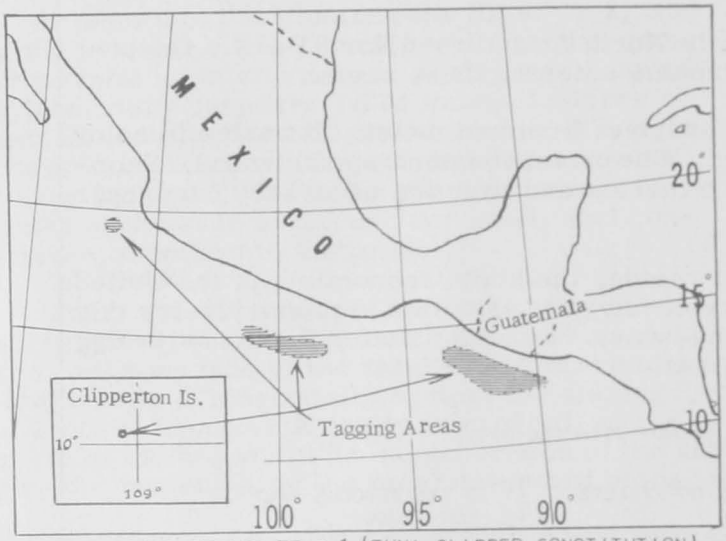
TRENDS AND DEVELOPMENTS

California

TUNA TAGGED OFF THE COASTS OF MEXICO, GUATEMALA, AND EL SALVADOR (M/V Constitution Cruise 57-C-1): In the waters off Southern Mexico, Guatemala, El Salvador, and Clipperton Island, biologists of the California Department of Fish and Game aboard the commercial tuna clipper Constitution tagged 871 yellowfin tuna and 128 skipjack tuna with the cooperation of the crew. The cruise (January 23-March 22, 1957) was cut short due to engine trouble.



TUNA-TAGGING CRUISE 57-C-1 (TUNA CLIPPER CONSTITUTION).

The cruise was planned for the following purposes: (1) to tag yellowfin tuna and skipjack with type G "spaghetti" tags; (2) to continue testing the relationship between tag color (red and white) and tag recovery success; (3) to field test efficiency of dart-type tags: (4) to make incidental collections and observations of marine life.

The 999 tuna tagged and released in good condition consisted of 871 yellowfin and 128 skipjack tuna. Of these 999 fish, 815 were tagged off the coasts of Guatemala and El Salvador, 178 off Southern Mexico, and 6 off Clipperton Island.

Number of Fish Released by Tag Colors and Type

Species	Loop		Dart			Totals
			Hollow Tip		Solid Tip	
	Red	White	Red	White	Clear	
	(Number of Fish)					
Yellowfin	360	403	44	49	15	871
Skipjack	53	53	11	0	11	128
Totals	413	456	55	49	26	999

A total of 130 fish, predominately yellowfin tuna, were tagged with experimental dart tags. Two types of heads were used on the darts--hollow nylon tubing and solid nylon rod. It was found that both types could be applied quicker and easier than conventional loop tags. All dart tags were applied slightly ahead of the second dorsal fin and the dart locked between the spines.

On several occasions during the cruise freshly-caught yellowfin tuna were observed to have large healed and partially healed wounds apparently inflicted by sharks. These fish were actively feeding on the bait thrown from the boat and showed no ill effects from their injuries.

Surface water temperatures in areas fished ranged from 76° F. to 82° F. The Gulf of Tehuantepec showed the greatest temperature variation, 76° F. to 81° F., temperatures elsewhere ranged from 80° F. to 82° F.

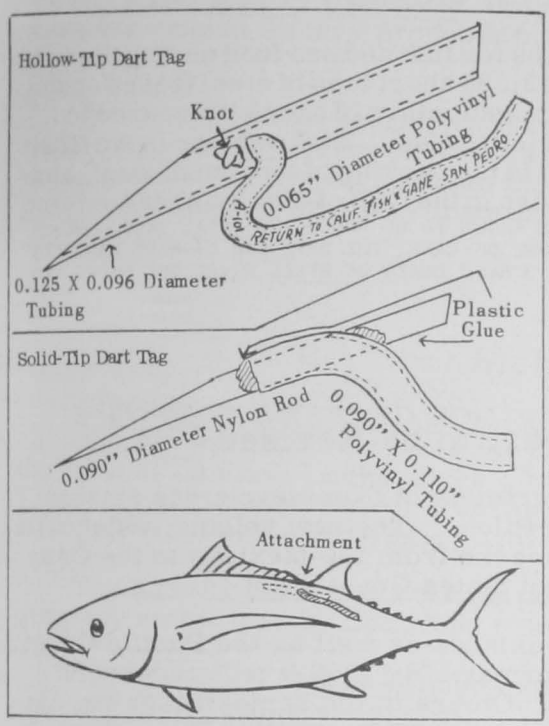


DIAGRAM OF DART-TYPE TAGS AND LOCATION OF TAG ON TUNA (TUNA CLIPPER CONSTITUTION, CRUISE 57-C-1)

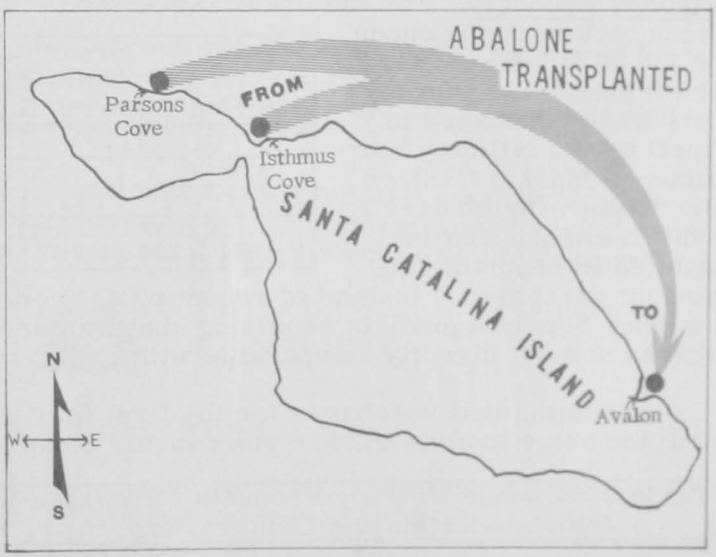
A collection of marine life specimens was made from night light stations, tuna stomach contents, bait-net hauls, and by brailing from the boat when in the vicinity of logs.

* * * * *

ABALONE TAGGING AND SURVIVAL STUDIES (M/V Nautilus Cruise 57-N-1): Over 1,000 pink abalone (Haliotis corrugata) were collected off Santa Catalina Island by divers working from a diving boat (Mollusk) and transported aboard the Nautilis by biologists of the California Department of Fish and Game for tagging. In addition, the red abalone (Haliotis rufescens) transplanted in Isthmus Cove, Santa Catalina Island, in February 1957 were found to have adapted themselves successfully in the new environment.

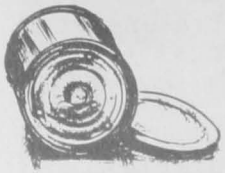
The purpose of the cruise (March 23-April 1, 1957) was: (1) to measure and tag pink abalone as a method to determine growth rate; (2) to develop transporting methods and techniques for pink abalone; and (3) to inspect the red abalone transplanted to Santa Catalina Island from San Miguel Island by the abalone investigation in February 1956.

