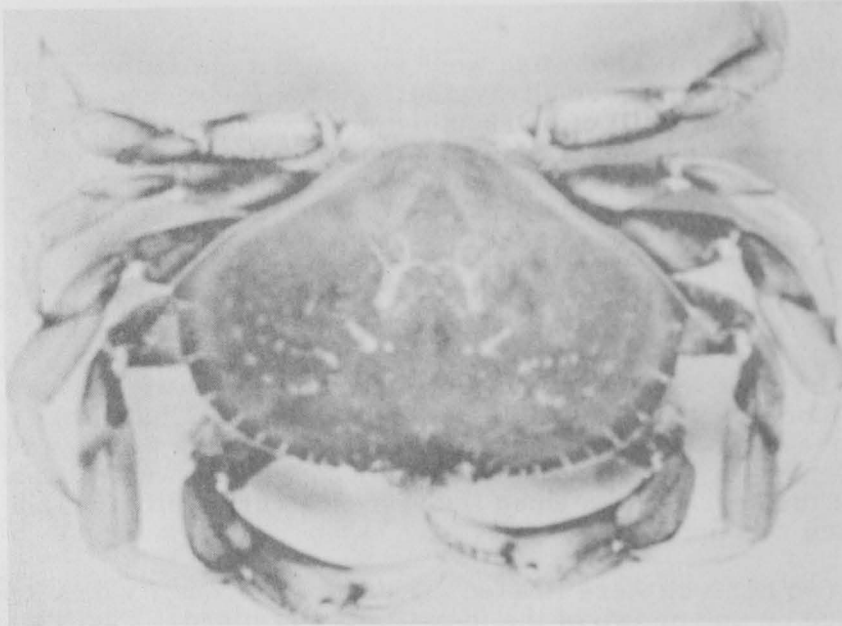


TRENDS AND DEVELOPMENTS

California

DUNGENESS CRAB FISHERY: The crab traps were ready and final overhauls of the vessels completed by mid-November-December in preparation for the opening of the commercial dungeness crab fishery along California's north coast. Prospects were good for another successful season to match the previous year's, the best since 1951/52. In fact, it was so good that most of the Eureka and Crescent City crabbers brought in their gear with two months of the season still remaining, because some of the markets had become saturated.



A SEVEN-INCH MALE MARKET CRAB, THE HIGHLY-PRIZED DELICACY SOUGHT BY COMMERCIAL FISHING FLEETS OPERATING MOSTLY OUT OF EUREKA, CRESCENT CITY AND SAN FRANCISCO.

Landings in the San Francisco area during the 1955/56 season were above average and rocketed upwards at the Eureka-Crescent City ports. Nearly 10 million pounds of the white-meated crab were caught in California annually during the last 10 years, bringing an income of \$1.5 million per season to the vessels and fishermen

alone, and providing employment for many others in allied industries.

The prime target for all this attention is the market crab, also known as the dungeness, commercial, or white crab. Only the mature males are legally caught, and along the Central California coast it usually takes 3 or 4 years to attain the legal seven-inch breadth. In a few close-to-shore areas in northern waters the crab may be taken, noncommercially only, when he reaches a width of 6.5 inches.

California crab laws and regulations apply only to this species and not to the various "rock crabs" taken in limited quantity by commercial and sport fishermen.

The introduction of more efficient crab traps (the principal means of catching the crab) and the addition of more and better-equipped fishing vessels in recent years together with an abundant resource, are the main reasons for the continued good fishing under increasing commercial activity. But a resource that is harvested so intensively needs sound protective regulations. For 60 years the female crab has been completely protected and since 1911 it has been unlawful to take males less than seven inches in width.

In 1955 the Legislature shortened the season by two months to protect crabs during the molting season, early in the summer. The larval crabs (only as big as a grain of sand) hatch from December through March and are swept away by the ocean currents. Later they settle to the bottom and spend the rest of their lives there. During their first year they grow fast, shedding their shells from 8 to 10 times and reaching a width of 3 to 4 inches. Because the shell encases the crab tightly, it cannot grow until it sheds or molts; a crab gains from 10 to 40 percent in size during a single molt.

