average expenditure by the fresh-water angler was \$77.

The duck hunters spent \$119,000,000 or \$60 apiece; big-game hunters expended \$73 each; and small-game hunters \$50 each.

The complete report (National Survey of Fishing and Hunting) is a 52 page publication which includes 20 charts and 18 tables. It is for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 40 cents a copy



## United States Fishing Fleet<sup>1/</sup> Additions

AUGUST AND SEPTEMBER 1956: A total of 55 vessels in August and 34 vessels in September of five net tons and over were issued first documents as fishing craft.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft, by Areas, August-September 1956 With Comparisons

Area	August		September		Jan. -Sept.		Total
	1956	1955	1956	1955	1956	1955	
	(Number)						
New England .....	2	1	1	-	13	16	18
Middle Atlantic .....	2	2	-	-	21	11	13
Chesapeake .....	9	5	12	2	87	34	54
South Atlantic .....	19	7	12	3	92	50	65
Gulf .....	12	14	6	8	83	77	103
Pacific .....	5	15	1	6	68	107	117
Great Lakes .....	-	1	-	1	2	7	9
Alaska .....	6	5	2	1	39	31	35
Hawaii .....	-	-	-	1	-	3	3
Wirgin Islands .....	-	-	-	-	-	-	1
<b>Total</b> .....	<b>55</b>	<b>50</b>	<b>34</b>	<b>22</b>	<b>405</b>	<b>336</b>	<b>418</b>

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

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft, by Tonnage, August and September 1956

Net Tons	Aug.	Sept.
	(No.)	
5 - 9 .....	29	20
10 - 19 .....	11	6
20 - 29 .....	6	2
30 - 39 .....	7	6
70 - 79 .....	1	-
100 - 109 .....	1	-
<b>Total</b> .....	<b>55</b>	<b>34</b>

The total for August 1956 was higher by 5 vessels than for the same month

in 1955. The September 1956 total exceeded that for September 1955 by 12 vessels. During the two-month period, the South Atlantic area led all others with a total of 31 craft, followed by the Chesapeake Bay area with 21, the Gulf of Mexico 18, Alaska 8, Great Lakes 6, New England 3, and the Middle Atlantic 2.

<sup>1/</sup> Includes both commercial fishing and sport fishing craft.



## U. S. Fish Stick Production

JULY-SEPTEMBER 1956: During the third quarter of 1956, the United States production of fish sticks by 38 manufacturers totaled 11.5 million pounds. This was 2.4

Table 1 - U. S. Fish Sticks Production			
Month	Cooked	Uncooked	Total
	.. (Million Pounds) ..		
July .....	2.8	0.4	3.2
August .....	3.5	0.6	4.1
September .....	3.6	0.6	4.2
<b>Total 3rd Quarter:</b>			
1956 .....	9.9	1.6	11.5
1955 .....	12.5	1.4	13.9
<b>Total Jan. -Sept:</b>			
1956 .....	34.8	4.7	39.5
1955 .....	44.3	5.7	50.0

million pounds (18 percent) less than the quantity produced during the corresponding period of 1955 are only 1 percent above the 11.4 million-pound output of the second quarter of 1956.

Production during the third quarter of 1956 averaged 3.8 million pounds a month as compared with an average monthly production of 4.7 million pounds during the third quarter of last year. The largest quantity of fish sticks ever produced dur-

ing a single month occurred during March 1955 when 7.4 million pounds were packed.

During the third quarter of 1956, 86 percent of the total production was precooked and 14 percent uncooked. During this same quarter, 23 manufacturers located in the Atlantic Coast States produced 9.5 million pounds or 81 percent of the total. Plants located in the interior of the country and in the Gulf States manufactured 1.2 million pounds of fish sticks and firms situated in the Pacific Coast States produced 836,000 pounds.

Area	July-September			
	1956		1955	
	Firms	Million Lbs.	Firms	Million Lbs.
Atlantic Coast States . . . .	23	9.5	28	10.9
Interior & Gulf States . . . .	5	1.2	7	1.6
Pacific Coast States . . . .	10	0.8	12	1.4
Total . . . . .	38	11.5	47	13.9

Note: Also see Commercial Fisheries Review, August 1956, p. 50.