Of the 1,000 or more abalone collected, over 800 were taken from Parsons Cove and approximately 200 from Isthmus Cove. The abalone were measured and tagged during transport and placed on the bottom on the east side of Avalon Harbor in the Fish and Game preserve area. Representatives of the City of Avalon and other prominent citizens were advised of the project and promised full cooperation to see that the abalone would not be disturbed. New tags and tagging methods were developed for the pink abalone; due to their shell structure it was not possible to utilize the same tags used on the red abalone. These red abalone have taken over in this new location and adapted themselves successfully. Only one empty shell was found. Many of the red abalone were observed which had added growth to their shells. Of the original plant it is estimated that approximately 85-90 percent have survived.



M/V NAUTILUS CRUISE 57-N-1, MARCH 23-APRIL 1, 1957

Cans--Shipments for Fishery Products, January-February 1957



Total shipments of metal cans for fish and sea food during the first two months of 1957 amounted to 13,335 short tons of steel (based on the amount of steel consumed in the manufacture of cans), compared to 10,542 short tons in the same period of 1956. Fish canning in the first part of 1957 was largely confined to the packing of tuna, mackerel, and anchovies in California and oysters in the Gulf of Mexico area.

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.

Coast Pilot for Pacific Coast to be Revised

The Coast and Geodetic Survey, U. S. Department of Commerce, has started revising the Pacific Coast edition of its "Coast Pilot." The new volume, which will give up-to-date descriptions of perils and landmarks from the Mexican to the Canadian border, will be published in 1958 as United States Coast Pilot 14.

The 1958 volume will include the Hawaiian Islands as well as the Pacific Coast. The Survey is using a new and more compact format. By 1960 it will reduce the number of volumes from the present ten to six. Others in the series cover the Atlantic and Gulf Coasts and Alaska. Annual supplements are supplied for each.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, APRIL 1957: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 1.8 million pounds (value $970,000) of fresh and frozen fishery products were purchased in April by the Military Subsistence Market Centers. Beginning with January 1, 1957, a change was instituted in reporting the amount purchased. Instead of reporting deliveries as in the past, the Military Subsistence Supply Agency is reporting what was ordered. Therefore, this year's purchases are not directly comparable with previous years.

Table 1 - Fresh and Frozen Fishery Products Purchases by Military Subsistence Market Centers, April 1957 with Comparisons

QUANTITY				VALUE			
April		April		April		April	
1957	1956	1957	1956	1957	1956	1957	1956
(1,000 Pounds)				($1,000)			
1,837	1,835	7,367	6,778	970	832	3,832	3,533

Assuming that purchases for the first four months of this year as compared with the same months in 1956 are roughly comparable, purchases were higher by about 8.7 percent in quantity and 8.5 percent in value for the first four months of 1957.

Table 2 - Canned Fishery Products Purchases by Military Subsistence Market Centers, Jan.-Apr. 1957

Month	QUANTITY			
	Tuna	Salmon	Sardines	Total
	(1,000 Pounds)			
Jan.-Apr.	841	992	31	1,864

Prices paid for fresh and frozen fishery products in April averaged 52.8 cents a pound, or about 2 percent less than the average of 54.0 cents paid in March, but higher by about 17 percent than the April 1956 average of 45.3 cents.

Canned Fishery Products: Canned sardines (12,000 pounds, valued at $4,027) were the canned fishery products purchased for use of the Armed Forces during April 1957.

In addition to the purchases made under contract, the Armed Forces generally make some local purchases which are not included in the data given. Therefore, actual purchases are higher than indicated, but it is not possible to obtain the local purchases made by military installations throughout the country.

Fish Hatchery

CONTRACT AWARDED FOR OREGON SALMON HATCHERY: The award of a contract for the construction of the Cascade Salmon Hatchery on Eagle Creek near the town of Cascade Locks, Oreg., was announced on April 29 by the Assistant Secretary of the Interior for Fish and Wildlife. The contract for $541,418 was awarded to a Portland, Oreg., firm.

The hatchery is being built as part of the Columbia River Fishery Development program authorized by Congress to restore depleted Columbia River salmon runs.

"Construction of this salmon hatchery is an excellent example of cooperation among Federal and state agencies," the Assistant Secretary pointed out. "Funds for the hatchery are appropriated by Congress to the Corps of Engineers and turned over to the United States Fish and Wildlife Service. The United States Forest Service of the Department of Agriculture has agreed to provide the site and the Oregon Fish Commission will take over operation of the hatchery."

Activation of this contract will start the seventh of 15 salmon and steelhead hatcheries contemplated for the State of Oregon under the program. States cooperating in the program are Oregon, Washington, and Idaho.

Work to be accomplished under the Cascade hatchery contract consists of construction of raceway ponds, holding pond and fish ladder, hatchery and utility building, residence quarters and garages, sewer system, water system roads, and relocation of a Forest Service residence.

The Cascade hatchery, when completed, will be devoted to the artificial propagation of chinook, silver, and chum salmon and will have an estimated annual production of 11,000,000 young migrants--a measurable contribution to the restoration program.

Fisheries Loan Fund

APPLICATIONS TOTAL $8 MILLION: As of April 29, a total of 211 fishery loan applications amounting to $7,962,100 had been received by the United States Fish and Wildlife Service. Of these, 86 cases amounting to $2,487,400 have been approved.

Florida

FISHERIES RESEARCH, JANUARY-MARCH 1956: The following are some excerpts from the Quarterly Report on Fisheries Research, March 1957, of the Marine Laboratory of the University of Miami.

Landings: Preliminary 1956 total landings for Florida show an increase over 1955 of more than 32 million pounds. Much of this can be attributed to a larger menhaden catch. Other preliminary figures indicate an increase in the landings of shrimp, Spanish mackerel, grouper, and spiny lobster. Mullet, the second most important fishery in the State has stabilized over the past few years. Shrimp were again the major source of fishery income to the state and will probably show the second best year in history with over 54 million pounds landed, with an ex-vessel value of over 18 million dollars.

Tortugas Shrimp Fishery: The collection and analysis of shrimp dealers' records continued throughout the quarter. To date records on 11 boats from a single dealer in Key West have been gathered and processed covering the years 1953 through 1956. The yearly average catch per unit of effort shows a downward trend with a decrease of about 90 pounds a boat a night over this four-year period. Records of 16 boats fishing out of Naples have been gathered and processed. These records cover the years 1954 through 1956 and also show a downward trend with a decrease of over 120 pounds a boat a night over the three-year period.

Over this same period there has been a sharp increase in the number of boats fishing the grounds. Preliminary figures suggest that the number in 1953 may have been under 300 and that for 1956 about 600. Total production for this same time period has increased slightly over 20 million pounds.

It is too early in the study to say if these catch-per-unit-of-effort figures are representative of abundance of shrimp or if they reflect fishing intensity. Records from boats fishing during the early period of the fishery will provide us with some clues concerning the value of the catch per boat per night as an indicator of apparent abundance.

The appearance of two peaks in the small shrimp fishery, one in the spring and one in the fall, becomes more certain as additional records are obtained.