In 1956 the California Legislature's new regulation went into effect making it mandatory for each crab trap to have a circular escape opening at least four inches in diameter so that most females and small males can escape. This will enable them to avoid being caught and injured by handling several times each season. Such a conservation measure will help to assure a constant replenishment of the fishery, for it is only because of compliance with regulations based on sound principles of conservation that our crab resource has survived.

To learn more about crab movements, shellfish biologists have tagged several hundred of them. Most of those recovered to date have moved only a few miles from the point of release, but there were a few restless ones, too. One traveled 28 miles in a month from the mouth of the Russian River in 90 feet of water to a spot off Point Reyes in water 204 feet deep.

Another crawled 35 miles from Point Reyes to just south of San Francisco in 10 weeks. En route both were successful in eluding their principal enemy, the octopus, which finds crabmeat one of its favorite meals. Against most other marine life, the crab's powerful claws and hard shell are ample protection.

Commercial crab fishing in California is carried on from Point Conception northward, but principally off Eureka, Crescent City, and San Francisco. Other centers are in the Fort Bragg, Bodega Bay, Monterey, and Avila-Morro Bay areas. During the season the traps set from 25-300 feet deep and marked by a line of buoys, may extend for miles off these fishing sites. The traps are circular, three feet in diameter and 18 inches high, made of reinforcing steel rods covered with stainless steel wire mesh. There are two entrance tunnels opposite each other and a hinged lid over half the top. A jar containing bait, such as squid, clams or fish waste, is hung between the entrance tunnels. The traps are fished at intervals of 1 to 10 days, depending on the season and the weather.

To keep abreast of developments in the industry and effects on the crab resource, California Marine Fisheries biologists are conducting extensive research into habits, numbers, and growth of the market crab. Samples of catches are taken aboard ship, measurements are taken, and laboratory tests made. Tests are in progress also of devices to permit the escape of legal-size crabs when storms carry away the traps, so as to prevent waste.

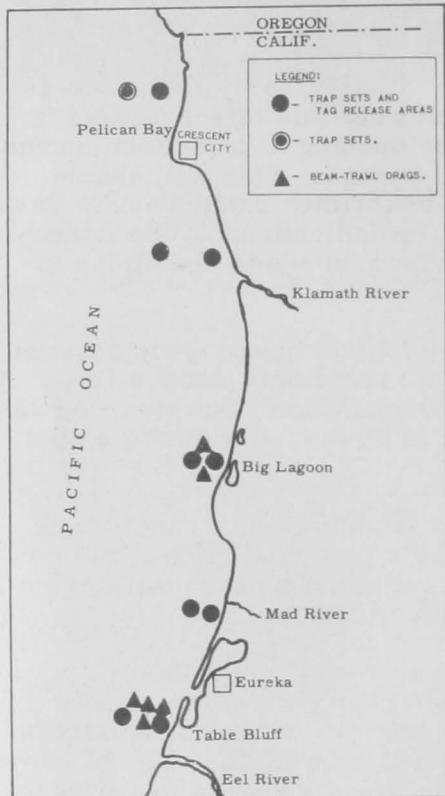
Through such methods the scientists hope to be able to predict well in advance the cycles of good and poor fishing success and to amass enough accurate evidence to make sound recommendations for protective regulations whenever needed. (Outdoor California, November 1956.)

* * * * *

DUNGENESS CRABS STUDIED OFF CENTRAL AND NORTHERN CALIFORNIA (M/V Nautilus Cruise 56-N-3): A study of dungeness or market crab (Cancer magister) off Central California in the San Francisco area and off Northern California in the Eureka and Crescent City areas (see chart) was continued from November 6-25, 1956, by biologists aboard California's Department of Fish and Game M/V Nautilus. The objectives of the cruise were to study the abundance and condition of the

dungeness crab; the sizes of the preseason crabs; tag legal-size crabs; and sample juvenile crabs by beam trawling.

Forty crab traps were used in the San Francisco area. Ten traps were set in each of the four areas fished. These traps were set and pulled after fishing approximately four hours.



M/V NAUTILUS CRUISE 56-N-3, (NOV. 6-25, 1956)

Off Eureka and Crescent City traps were set in the Table Bluff, Mad River, Big Lagoon, Klamath River, and Pelican Bay areas. Depths fished ranged from 60 feet to 180 feet. For shallow and deep-water fishing in each area the traps were set in two separate strings. Seventeen traps were lost due to rough weather from November 12 to 14 off Table Bluff.