## U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JULY 1956: United States imports of edible fresh, frozen, and processed fish and shellfish in July rose 21.7 percent in quantity and 11.2 percent in value as compared with June 1956. Compared with July 1955 the imports for July 1956 decreased 3.4 percent in quantity, but were 17.7 percent

	Quantity			Value		
	July		Year	July		Year
	1956	1955	1955	1956	1955	1955
<b>Imports:</b>	(Millions of Lbs.)			(Millions of \$)		
Fish & shellfish:						
Fresh, frozen, & processed <sup>1/</sup> . . . . .	71.1	73.5	769.9	21.9	18.6	206.4
<b>Exports:</b>						
Fish & shellfish:						
Processed <sup>1/</sup> only (excluding fresh & frozen) . . . . .	5.9	4.8	01.0	1.3	1.2	21.6

Note: Includes pastes, sauces, clam chowder, and juice, and other specialties.

higher in value. July 1956 imports averaged 30.8 cents a pound as compared with 25.3 cents a pound for the same month in 1955 because of the higher prices prevailing for many imported fishery products.

Exports of processed fish and shellfish in July 1956 declined about 9 percent compared with the previous month, but were 23 percent above the same month in 1955. The July 1956 value of these exports was the same as the previous month, but was higher by 8.3 percent than for the same month a year ago.

\* \* \* \* \*

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA PROVISIO: The quantity of tuna canned in brine which may be imported into the United States during the period from April 16 through December 31, 1956, at the 12½-percent rate of duty is limited to 28,757,393 pounds. Any imports in excess of that quantity will be dutiable at 25 percent ad valorem.

Imports under the quota for the period from April 16 through September 29, 1956, amounted to 20,745,940 pounds, according to data compiled by the Bureau of the Customs. This leaves a balance of 8,011,453 pounds of the quota which may be imported in the last months of 1956 at the 12½-percent rate of duty.



A proclamation, issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade.

The quota is based on 20 percent of the previous year's United States pack of canned tuna, prorated to account for the months that had elapsed during 1956 before April 16, the effective date of the action.

\* \* \* \* \*

IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS JANUARY-JULY 1956: Fillets: Groundfish fillet imports in July 1956 were up 22 percent over a year ago. Total fillet imports the first seven months of 1956 were 33 percent greater.

Imports of blocks and slabs of groundfish reversed the general trend noted earlier in the year--July imports were 57 percent above a year earlier. Imports for the first seven months of 1956 were, nevertheless, 28 percent less than in 1955.

Swordfish: July imports were 6 percent less than a year earlier, and the first seven months total was 11 percent less than a year earlier.

Tuna: There was an over-all decline in frozen tuna imports, but an increase in canned tuna. Fresh or frozen tuna: due to a drop of some 10 million pounds in albacore, July tuna imports were 49 percent less than a year ago. First seven months 1956 total tuna imports were 20 percent below a year ago; only half as much albacore was received but 9 percent more of other species. Canned tuna: July imports, practically all canned in brine, were 26 percent more than a year earlier. First seven months 1956 total imports were up 22 percent, canned albacore tuna was up 29 percent, other species 18 percent.

Bonito and Yellowtail: July imports 40 percent less than a year ago. Total imports for first seven months this year were down 15 percent.

Salmon: Canned salmon imports continued to gain, frozen salmon declined. Frozen salmon imports during July were 23 percent less; seven months total down 49 percent against last year. Canned salmon: July imports were about three times those of a year ago; seven months total 8 times that of 1955. Principal gain in imports was from Japan, but also due to tripled Canadian imports.

Sardines: In line with the previous trend, July imports down 86 percent from year ago. Imports during first seven months were 20 percent less.

Shrimp: July imports exceed year ago by 24 percent. Total for year through July was 48 percent greater. Principal gain in imports was from Mexico, but Panama, Ecuador, and Japan all showed substantial increases over year ago.

Lobster: Canned imports for first seven months down 2 percent. Frozen lobster July imports 20 percent greater than a year ago. Total for first seven months up 6 percent. Imports from Canada and Mexico less than a year ago. Increases principally from Union of South Africa, New Zealand, and Cuba.

Crab Meat: Canned July imports were double those of a year ago. Imports for year through July increased 65 percent.

Fish Meal: July imports down 15 percent. Receipts for first seven months 5 percent more than previous year.

Exports: Little change in exports of fishery products during July. Imports for year through July were 83 percent less for canned salmon, 11 percent more for canned sardines and 27 percent more for fish oils.

\* \* \* \* \*

GROUND FISH FILLET IMPORTS DECLINE IN SEPTEMBER 1956: A total of 9.1 million pounds of groundfish (including ocean perch and fish blocks) was imported in the United States during September 1956. Imports of these products during the like period of 1955 amounted to 10.4 million pounds. The decline of 13 percent was caused primarily by lighter receipts from Canada (down 32 percent) which offset the 1.7-million-pound increase in fillets from Iceland. Imports from Norway and the Netherlands also were somewhat larger while receipts from Denmark and West Germany were less than in September 1955.