Spotted Sea Trout: The apparent decline in commercial landings of spotted sea trout can probably be explained by the fact that these fish were formerly taken incidental to mullet fishing. The decline in mullet landings due to low prices began in mid-1952 and has continued to the present time. This decline is closely paralleled by a decline in landings of spotted sea trout.

A decided shift by the commercial fishermen to species which are not associated ordinarily with the spotted sea trout has become apparent. This shift eliminates much of the production formerly obtained by these experienced fishermen.

Mullet Marketing: Some time was spent during the quarter on a follow-up of the mullet marketing study. Fish dealers from Naples to Pensacola were contacted concerning this study and recommendations made. Market outlets for Florida fishery products were discussed. Particular emphasis was placed on the market areas of Cincinnati, Milwaukee, and Detroit.

Black Spot Control in Shrimp: Control of black spot in shrimp continues to be a major activity. Sodium bisulfite is now being widely used in the Florida industry and tests are being conducted to ensure its proper use, and to determine more accurately its effects.

Earlier reports showed that 2½-percent dip solutions gave the best control of black spot in experimental work. Field tests led to the recommendation that half this concentration (1¼ percent) should be used, balancing a somewhat reduced effectiveness against black spot control with reduced cost and less chance of misuse.

The most recent experiments involved the use of still lower concentrations (0.5 percent) to determine if this was sufficiently effective for practical use. This experiment started at the end of of March and results were expected early in April.

Studies were continued to determine the effect of antioxidant butylated hydroxy toluene (Ionol) on black spot in shrimp. Results from these tests indicate that at levels above 1.0 percent black spot can be retarded up to 14 days, providing that the dipping time is for periods longer than five minutes.

Studies were commenced on the use of Ionol when applied as a glaze to frozen shrimp. Samples will be drawn for testing over a none-month period to determine if blackening during frozen storage can be retarded in this way.

Spoilage Control in Shrimp: Studies were continued to determine the preservative action on shrimp of the antibiotic terramycin when applied in a dipping solution.

A trip was made in February on a shrimp boat out of Key West, and samples of pink shrimp (Penaeus duorarum) were dipped in three concentrations of seawater solutions of terramycin. Concentrations of 10, 30, and 50 parts per million were dipped for 1, 5, and 15 minutes, so that a total of nine conditions were tested. Three control (untreated) samples were also collected.

Bacterial counts on the treated samples from these tests showed no significant differences from the controls. Odor and taste scores likewise showed small and probably insignificant differences compared to control scores. Black-spot incidence did not seem to be increased or decreased by the use of the antibiotic.

Further tests are planned using terramycin in April.

Another bactericidal agent was tested, in an attemp to find a means of reducing shrimp spoilage. This is Dynactol (monoxychlorosene) which was tested as a seawater dip solution at 0.3-percent concentration. This work was carried out on a vessel out of Key West during February.

Results of this one test were promising, the quality of the shrimp (in terms of bacterial counts, taste and odor scores) being better than the controls. An important additional fact was that blackspot incidence seemed to be considerably reduced.

Further tests were planned in May with this chemical.

Rancidity in Fish: The study on the effect of chemicals in controlling the development of rancidity in frozen Spanish mackerel was completed. Results from these tests indicate that concentrations of the antioxidant Ionol in the range of 200-300 p.p.m. are effective in the control of rancidity. At concentrations lower than 200 p.p.m. the chemical was ineffective and taste panel scores were either not higher or below that of the control.

Concentrations of Ionol in the 200-300 p.p.m. range were also effective in preventing the fading of the pigment spots. The controls, which had not been treated, showed bleaching. This follows the successful retention of color of red snappers (Lutjanus aya) with Ionol at the 200-300 parts per million fresh-water solutions. The color remained bright after six months of storage.

Smoking: Studies were continued on the prevention of mold in smoked fish (mullet and mackerel). Results from the first test indicated that neither the treated nor untreated samples of smoked fish showed any signs of mold growth up to 20 days when held under ice box temperatures. This was true whether the samples were wrapped in Mylar 332 (an experimental film produced by DuPont) or unwrapped, whether treated with sorbic acid or not.

Both treated and untreated samples held in room temperatures showed signs of mold growth on the eighth day of storage. Treatment involved dipping the fish in a 0.1-percent solution of sorbic acid.

A second series of tests were run on smoked mullet. Both wrapped and nonwrapped samples were held under room temperatures. In this test samples were wrapped in Mylar 322 and the bag was filled with carbon dioxide gas. Other samples wrapped in Mylar 322 were sprayed with 0.5-percent sorbic acid. None of these two groups of samples showed any signs of mold after 21 days of storage, and the experiment is continuing.

Maine Sardines

CANNED SARDINE STOCKS, APRIL 1, 1957: Distributors' stocks of Maine canned sardines totaled 295,000 actual cases as of April 1, 1957, exactly 49,000 cases or 14.2 percent less than the 344,000 cases held by distributors on January 1, 1957. Stocks held by distributors on April 1, 1956, amounted to 268,000 actual cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on April 1, 1957, were 465,000 standard cases (100 3¼ oz. cans) as compared with the 879,000 cases held on January 1, 1957, and 152,000 cases on April 1, 1956.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners Stocks, April 1, 1956 with Comparisons

Type of Stocks	Unit	1956/57 Season			1955/56 Season				
		4/1/57	1/1/57	11/1/56	7/1/56	6/1/56	4/1/56	1/1/56	11/1/55
Distributor	1,000 actual cases	295	344	388	154	160	268	326	354
Canner	1,000 std. cases 1/	465	879	1,016	315	64	152	475	625

1/ 100 3¼-OZ. CANS EQUAL ONE STANDARD CASE.

The pack of Maine sardines during the 1956 packing season amounted to 2,221,793 standard cases, much higher than the 1,254,222 standard cases packed in the 1955 season. However, the 1955 sardine pack was the lowest since 1939. Shipments from April 15, 1956 (the beginning of the season) to April 1, 1957, totaled 1,877 standard cases, somewhat higher than shipments of 1,793 cases for the same period a year earlier.

Marketing Prospects for Edible Fishery Products, Summer 1957

United States civilian consumption of fishery products per person was at least as large this winter as last, and is expected to continue close to the year-earlier rate this summer. Retail prices, judging from the Bureau of Labor Statistics wholesale prices in primary markets, averaged about the same as in the first quarter of 1956. They will likely maintain this relationship to the year-ago level.

Commercial landings of edible fish and shellfish this winter for use in the fresh or frozen forms differed little in total from those of a year earlier but there were variations in the catch of individual species in the two periods. Commercial fishing operations are now on a seasonal upswing, which will continue until early or midsummer.

About 34 million pounds of edible fishery products were frozen commercially in the continental United States during the first quarter of 1957. This was 12 percent less than in the same part of 1956. Part of the reduction apparently is due to under-reporting on freezings of fish sticks. The total volume of freezings will soon be increasing seasonally with the catch reaching a peak in July or August.

Cold-storage holdings of frozen fish and shellfish on May 1 totaled less than a year earlier. The trade will soon begin building up stocks for marketing next winter when commercial landings are at their seasonal low point.

Imports of edible fishery products during the next few months are expected to be close to the year-earlier total, but some reduction in exports is probable. The latter will in large part be due to the fact that our supplies of canned California sardines (pilchards) are relatively low because of the poor pack last fall. California sardines have always been one of our major export items among edible fishery products.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the U. S. Fish and Wildlife Service, and published in the former agency's May 2 release of The National Food Situation (NFS-80).