An eight-foot beam trawl with a 1-inch mesh net was used to catch juvenile crabs and to supplement trap catches for tagging legal crabs.

San Francisco: A total of 232 market crabs were caught in areas off San Francisco. Of these 170 (73.3 percent) were legal (7-inch males), 58 (25.0 percent) were sublegal males, and 4 (1.7 percent) were females. The number of legals averaged slightly over 4 per trap. The percentage of soft legals was 2.9 percent (5 out of 170 crabs).

Eureka-Crescent City: A total of 224 trap sets were made in the Northern California areas. These sets yielded 833 market crabs. Of these 693 (83.2 percent) were legal, 124 (15.0 percent) were sublegal males, 2 (0.2 percent) were females, and 14 (1.6 percent) were juvenile crabs. The percentage of legals per trap ranged from a low of 62.2

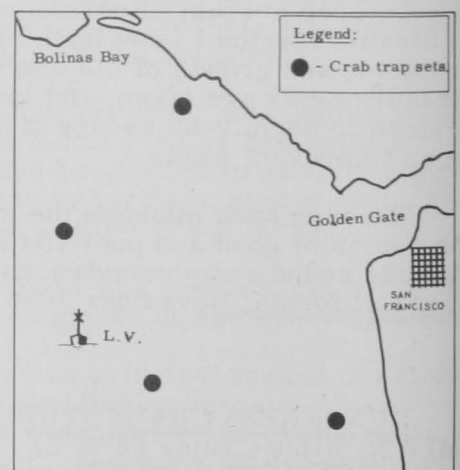
percent at Table Bluff to a high of 100 percent off Big Lagoon.

The soft condition of legal crabs ranged from none soft off the Klamath River to a high of 18.8 percent soft for Table Bluff Light Station.

Measurement of Crabs: Shoulder-width measurements were made on all adult crabs caught by the traps and beam trawl. A shoulder-width measurement is made just in front of the last antero-lateral spine. At least 50 juvenile crabs from each beam trawl sample were measured and the remainder counted. These data with previously collected information will be used in studies of the composition of the crab resource.

Tagging: A total of 230 crabs were tagged with Peterson disks attached by nickel pins run through the carapace. An electric drill was used in making the holes through the lateral portion of the shell.

A total of 235 crabs were tagged with stainless carapace strap tags. These tags were type 316 stainless steel and of 0.008 x 0.5 x 2.0 inch dimension. These tags were applied by wire looped on the last antero-lateral spines. Type 302 stainless 0.025-inch diameter wire was used.



M/V NAUTILUS CRUISE 56-N-3, (NOV. 6-25, 1956)

A total of 239 crabs were double-tagged, using both the disk and strap tags.

Tagged crabs were released in 9 locations from Eureka to Crescent City.

Beam Trawling: A total of 6 drags were made with the beam trawl. These drags were of 15- to 30-minute duration. Market crabs were taken in 5 out of the 6 drags

and included several year-classes. As many as 720 juvenile crabs of an average shoulder width of 1 inch (25.2 mm.) were caught in one 30-minute tow off Table Bluff in 15-20 fathoms of water.

Location	Depth In Feet	Legal Crabs Caught	Tagged	Average Shoulder	Percentage
				Width for Legals	of Legals
	Feet	(No.)		Millimeters	%
San Francisco	60 & 102	170	0	173.1	2.9
Table Bluff	180	44	41	185.3	18.8
Table Bluff	100	149	129	179.3	17.9
Mad River	168	93	89	183.6	12.9
Mad River	84	50	48	181.7	14.0
Big Lagoon	72 & 84	110	110	181.9	4.7
Big Lagoon	180	90	90	184.4	2.2
Klamath River	96	6	6	189.3	0
Klamath River	180	3	3	191.7	0
Pelican Bay	150	0	0	0	0
Pelican Bay	96	188	188	179.0	15.4