Groundfish and ocean perch fillets received from Canada during September 1956 amounted to 6.1 million pounds--67 percent of the month's total receipts. Iceland accounted for 28 percent of these imports while the remaining 5 percent were received from Norway, Denmark, the Netherlands, and West Germany.

Thirteen countries exported 103.0 million pounds of groundfish and ocean perch fillets to the United States during the first nine months of 1956, compared with 97.7 million pounds during the corresponding period of 1955. Canada (68.1 million pounds) led all other countries and accounted for 72 percent of the nine-month total imports. Iceland (17.4 million pounds) was in second place, followed by Norway (2.7 million pounds), Denmark (2.5 million pounds), and West Germany (1.7 million pounds).

Note: See Chart 7 of this issue.



## White House Pays Tribute to Fishing Industry

In a telegram addressed to the Chairman, National Fish Week Committee, the President, on October 16, congratulated the Fishing Industry for its efforts and contributions to the National Economy. The telegram reads as follows:

"To the Fishing Industry of America, I send greetings. Every part of your industry contributes its share to the National Economy and to the nutritional well-being of our citizens. The combined work of fishermen, processors, and distributors enables this country to enjoy the widest variety of fish and shellfish in the world.

"My congratulations go to your 87,000 Commercial Fishermen and to the Fishing Industry which supplies the nation with more than four and one half billion pounds of sea food every year.

/s/ Dwight D. Eisenhower"



## Wholesale Prices, September 1956

Catches in September 1956 of fish and shellfish were about normal for this period of the year. Seasonal declines for some East Coast varieties, light supplies of Pacific salmon, and the Pacific halibut fishery approaching the end of a drawn-out season were balanced somewhat by greater landings of shrimp. There was little change in the average wholesale price for all edible fish and shellfish during the

month. The September 1956 index (114.3 percent of the 1947-49 average) for all edible fish and shellfish (fresh, frozen, and canned) declined only 0.3 percent from August 1956, but was higher by 4.7 percent than for September 1955.

Landings of the leading fresh finfish in September declined. Compared with the previous month, wholesale prices for Great Lakes whitefish were up sharply and the market for fresh haddock, salmon, and halibut continued firm. The index for the drawn, dressed, and whole finfish subgroup in September was 1.1 percent above that for August and 6.1 percent above September 1955. The very high indexes for fresh-water whitefish and yellow pike in September 1955 were due to the strong Jewish holiday market occurring in that month, but were offset by the lower haddock, salmon, and halibut prices.

Although landings of large drawn haddock at Boston were relatively light this September, those of small haddock (which are usually filleted), were good. Wholesale prices this September for fresh drawn haddock and fresh haddock fillets held

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

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices <sup>1/</sup> (\$)		Indexes (1947-49=100)				
			Sept. 1956	Aug. 1956	Sept. 1956	Aug. 1956	July 1956	Sept. 1955	
			ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) . . . . .						114.3
<u>Fresh &amp; Frozen Fishery Products:</u> . . . . .						125.8	126.5	125.9	113.8
<u>Drawn, Dressed, or Whole Finfish:</u> . . . . .						132.6	131.2	122.5	125.0
Haddock, lge., offshore, drawn, fresh . . . . .	Boston	lb.	.10	.10	100.1	101.3	92.2	58.5	
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.45	.44	139.2	136.9	122.2	133.1	
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.68	.66	151.7	148.3	142.7	140.4	
Whitefish, L. Superior, drawn, fresh . . . . .	Chicago	lb.	.61	.49	151.2	121.5	119.0	235.5	
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.74	.65	149.6	131.4	131.4	222.4	
Lake trout, domestic, No. 1, drawn, fresh . . .	Chicago	lb.	.58	.60	117.8	122.9	122.9	123.0	
Yellow pike, L. Michigan & Huron, rnd., fresh . .	New York	lb.	.50	.55	117.3	129.0	126.7	211.0	
<u>Processed, Fresh (Fish &amp; Shellfish):</u> . . . . .						126.3	122.2	128.6	107.8
Fillets, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.29	.29	97.0	97.0	112.3	78.3	
Shrimp, lge. (26-30 count), headless, fresh . . .	New York	lb.	.72	.70	113.0	110.2	126.4	94.5	
Oysters, shucked, standards . . . . .	Norfolk	gal.	6.00	5.75	148.5	142.3	136.1	129.9	
<u>Processed, Frozen (Fish &amp; Shellfish):</u> . . . . .						102.9	114.5	117.7	93.8
Fillets; Flounder, skinless, 1-lb. pkg. . . . .	Boston	lb.	.40	.40	103.4	103.4	102.1	102.1	
Haddock, sml., skins on, 1-lb. pkg. . . . .	Boston	lb.	.28	.28	86.3	86.3	86.3	84.7	
Ocean perch, skins on, 1-lb. pkg. . . . .	Boston	lb.	.28	.28	110.8	110.8	109.8	108.8	
Shrimp, lge. (26-30 count), 5-lb. pkg. . . . .	Chicago	lb.	.64	.78	99.2	120.4	126.6	84.1	
<u>Canned Fishery Products:</u> . . . . .						98.0	97.7	98.7	102.7
Salmo, pink, No.1 tall (16 oz.), 48 cans/cs. . . .	Seattle	cs.	22.65	22.65	120.0	120.0	120.0	114.8	
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	10.60	10.60	76.4	76.4	76.4	92.3	
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs. . . . .	Los Angeles	cs.	7.50	7.50	87.5	87.5	87.5	88.1	
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs. . . . .	New York	cs.	7.70	7.50	81.9	79.8	87.3	81.9	