NOTE: SEE COMMERCIAL FISHERIES REVIEW, MARCH 1957, P. 23

Maryland

SHELLFISH RESEARCH STUDIES: The current shellfish research program of the Maryland Department of Research and Education falls into three general divisions. (1) Studies of the soft shell clam (Mya arenaria), and of hydraulic clam dredging, constitute the full time program of two biologists of the Chesapeake Biological Laboratory at Solomons. (2) Oyster studies in the Chesapeake area are conducted by two other biologists of the Laboratory staff who are assigned to this work on an approximate half-time basis. (3) Oyster studies in the Chincoteague Bay area constitute the major portion of the program of a resident biologist stationed at the Department's field laboratory in Worcester County. Certain phases of the research program are conducted jointly by the above divisions, and there are several cooperative projects with personnel of the Department of Tidewater Fisheries and of the United States Fish and Wildlife Service Laboratory at Annapolis.

Soft Clam Studied: Present emphasis in the soft-shell clam program deals with the effects of hydraulic clam dredging upon the bottom structure, upon rooted

marine vegetation, upon the oyster population, upon the clam population, and upon other associated organisms, especially those of economic importance. Experimental plots have been set aside in the Patuxent River and in Eastern Bay. Observations have been made by aerial photography, skin diving, glass-bottomed viewing boxes, direct observation of flats exposed by exceptional low tides, bottom cores, and by instruments for measuring turbidity and siltation. A modern commercial-type hydraulic clam dredge is used for experimental dredging and gatherning clam population data. Studies of spawning, setting and growth of the soft clam in the Chesapeake area are in progress, and a study of the effect of temperature upon pumping rates of the clam has been completed. A paper dealing with the effects of hydraulic clam dredging has just been published. This supplies information of use to the General Assembly in their consideration of regulatory measures for the industry.

Oyster Studies: Active projects in the Chesapeake oyster research program center around setting and oyster growth. The time and intensity of setting are determined annually by test-shell exposures in the Solomons area and in selected areas that offer potentialities for seed production. Counts of the surviving commercial set on State shell plantings and upon old cultch on natural bars, together with observations on the composition of the bar populations, are made during the fall and winter months in cooperation with the Department of Tidewater Fisheries and the Annapolis Shellfisheries Laboratory of the U. S. Fish and Wildlife Service. Comparisons of rates of growth and of mortality are made among groups of experimental seed oysters from different sources when planted on trays at Solomons and in Chincoteague Bay. Determinations of oyster larvae abundance are made by means of single continuous samples of water pumped from a 12-foot depth by a boat moving the length of the area to be studied. The relationship of the observed number of larvae to the subsequent spatfall on test shells is being studied as a possible means of predicting oyster sets in a given area. Trays of shells are planted during different months of the year at a selected location in St. Marys River in order to compare the efficiency as cultch of shells planted at different seasons. The weighted incidence of infection by the fungus Dermocystidium marinum (a standard method for scoring the degree of infection) is determined each fall from oyster samples in those areas where the parasite has been found.

Studies of the seasonal abundance of oyster drills in Chincoteague Bay, and of the effectiveness of drill traps as a control measure are being made in cooperation with the United States Fish and Wildlife Service. Oyster sets on experimental plantings of shells in intertidal windrows, and in suspended wire bags, are being evaluated as a possible source of local seed. The growth and survival of this seed is being compared with that from other sources. Data upon the nature and relationship of the hydrography of the area to oyster growth and to the distribution and abundance of the hard clam are being gathered, together with a general survey of the marine biota.

Compilation of hydrographic and meteorological data is on a continuous basis so that the effects of seasonal and annual variations in environment upon shellfish can be evaluated (G. F. Beaven, Maryland Tidewater News, January-February 1957).

Michigan

SEA LAMPREY WEIRS OPERATING IN 1957: The operation of 90 sea lamprey weirs in Michigan streams was under way in April and many streams will be protected against the passage of the parasitic sea lamprey this year.

The Michigan Conservation Department Director recently granted permission to the United States Fish and Wildlife Service to install, maintain, or operate "screens, weirs, traps and electrical devices" in 90 streams tributary to the Great Lakes for control and suppression of sea lampreys.

SEA LAMPREY
(PETROMYZON MARINUS)

MOUTH OF SEA LAMPREY

The streams include 50 in the upper peninsula, tributary to Lake Superior; 21 upper peninsula streams which flow into Lake Michigan; 17 lower peninsula tributaries of Lake Michigan; and 2 lower peninsula streams which flow into Lake Huron.

The weirs, located near the mouths of streams, set up an electrical barrier which prevents lampreys and fish from moving upstream. Instead, lampreys and fish are guided into traps. The game fish are then removed from the trap and allowed to continue upstream while the lampreys are destroyed.

Lampreys attempt to move from the Great Lakes into streams to spawn and the weirs generally will be in operation from April 1 to July 31, a period which covers the normal spawning time of this parasitic fish that has invaded the Great Lakes in recent years and caused heavy mortality among Great Lakes fish populations, particularly lake trout.

Moorage of Fishing Vessels at Port Orford, Oregon

The safe moorage of fishing vessels presents many difficulties. This article is a photographic report of how the problem of moorage has been solved at Port Orford, a fishing community in southern Oregon not far from the Oregon-California border.

FIG. 1 - THE OPEN EXPOSED HARBOR AT PORT ORFORD. (THE LINE ACROSS THE PICTURE IS A STEEL CABLE ATTACHED TO THE END OF THE DOCK.)

FIG. 2 - THE DOCK. NOTE THE DERRICK USED TO LIFT THE TROLLERS OUT OF THE WATER. THE LARGE BUILDING ON THE RIGHT IS THAT OF A FISH COMPANY.

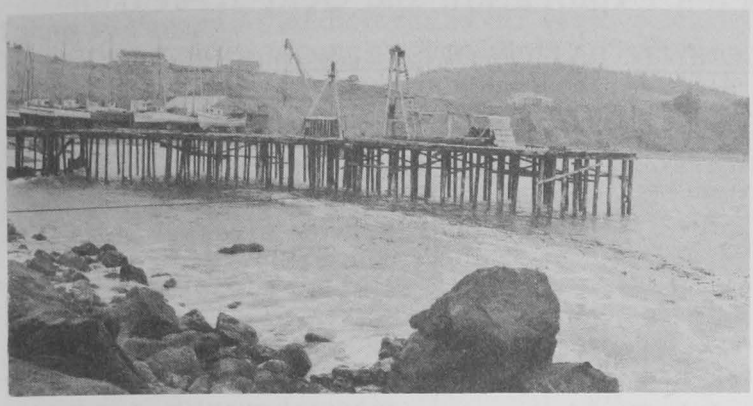


FIG. 3 - END OF DOCK, SHOWING THE DERRICK AND A PILE DRIVER. (THE CABLE IS THE SAME ONE THAT IS SHOWN IN FIG. 1.)

FIG. 4 - TROLLERS ON DOCK. NOTE HOW THE USE OF THE LARGE DOLLIES PERMITS THE TROLLERS TO BE MOVED EASILY TO ANY DESIRED LOCATION. THESE TROLLERS ARE DAY BOATS: THAT IS, THEY LEAVE IN THE MORNING AND RETURN IN THE EVENING OF THE SAME DAY.