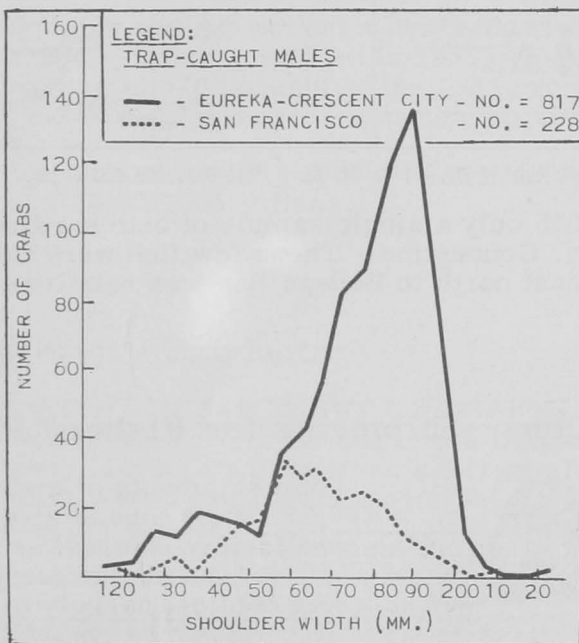
Juvenile crabs caught off Big Lagoon

were of an average shoulder width of 1 1/4 inches (31.5 mm.). Approximately equal numbers of male and female juvenile crabs were taken by the beam trawl.

Legal Crab Summary: The above table summarizes the trap catch of legal-size male crabs taken during the cruise.

POPULATIONS OF SARDINES, JACK AND PACIFIC MACKEREL, AND ANCHOVIES SURVEYED BY M/V "N. B. SCOFIELD"

(Cruise 56-5-8): To census the populations of sardines, northern anchovies, and Pacific and jack mackerel north of Pt. Conception and to collect rockfish were the objectives of this cruise (November 23-December 13, 1956). The California Department of Fish and Game research vessel N. B. Scofield operated off the coast of California from Bodega Bay to Point Dume, including Cordell Bank, the Farallone Islands, and the island groups just south of Pt. Conception (see chart).

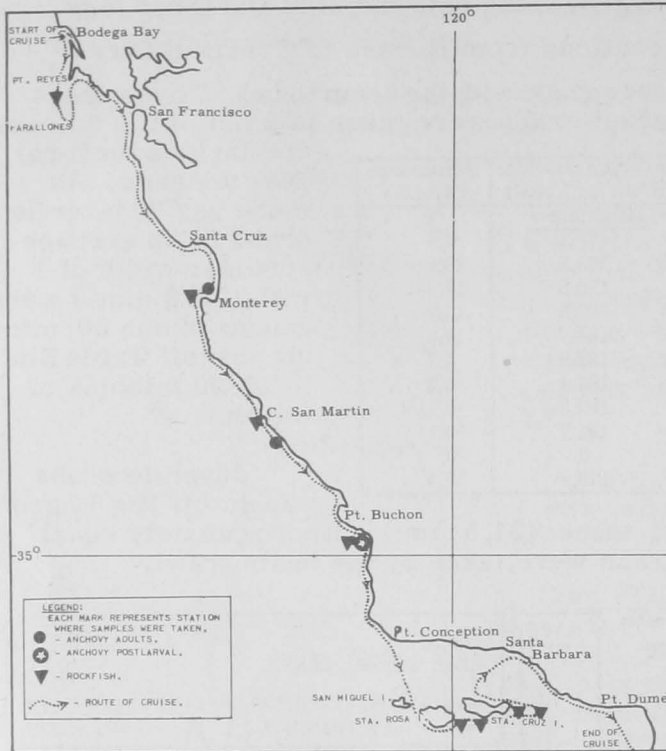


WIDTH FREQUENCIES--DUNGENESS CRAB, NOV. 1956 (M/V NAUTILUS CRUISE 56-N-3).

A total of 65 light stations were occupied between Bodega Bay and Pt. Conception. Adult northern anchovies were taken at one station and postlarval anchovies at three stations. No sardines, Pacific mackerel, or jack mackerel were observed at light stations or while scouting.

The N. B. Scofield traveled a total of 299 miles while scouting between stations: 3 schools of anchovies, 20 schools of sauries, and a few small groups of jack smelt were observed.

Seven species of rockfish were taken on hook and line during daylight fishing at four stations north of Pt. Conception and four stations at the Channel Islands. These will be used for later study of the characteristics of the genera Sebastodes.