<sup>1/</sup>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.

steady at August levels. Prices at wholesale for fresh 26-30 count shrimp at New York were up slightly and the shucked oyster prices for the new season starting September 1 were about 50 cents a gallon higher. Higher shrimp and oyster prices boosted the September fresh processed fish and shellfish subgroup index about 3.4 percent above August. When compared with September 1955, the September 1956 prices for items in this subgroup were higher by 17.2 percent due to substantially higher prices for all the items in this subgroup.

Frozen fillet prices at the wholesale level were unchanged from August to September, but frozen shrimp prices at Chicago declined 17.9 percent. Prices for frozen shrimp normally start to decline in September due to greater catches of shrimp in the Gulf of Mexico. The rather sharp decline in frozen shrimp prices in September 1956 were probably not as drastic as the index indicates since part of the drop was attributed to the lack of the higher-priced white shrimp on the market during the pricing period. Primarily due to the lower frozen shrimp price, the index for the processed frozen fish and shellfish subgroup declined 10.1 percent from August to September, but was still 8.8 percent above September 1955.

There were no significant changes in canned fishery products from August to September 1956 except for a slight change upward in the wholesale price for canned Maine sardines. The late season pack of Maine sardines has not been up to expectations and the pack, although higher than in 1955, is still below average. The index for canned fishery products in September was only 0.3 percent above that for August, but 4.6 percent below September 1955. When comparing this September's canned fish prices with those for last September, canned tuna prices were substantially lower this year than last, and this more than offset the increases in the three other canned fishery products in this subgroup.



#### MOTION PICTURES CAN PROMOTE FISH SALES

Industry has found that the motion picture, used as a sales-promotion medium, reaches a great number of consumers in a relatively short period--at low cost as compared to most other advertising media. Food industries which are in competition with the fisheries, such as the meat and poultry industries, are making good use of motion pictures in their advertising campaigns. However the fishing industry is also realizing the important role of the motion picture in sales promotion, and fishery films produced by individual fish companies and through Government-industry cooperation are stimulating daily the demand for fishery products.

Reports received from television stations and the approximately 140 Fish and Wildlife Service film depositories indicate that several million persons a year see the commercial fisheries motion pictures produced and distributed by the Service.

The Service has a program whereby it will cooperate with any segment of the fishing industry desiring to finance the production and distribution of motion pictures: For example, the most recent reports received from Service film libraries show that a sound, color, 16mm. film produced about eight years ago by the Service, in cooperation with the Maine sardine industry, has been in constant distribution during those years and has had a larger audience every reporting period. This film has averaged about one television showing a week during these years and, in addition, about 300,000 persons see it each year by obtaining library prints. The effectiveness of the program is best evidenced by the fact that the Maine sardine industry is sponsoring a follow-up industry-Government film, cooperatively-produced, featuring the use of Maine sardines in hot and cold dishes. Similar films have been produced cooperatively with the shrimp, menhaden, and other industries related to the fisheries.

The Service fishery motion pictures are distributed free of charge to the public and, with the exception of the initial cost of production and the prints, the motion picture assistance is free of charge to the segments of the industry which sponsor the production of the film. Eleven fishery market development motion pictures are now in distribution and three are currently in production. Fishery Leaflet 255, entitled Fishery Motion Pictures, contains the titles and a description of each film as well as information as to how they may be borrowed free of charge. This leaflet may be obtained by addressing requests to the U. S. Fish and Wildlife Service, Washington 25, D. C.