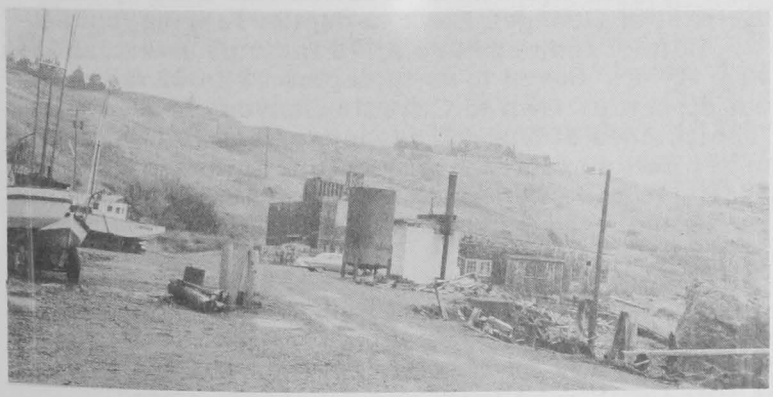


FIG. 5 - FISH COMPANY SITE AT ORFORD. THE PRODUCTS THE COMPANY HANDLES ARE SALMON AND CRAB.

NOTE: THE AUTHOR GRATEFULLY ACKNOWLEDGES THE AID OF CARL FISHER OF THE PORT ORFORD FISH COMPANY.

--BY F. BRUCE SANFORD, CHEMIST,
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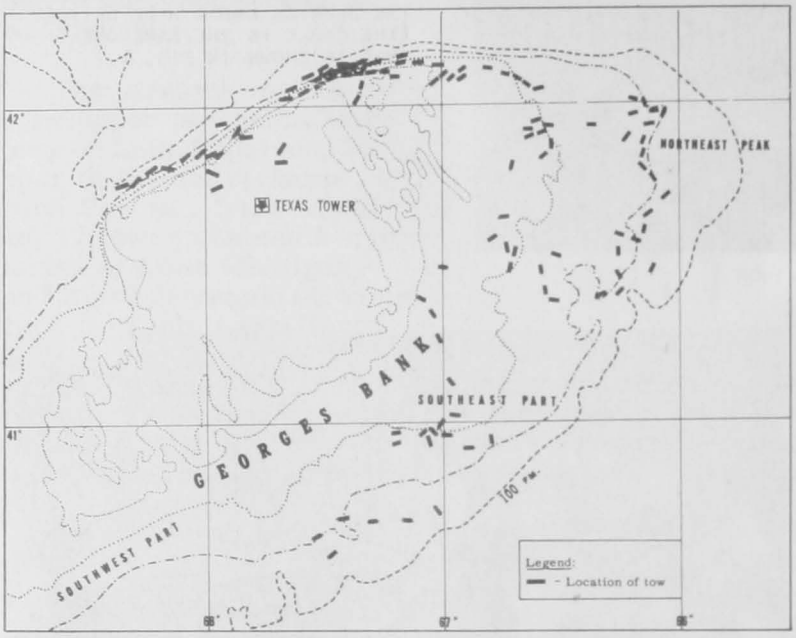
North Atlantic Fisheries Exploration and Gear Research

SIZEABLE COMMERCIAL CONCENTRATION OF SCALLOPS ON GEORGES BANK (M/V Delaware Cruise 57-4): Georges Bank supports sizeable commercial concentrations of sea scallops (Pecten grandis) in two areas not presently being fished, according to the results of the second scallop exploratory cruise by the Service's vessel Delaware. The cruise was completed on May 10, 1957.



M/V DELAWARE CRUISE 57-4 (APRIL 23, 1957-MAY 10, 1957)

Scallops were found to be widespread in light commercial quantities in most all areas explored from 30 to 50 fathoms along the northern edge and west of the northeast peak. Most scallops taken were of good commercial size, with some catches yielding nine and ten meats per pound.

During the three-week trip, 117 tows were made with the best catches of 7 bushels/30-minute tow (15 eyes/1 pound) in location 1H3 2152 2138, 1H2 1037 1040 and 8 bushels/40-minute tow (10 eyes/1 pound) in location 1H3 2158 -, 1H2 1066 1057. Eight tows on the SE. part of Georges Bank in depths ranging from 46 to 72 fathoms caught no scallops. Bottom temperature at 72 fathoms was 48.2° F., while the surface temperature was 42° F. Seven tows in depths 52 to 62 fathoms from the NE. Peak in a southwest direction down to Corsair Canyon caught scallops only on two consecutive tows. The catches of 5 and 6 bushels of small scallops yielded 24 and 21 meats per pound. Bottom temperature in this area was 41.9° F. and surface temperature was 42° F. It was interesting to note that in all areas where scallops were taken bottom temperatures averaged about 42° F.

Three variations of scallop dredges were tested:

1. Standard 11' dredge.
2. Standard 11' dredge fitted with depressor plates.
3. Standard 11' dredge fitted with rake teeth and depressor plates.

Dynamometers were used to measure resistance over the bottom as the dredges were towed at different engine speeds. Distance covered was plotted by loran and all tows attempted to cover a localized area.

Initial tests indicate that at 120 r.p.m., resistance of a dredge with a depressor is from 2,000 to 4,000 pounds and the resistance of a dredge without a depressor measured 2,000 to 3,750 pounds. Further tests will be made on the catch efficiency of these two types of dredges.

Six tows made with the rake-toothdredge at 120-140 r.p.m. registered minimum dynamometer readings of 3,200 pounds with maximum readings up to 7,500 pounds. No scallops were taken on these tows probably due to improper thickness and spacing of rake teeth, which caused excessive jumping over the bottom.

Samples of the catch were brine-frozen in bags, brine-frozen individually, dry-frozen in bags, and iced on board for various lengths of time to be used for technological tests at the Service's East Boston Station.

The Delaware was scheduled to depart from East Boston June 6, 1957, for exploration of the offshore Atlantic for pelagic subsurface resources. Four weeks of long-line fishing operations will be conducted within the general offshore area bordered by 65° W. longitude and 35° N. latitude.

Information on the general distribution of tuna (bluefin, yellowfin, and albacore) species in the offshore areas during this season of the year will be the cruise's objective, supplementing the distribution and catch information obtained earlier in the year on cruise 57-3.

North Atlantic Fisheries Investigations

DRIFT OF HADDOCK SPAWN (M/V Albatross III Cruises 90 and 92): A study of the nontidal drift pattern on Georges Bank and its relation to the drift of haddock eggs and larvae was made by the Service's research vessel Albatross III in two cruises (Cruise 90, April 11-17; and Cruise 92, April 25-May 2). The studies were made to develop a method for making predictions of the future abundance of haddock on the basis of the abundance and distribution of haddock eggs and larvae.

This year radio drift buoys developed by the Woods Hole Oceanographic Institution were used to follow the drift of water masses containing developing haddock eggs. Each buoy sends a radio signal on which the vessel can "home" and thus find the instrument.

Cruise 90: The vessel returned from its first cruise of the survey on April 17. On this cruise it observed a strong concentration of eggs on the Northeast Part of Georges Bank, the usual spawning area. Three drift buoys were placed in this area and their drift observed. The buoys drifted to the south and southwest. Samples of the water showed that the eggs were drifting in the same direction. The Albatross III followed these buoys for two days, when she was relieved by the Bear of the Woods Hole Oceanographic Institution which is cooperating with the Service in these studies. The Bear returned to port on April 22.