M/V SCOFIELD CRUISE 56-5-8 (NOV. 23-DEC. 13, 1956).

1955 only a single sample of both sardines and jack mackerel were taken north of Pt. Conception. These few fish were taken in the harbor of Avila. The rest of the coast north to Bodega Bay was relatively barren during both years.

Two species of Coelenterate medusae were observed in very great numbers for approximately 50 miles along the coast south of Bolsa Pt. In addition, tunicates of the genus *Pyrosoma* and *Salpa* were observed in large numbers at various points along the route.

Sea surface temperatures ranged from 10.60° C. (51.08° F.) at Pt. Lobos to 13.90° C. (57.02° F.) at China Harbor near Morro Bay. Bathythermograph casts which were made to a depth of 450 feet revealed no definite thermocline. In the coastal areas surveyed, uniformly cold water prevailed with little or no decrease in temperature from the surface to the bottom. The depth at various stations ranged from 6 to 210 fathoms.

The scarcity of sardines and mackerel observed on this cruise closely parallels the conditions found in this northern area on the November 1955 survey cruise. In



Cans--Shipments for Fishery Products, January-November 1956



Total shipments of metal cans during January-November amounted to 106,619 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 97,596 tons in the same period of 1955. During the month of November the packing of fishery products was confined largely to shrimp, sardines, and tuna.

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.



Canned Fish Production Higher in 1956

Increases in the packs of tuna, Alaska salmon, Maine sardines, and Pacific mackerel are largely responsible for the 10-percent increase in the 1956 production of fish canned for human food in the United States and its Territories. In 1956 the pack of fish and shellfish for human food amounted to 650 million pounds as compared with 588 million pounds in 1955.

The tuna pack of 227 million pounds in 1956 set a new record, beating the 1955 pack by 31 million pounds. The Alaska salmon pack was 144 million pounds, 30 million pounds higher than in 1955, but the Puget Sound salmon pack of 23 million pounds was 20 million pounds less than in the previous year.

A larger run of red salmon in western and central Alaska and a better-than-usual run of chum salmon in central and southeastern Alaska were responsible for the gains made in the 1956 Alaska salmon pack. The Puget Sound area experienced its usual "even-year absence" of pink salmon which, because of their two-year cycle, historically have large runs on odd-numbered years and almost no fish on even ones.

Pacific Coast firms engaged in canning Pacific and jack mackerel packed 50 million pounds in 1956, twice the 1955 pack. This heavy pack was due to a great extent to the extremely low sardine catch, and the canners turned to mackerel as an alternative. The Pacific sardine pack of 32 million pounds was just half what it was in 1955. The Maine sardine canners, which had a much better year in 1956, packed 45 million pounds, an increase of 19 million pounds over 1955.

The South Atlantic and Gulf oyster pack of 4.3 million pounds was down considerably below the 1955 pack of 5.3 million pounds. Shrimp canners, with a pack of 13.8 million pounds in 1956, were slightly ahead of the previous year.



Byproducts Production in 1956

The production of fish meal in the United States and Alaska set a new record--the 296,000 ton produced in 1956 exceeded the 264,000 tons produced in 1955, which in turn had broken all previous marks. Approximately 70 percent of the 1956 production of 208,000 tons of fish meal was from menhaden--a record for menhaden meal.

There were 26,500,000 gallons of fish oil produced, seven percent more than in 1955 but considerably less than the 1936 pack of 39,900,000 gallons.



Federal Purchases of Fishery Products

CANNED FISHERY PRODUCTS PURCHASED BY DEPARTMENT OF DEFENSE, 1956: Canned tuna, salmon, and sardine purchases in 1956 for the use of the United States Armed Forces by the Military Subsistence Market Centers were substantially higher than for any year since 1953. Although canned tuna purchases in 1956 were somewhat lower than in 1954, canned salmon and sardine purchases, on the other hand, were substantially higher.

Canned Product	1956	1955	1954	1953
 (1,000 Pounds)			
Tuna	3,334	2,906	3,779	1,298
Salmon	2,798	2,785	471	766
Sardines	236	143	450	1,899

A total of 1,107,000 pounds of canned tuna, 2,197,000 pounds of canned salmon, and 5,000 pounds of canned sardines were purchased

October-December 1956 for the use of the United States Armed Forces by the Military Subsistence Market Centers. This was substantially more than was purchased during any other quarter in 1956.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, DECEMBER 1956, P. 37.