Approximately 950 miles of continuous plankton tows were made at the surface and 10 meters with Hardy Plankton Recorders; 111 bathythermograph lowerings, 55 salinity samples, 11 meter net and 50 Hensen egg net surface tows were made; 648 drift bottles and 3 transponding buoys were released.

Haddock eggs were found in abundance on the northeast part of Georges Bank. The transponding buoys released in the center of this concentration moved in a southerly direction.

Cruise 92: Approximately 1,200 miles continuous plankton tows were made at the surface and 10 meters with Hardy Plankton Recorders; 119 Bathythermograph lowerings, 60 salinity samples, 8 meter net and 60 Hensen egg net surface tows were made; 720 drift bottles and 1 transponding buoy were released.

Only limited numbers of haddock eggs were found. Failure in triggering mechanism prevented locating transponding buoys "Hotel" and "November."

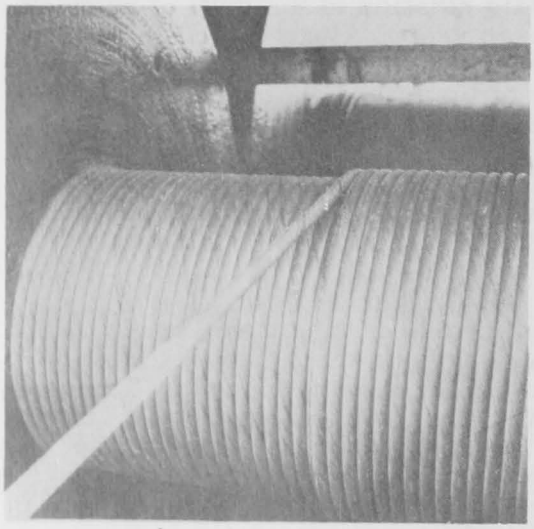
* * * * *

MULTIPLANE KITE OTTER BOARD TESTED (M/V Albatross III Cruise 91): During a short trip (April 22-23) the Service's research vessel Albatross III tested and calibrated a 60-pound multiple-plane kite otter board in the 100-fathom or more area south of Martha's Vineyard.

Fourteen runs were made at 7 knots and 10 knots with the following scopes of cable: 10, 20, 30, 40, 50, 75, and 100 meters. Although vibration was considerable, the gear streamed exceedingly well and appears to have excellent possibilities as a depressor for high-speed sampling gear.

North Pacific Exploratory Fishery Program

MIDWATER TRAWLING EXPERIMENTS TO BE CONTINUED (M/V John N. Cobb Cruise 31): Continuation of midwater trawling experiments was to be the objective of an 8-week cruise by the Fish and Wildlife Service's exploratory fishing vessel John N. Cobb scheduled to begin on April 29, 1957. The experimental fishing was to be done with a 64-foot nylon midwater trawl on the offshore trawling grounds from Oregon to British Columbia. It was planned to work closely with some of the commercial trawlers who have reported seeing schools of fish, presumably Pacific ocean perch, on their echo-sounders in midwater depths on many occasions when their bottom gear was relatively ineffective.



WIRE ROPE WITH INSULATED ELECTRICAL CONDUCTORS AS A CORE BEING USED EXPERIMENTALLY FOR DETERMINING DEPTH OF THE TRAWL ON THE M/V JOHN N. COBB.

A pair of new aluminum midwater trawl doors were to be tried out on this cruise. Equipment was also assembled for experiments to determine depth of the trawl by electrical telemetering. Special trawl cable having electrical conductors in the center were to be tested as a possible substitute for the present system of acoustic depth-telemetering in use on the John N. Cobb.

The cruise was planned to be "split," with a port call at Seattle scheduled for anticipated modifications to the midwater trawling gear and other experimental equipment.

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EXPLORATORY BOTTOM FISHING TO BE CONDUCTED IN ALASKAN WATERS (M/V Tordenskjold Cruise 32): The chartered schooner-trawler Tordenskjold was scheduled to leave Seattle on or about May 16 to conduct exploratory bottom-fishing explorations in Alaskan waters. Bottom fish and king crab were to be the primary objectives of the exploration. The vessel is under charter to the Fish and Wildlife Service's North Pacific Fisheries Exploration and Gear Research project for a period of 110 to 150 days, beginning on May 15, 1957.

For approximately the first six weeks of the charter period, the Tordenskjold was to explore potential bottom-trawling grounds off southeastern Alaska, from Dixon Entrance to Baranof Island. Standard commercial-type fish trawls were to be used, and all bottom suitable for trawling will be surveyed out to depths of 300 fathoms.

In the fall of 1956, the Service's exploratory fishing vessel John N. Cobb carried out a preliminary survey on part of these grounds and found that considerable trawling bottom existed north and west of Forrester Island. Some of the catches during that cruise contained fair showings of flatfish and Pacific ocean perch, but the fall weather, which was unusually bad last year, did not allow a complete coverage of the area in which the Tordenskjold will operate.

The last two months or more of the charter were to be spent by the Tordenskjold in explorations south of the Alaska Penninsula and the eastern Aleutian Islands. Fishing with bottom trawls and king crab pots, the vessel was to survey the coastal waters and banks from the Shumagin Islands westward to Umnak Island. Distribution and availability of king crabs and bottom fish were to be recorded, and efficiency of the two types of gear in catching king crabs were to be compared in various localities. Effectiveness of king crab pots on the offshore banks were to be tested, using various types of crab-pot floats and baits.

A biologist was assigned to the Tordenskjold from the staff of the Service's King Crab Investigations to collect data on sizes of the crabs and to tag a number of crabs south of the Aleutians and the Penninsula. While in this area, the Torenskjold was to base at Sand Point in the Shumagin Islands.

NOTE: SEE COMMERCIAL FISHERIES REVIEW, NOVEMBER 1956, P. 45 AND DECEMBER 1956 P. 46.

United States Fishing Fleet[1/] Additions

A total of 45 vessels of 5 net tons and over were issued first documents as fishing craft during April 1957--26 more than during the corresponding month of 1956. The Gulf area led with 13 vessels, followed by the Chesapeake and South Atlantic areas with 9 each, the Pacific Coast area 5, New England 3, and the Middle Atlantic, Great Lakes, and Alaska 2 each.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft, by Areas, April 1957 with Comparisons

Area	April		Jan.-Apr.		Total
	1957	1956	1957	1956	1956
	(Number)				
New England	3	1	6	6	15
Middle Atlantic	2	1	12	8	26
Chesapeake	9	9	31	21	138
South Atlantic	9	3	28	14	119
Gulf	13	14	35	29	100
Pacific	5	10	19	14	76
Great Lakes	2	-	2	2	6
Alaska	2	9	10	12	40
Hawaii	-	-	-	1	1
Total	45	47	143	107	521

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

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft, by Tonnage, April 1957

Net Tons	Number
5 to 9	20
10 to 19	12
20 to 29	3
30 to 39	6
40 to 49	1
80 to 89	1
110 to 119	1
120 to 129	1
Total	45

For the first four months of this year a total of 143 vessels of 5 net tons and over were issued first documents as fishing craft as compared with 107 vessels in the same period a year earlier. This indicated that more vessels entered the fisheries this year than last.