FRESH AND FROZEN FISHERY PRODUCTS PURCHASED BY THE DEPARTMENT OF DEFENSE: December 1956: The U. S. Military Subsistence Market Centers in December 1956 purchased 2,030,698 pounds (value \$1,092,627) of fresh and frozen fishery products for the use of the Armed Forces. This was about 6.1 percent less in quantity and 2.3 percent less in value than the purchases in November 1956. When compared with December 1955, purchases in December 1956 were higher by 13.6 percent in quantity and 21.7 percent in value.

Prices paid for these fishery products by the Department of Defense in December 1956 averaged 53.8 cents a pound as compared with 51.7 cents a pound in November and 50.2 cents a pound in December 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 it is not possible to obtain data on the local purchases by military installations throughout the country.

Year 1956: Purchases of fishery products for the 12 months of 1956 totaled 26,610,267 pounds, valued at \$13,413,350--6.5 percent more in quantity and 22.7 percent more in value than the purchases made during the 12 months in 1955.

The over-all average price for fishery products purchased was 50.4 cents a pound in 1956, 43.7 cents in 1955, and 41.1 cents in 1954. The general increase in the average price is due principally to purchases of more expensive fish and shellfish items like shrimp, scallops, and oysters rather than a general price increase.

QUANTITY					VALUE				
December		T o t a l			December		T o t a l		
1956	1955	1956	1955	1954	1956	1955	1956	1955	1954
(1,000 Lbs.)					(\$1,000)				
2,031	1,787	26,610	24,989	25,290	1,093	897	13,413	10,929	10,395

Fish-Cookery Demonstrations for First Half of 1957

A total of 91 fish-cookery demonstrations for the first half of 1957 have been arranged by the Bureau of Commercial Fisheries of the United States Fish and Wildlife Service. Additional projects are being scheduled.

The fish-cookery demonstrations are presented to the schools in connection with the school-lunch program, and to home extension agents, restaurant personnel, home economic classes, and cookery specialists for private firms.

This year's program to date includes 72 school-lunch demonstrations and 19 appearances at other groups. Since the program started in 1946, the Fish and Wildlife Service has given 1,544 demonstrations of which 1,234 were for school-lunch personnel.

School-lunch demonstrations thus far scheduled are as follows: Mississippi, 32; Georgia, 12; Texas, 9; Maine, 8; Virginia, 4; New York, 3; Maryland, 2; and one each for Tennessee and Massachusetts. Special demonstrations for institutional and extension personnel will be given in Colorado, Idaho, Indiana, Maryland, Michigan, Oregon, Washington, and Alaska.

Trained home economists explain the proper preparation of appetizing, economical, nutritious, and easy-to-prepare dishes. Fishery marketing specialists give necessary information on supplies and marketing conditions and often have arranged for fish distributors to expand their market to meet the potential developed by the demonstrations.

The fish featured in each of these projects are available in each area in good supply and are in the low-cost field. They include frozen fillets or portion fish such as cod, haddock, and ocean perch; canned fish such as tuna, flake fish, and mackerel; and precooked fish.

Special attention is given in the school-lunch programs to recipes which provide the two ounces of cooked protein to meet the Type A school-lunch requirements. The recipes used were developed at the Fish and Wildlife Service test kitchens at College Park, Md., and Seattle, Wash.



Fisheries Loan Fund

LOANS APPROVED: Thirty-five loans, totaling \$1,196,330, have been approved under the fishery loan fund program up to February 4, 1957, the Secretary of the Interior announced on February 12.

More than 125 applications have been received, five of which were rejected. Other requests for loans for purposes not covered by the provisions of the law have been returned to the applicants.

Of the 35 applications approved, 18 were from the New England area, 7 from the Pacific Coast, 1 from the South Atlantic Coast, 1 from the Gulf of Mexico, 1 from the Great Lakes, and 7 from Alaska.