1/ INCLUDES BOTH COMMERCIAL AND SPORT FISHING CRAFT.

U. S. Fish and Wildlife Service

COMMERCIAL FISHERIES ACTIVITIES IN FISCAL YEAR 1956: The Annual Report of the Fish and Wildlife Service for the year ending June 30, 1956, recently released lists activities in fiscal year 1956. The Service's activities of interest to commercial fisheries included:

The establishment of the first voluntary standard of grade and condition for fishery products.

Continuation of a vigorous salmon restoration program in Alaska.

Large-scale testing of several electronic devices used in fish guiding, counting, and other fishery research.

Numerous studies relative to shellfish.

Two promising selective poisons for use in sea lamprey control out of 4,600 compounds tested over a period of time.

Numerous oceanic research problems for the benefit of the fishing industry.

Exploratory fishing cruises discovered a yellowfin tuna resource in the southern part of the Gulf of Mexico, located a red shrimp resource in the deep waters of the South Atlantic, found a fishing ground for large lobsters off New England in deep water, found a new ocean perch fishing area, and studied the Maine sardine fishery.

Through a technological research program, the Service isolated certain chemical components of fish oil which may pave the way for the creation of many new products.

Two fishery motion pictures in sound and color were completed during the year and a third started. These films are financed by interested segments of the fishing industry.

Daily fishery market news reports were released in key areas from seven strategically-located reporting offices. Fish transportation and importation problems were studied. Monthly bulletins were issued on landings in 12 coastal states and Ohio on Lake Erie.

Vigorous restoration measures were continued in the Alaska salmon fisheries. The pink salmon fishery in Prince William Sound was closed completely and trap fishing in southeastern Alaska reduced by 50 percent; more protection was given salmon in the various bays, and the stream guard program was intensified.

Restrictions were invoked and lake fertilization experiments conducted in red salmon areas.

The Pribilof seal harvest was 65,638 skins; 52,597 skins were sold at auction for $4,849,610.

Research on the Atlantic salmon, shad, and striped bass continued in eastern waters. In the Northwest considerable laboratory research was done on electrical fish-guiding devices to divert salmon into bypass channels, and on other devices to protect young salmon from squawfish.

Instruments which record the passage of fish through underwater orifices, giving the direction of the movement were perfected and put into commercial production. Intensive studies of fish behavior during migration were made at the Fisheries-Engineering Research Facility established at Bonneville Dam with the cooperation of the Corps of Engineers. A "sonic tracker," which when attached to a fish sends signals by which the path of the fish can be followed, was developed.

Extensive studies of salmon races were made in accordance with the program outlined by the North Pacific Fisheries Commission.

Studies of the king crab in Bristol Bay, the oyster in Long Island Sound, raft culture for oysters in Massachusetts, soft clam in New England, and the role of chemical elements in the metabolism of marine organism were among the other research projects.

Major attack on the sea lamprey which has ruined fisheries in three of the Great Lakes was centered in Lake Superior where lake trout are still commercially important. All lamprey work was done in accordance with the general program of the International Great Lakes Fisheries Commission.

A new research unit, Ocean Research, located at Stanford University, was opened in September 1955, to study the relationship of climate and ocean conditions to the sudden fluctuations in numbers of commercial fish.

Research continued on sockeye salmon "virus" and on the blue-sac disease.

The lower Columbia River Fisheries Development Program, in its eighth year, brought more evidence of the soundness of that program. Eleven hatcheries have been completed since the program started and two more--at Eagle Creek, Ore., and Carson, Wash.--were nearing completion when the fiscal year closed.

Seal studies indicated that the fur seal is not a salmon predator. Out of 205 stomachs studied during the project only one of them showed any evidence of salmon. Seal hookworm studies were continued.

U. S. Foreign Trade

GROUNDFISH FILLET IMPORTS, APRIL 1957: During April 1957, imports of groundfish and ocean perch fillets and blocks amounted to 12.4 million pounds. Compared with the corresponding month of the previous year, this was a decrease of 912,000 pounds or 7 percent. Reduced imports from Iceland, and no imports from Norway, France, and St. Pierre-Miquelon were primarily responsible for the decrease. Increased imports from Canada (up 1.8 million pounds), Denmark, the United Kingdom, and the Netherlands were not great enough to offset the over-all decrease.

Imports of groundfish and ocean perch fillets and blocks into the United States during the first quarter of 1957 totaled 47.6 million pounds as compared with 51.5 million pounds for the same period the previous year. Canada led all other countries exporting fillets to this country with 34.1 million pounds, followed by Iceland with 10.0 million pounds, Norway 1.9 million pounds, and Denmark with 1.1 million pounds. These four countries accounted for 99 percent of the total imports for the first four months of 1957.

NOTE: SEE CHART 7 IN THIS ISSUE.

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EDIBLE FISHERY PRODUCTS, FEBRUARY 1957: United States imports of edible fresh, frozen, and processed fish and shellfish in February 1957 were lower by 24.6 percent in quantity and 23.3 percent in value as compared with the previous month. Compared with February 1956, the imports for February this year were down 11.0 percent in quantity and 11.2 percent in value. Imports for February 1957 averaged 28.7 cents a pound as compared with 28.8 cents a pound for the same month in 1956.

February 1957 imports both as compared with January and the same month a year ago indicate that groundfish fillet imports were down sharply (62 and 42 percent respectively).

Exports of processed edible fish and shellfish in February 1957 declined about 10 percent in quantity as compared with the previous month, but were 23 percent above February 1956. The February 1957 value of these exports was 6 percent lower than the previous month, and higher by 13 percent when compared with the same month a year ago.

United States Foreign Trade in Edible Fishery Products, February 1957 With Comparisons

Item	Quantity			Value		
	Feb.		Year	Feb.		Year
	1957	1956	1956	1957	1956	1956
Imports:	(Millions of Lbs.)			(Millions of $)		
Fish & shellfish: Fresh, frozen & processed 1/.....	55.0	61.8	786.5	15.8	17.8	231.6
Exports:						
Fish & shellfish: Processed 1/ only (excluding fresh & frozen).....	8.3	6.8	82.8	1.7	1.5	19.2

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

During February this year, canned sardine exports were much lower as compared with February 1956, but increases in canned mackerel exports helped to increase the exports of all processed edible fish and shellfish to a higher level than a year ago.

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IMPORTS AND EXPORTS OF SELECTED FISHERY PRODUCTS, FEBRUARY 1957: Imports: GROUNDFISH: Fillets imported in February 1957 totaled 4.5 million pounds as compared with 7.1 million pounds in the same month a year ago. Total imports during the first two months of 1957 were 17 percent less than in the same period a year ago, due to a smaller quantity of imports from Canada.

Blocks and slabs imports during February of 2.5 million pounds were 31 percent less than a year ago. But total imports for the first two months of the year amounted to 9 million pounds, 41 percent more than a year earlier. Imports from both Canada and Iceland increased substantially.

FROZEN TUNA: Imports of 11.8 million pounds during February were 25 percent greater than a year earlier due to a large increase in imports of albacore. Imports of other tuna dropped. Total imports for the first two months of 1957 reached 24.3 million pounds, up 17 percent from a year ago.

CANNED TUNA: February imports of 2 million pounds were about the same as the previous year, but total imports for the first two months of 1957 were 10 percent less than a year earlier.

CANNED BONITO: Imports of 1.3 million pounds in February were 2 percent greater than a year ago; imports for January-February this year were about the same as in the first two months of 1956.

CANNED SALMON: Imports of 725,000 pounds dropped off sharply in February. For the first two months of 1957 imports totaled 5.2 million pounds, 2 percent less than a year earlier.

CANNED SARDINES: February imports of sardines totaled 1.8 million pounds, down 8 percent from a year earlier. Imports for January-February 1957 totaled 3.6 million pounds, about 1 percent less than in the similar period of 1956.

SWORDFISH: Imports during February of 1 million pounds were 10 percent less than in 1956. During the first two months of 1957 these imports of 2.4 million pounds were down 12 percent from that period of 1956.

SHRIMP: Imports continued to decline in February when 4.2 million pounds were received, a drop of 29 percent. During the first two months of 1957 a total of 9.9 million pounds were imported, 33 percent less than in that period of 1956.

LOBSTERS: February imports of 4.1 million pounds were 18 percent greater than a year earlier. Total imports for this year through February were 8.8 million pounds, a gain of 34 percent.

CANNED CRABMEAT: Imports declined in February to 215,000 pounds. Imports for the first two months of this year of 520,000 pounds were 37 percent less than in the same period in 1956.

FISH MEAL: Imports of 5,086 tons in February were 34 percent less than a year ago. Total imports for the first two months of 1957 amounted to 9,305 tons, a decline of 51 percent as compared with the same months in 1956. Reduced imports were noted from all countries.

Exports: CANNED SARDINES: Exports of 2.1 million pounds of canned sardines in February 1957 were 56 percent less than in the same month of 1956. Exports during the first two months of 1957 were 64 percent less than a year earlier. Cuba and Philippines were the principal importers.

CANNED MACKEREL AND JACK MACKEREL: Exports in February of 3.2 million pounds were substantially higher than a year earlier as a result of increased shipments to the Philippines.

FISH OIL: February exports totaled 3.7 million pounds, 65 percent less than in that month of 1956. Total exports for the first two months of 1957 amounted to 20.3 million pounds, down 14 percent from a year earlier. Exports to the Netherlands declined, but a large quantity was shipped to Sweden in January.

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TUNA CANNED IN BRINE IMPORTS UNDER QUOTA PROVISO, JANUARY-MARCH 1957: The quantity of tuna canned in brine which may be imported into the United States during 1957 at the $12\frac{1}{2}$-percent rate of duty is limited to 44,528,533 pounds. Any imports in excess of that quantity will be dutiable at 25 percent ad valorem.

Imports under the quota from January 1-March 30, 1957, amounted to 8,212,021 pounds, according to data compiled by the Bureau of Customs. This leaves a balance of 36,316,512 pounds of the quota which may be imported during the remainder of 1957 at the $12\frac{1}{2}$-percent rate of duty.

Wholesale Prices, April 1957

Demand and prices for fresh and frozen fish and shellfish at wholesale held up well during April due in part to the late Lenten season. Generally prices decline in April as supplies increase seasonally and frozen items in good supply are sold off to decrease carryover into the new freezing season. In April this year the overall edible fish and shellfish (fresh, frozen, and canned) wholesale index (119.3 percent of the 1947-49 average) was about unchanged from the previous month, but higher by about 10 percent than for April 1956.

April 1957 wholesale prices for drawn, dressed, or whole finfish were 3.2 percent lower than in March. Higher prices in April for large drawn haddock and whitefish at New York were more than offset by lower prices for yellow pike, halibut, and salmon. As compared with April 1956, this April's index for the subgroup was up 18.8 percent. Higher prices for large drawn haddock and all the fresh-water varieties were responsible for the increase. The Jewish religious holidays in April were responsible for the price increases for fresh-water varieties, but these increases were partially offset by lower prices for dressed halibut (down 13.1 percent) and dressed salmon (down 2.7 percent).

Prices for the processed fresh fish and shellfish items in April 1957 declined 1.6 percent as compared with the previous month due primarily to a decline in shucked oyster prices which was not completely offset by an increase in fresh small haddock fillet prices at Boston. The April 1957 index for this subgroup was 10.9 percent higher than in April 1956.

During April this year prices for processed frozen fish and shellfish increased 9.0 percent over the preceding month because of higher frozen haddock fillet prices (up 5.3 percent) and a rather sharp rise of about 10 cents a pound (13.1 percent) in frozen shrimp prices at Chicago. As compared with April 1956, wholesale prices for the items in this subgroup in April 1957 were higher by 14.5 percent due chiefly to higher shrimp prices (up 25.5 percent). Wholesale prices for frozen ocean perch and flounder fillets were unchanged this April from the preceding month and April 1956.

Wholesale prices for canned fish remained steady during April with only a slight decline (0.03 percent) from March, but an increase of 2.0 percent over April

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, April 1957 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices1/ ($)		Indexes (1947-49=100)			
			Apr. 1957	Mar. 1957	Apr. 1957	Mar. 1957	Feb. 1957	Apr. 1956
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					119.3	119.4	115.3	108.6
Fresh & Frozen Fishery Products:					132.0	132.0	124.9	115.2
Drawn, Dressed, or Whole Finfish:					119.4	123.4	113.0	100.5
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.11	.10	111.0	100.5	60.7	50.1
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.30	.31	92.3	95.9	105.2	106.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.60	.62	134.3	139.3	142.7	137.1
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.92	.79	198.3	195.8	171.1	171.0
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	1.12	.90	227.5	182.0	151.7	121.3
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.80	.79	163.9	161.8	143.4	110.6
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.32	.74	75.0	173.5	152.4	49.3
Processed, Fresh (Fish & Shellfish):					140.4	142.7	132.6	126.6
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.36	.34	120.8	117.4	88.5	81.7
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.91	.91	143.8	143.8	130.4	124.8
Oysters, shucked, standards	Norfolk	gal.	5.75	6.00	142.3	148.5	145.4	139.2
Processed, Frozen (Fish & Shellfish):					130.9	120.1	124.4	114.3
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	103.4	103.4	103.4	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.30	.28	92.6	87.9	97.3	91.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.29	.29	114.8	114.8	114.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.94	.84	145.8	128.9	131.2	116.5
Canned Fishery Products:					101.2	101.5	101.5	99.2
Salmon, pink, No.1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	22.65	22.65	120.0	120.0	120.0	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.20	11.20	80.8	80.8	80.8	77.1
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	9.00	9.00	105.0	105.0	105.0	86.1
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	cs.	7.70	7.95	81.9	84.6	84.6	89.9

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

1956. Prices for canned pink salmon and California sardines were only nominal as supplies from the past packing season were about exhausted. Supplies of canned tuna were plentiful with the market firm. In order to reduce the carryover into the new season that started April 15, canned Maine sardine prices dropped slightly from March to April. Canned fish prices were somewhat lower than in April 1956.

EVALUATING FROZEN TUNA QUALITY

Experiments conducted in Japan have shown that the quality of frozen tuna can be evaluated by measuring the "internal friction" of the frozen meat. The "internal friction" of the frozen fish meat increases with a decrease in its freshness. On the basis of this finding, an instrument was invented for measuring the quality of frozen tuna.

--Modern Refrigeration, August 1955,