The largest loan to date is for \$250,000 to the Delta Towing and Transportation Company, Incorporated, of Pascagoula, Miss., for repairs, modernization, and refinancing of menhaden vessels. The smallest is to William Estrada of Juneau, Alaska, who will receive \$1,500 for vessel replacement.

Fishermen of Gloucester, Mass., had 15 loans approved for refinancing, gear replacement, operating expenses, and vessel repairs; and two firms in Boston had loans authorized. One Newport, R. I., fisherman will receive a loan.

The loans approved for Gloucester are as follows: Joseph Parisi, \$23,785; Maristella, Inc., \$49,500; Mrs. Rose P. Bertolino, \$25,500; Twin Sisters, Inc., \$19,550; Matthew Parisi, \$35,000; Jerome Palazola, \$10,000; North Atlantic Trawling Co., \$49,875; Mrs. Ray Adams Pine, \$22,084; Mrs. Margaret Sinagra, \$6,632; Salvatore Frontiero, \$39,323; Schooner Thomas J. Carroll, Inc., \$60,000; Wild Duck, Inc. \$59,000; Andrea G. Corporation, \$20,131; Schooner Raymonde, Inc., \$36,325 (refinancing only); and Clarence Leveille, \$3,362.

In Boston, Trawler Four, Inc., will receive \$65,000 for refinancing and vessel repairs; Trawler Cormorant, Inc., has been authorized to receive \$60,000 for refinancing; and Leo E. Destremps, of Newport, R. I., will receive \$7,540 for the same purposes.

In the South Atlantic there is one recipient, A. M. Acuff, Inc., of Eastville, Va., who will get \$8,800 for vessel and gear replacement.

Loans approved for Pacific Coast applicants are: California:--Gestur R. Armann, Costa Mesa, \$6,000 for repairs and refinancing; Dorothy and Russell Farnell, Westminster, \$20,000 for repairs and refinancing; John E. Leanders, San Diego, \$79,900 for refinancing; M. Machado Medina, San Diego, \$155,000 for refinancing; Katherine Tierheimer, Torrance, \$3,850 for vessel improvement; Joe E. Penacho, San Diego, \$45,000 for refinancing; Washington:--Woodrow E. Anderson, Bellingham, \$8,873 for refinancing.

In the Great Lakes area, a loan of \$5,500 was approved for Richter Fisheries of South Haven, Mich., for vessel repairs, gear replacement, and refinancing.

Approval or rejection of the loans is the responsibility of the Department of the Interior. The disbursement of the funds and servicing of the loans is handled by the Small Business Administration under an agreement with the Department of the Interior.



Florida

FISHERIES RESEARCH, OCTOBER-DECEMBER 1956: The following are some excerpts from the Quarterly Report on Fisheries Research, December 1956, of the Marine Laboratory of the University of Miami.

Small Shrimp Studies: The analysis of the data collected during the mesh experiments on the M/V Manboy is continuing. The variation about the average escapement of each size of shrimp through the various mesh sizes has been computed as a means of showing the escapement of small shrimp through each net. The amount and type of trash present in these hauls is being compared with the total escapement and the escapement of the various sizes of shrimp. The size distributions of shrimp taken in both the cod end and the cover bag plotted throughout the year suggest that two groups of small shrimp may enter the fishery--one in October and November and one March through May--and that they can be traced for several months. These groups may result from two separate spawning peaks, and that they appear to increase in an orderly manner is suggestive of growth.

Black Spot Control in Shrimp: Further experiments concerning the use (and possible misuses) of sodium bisulfite to retard the development of black spot in shrimp, were carried out. Results from these tests indicate that the quality of the shrimp is not adversely affected, and in certain cases may be slightly improved. Bacterial counts of the treated and nontreated samples showed no significant differences up until about the 15th day of iced storage.



Frozen Foods

ILLINOIS AND INDIANA LEGISLATURES CONSIDER CONTROLS: Frozen food controls have been incorporated in bills introduced in the legislatures of Illinois and Indiana. Indiana's House Bill 166 provides for licensing frozen food processing plants and in some 49 sections provides rules to cover temperature control, personal hygiene, operational practices, penalties, etc.

It is interesting to note that the Association of Food and Drug Officials of the United States last year adopted a resolution requesting all state regulatory officials to withhold such legislation until a model code is established to serve the best interests of the industry, the regulatory officials, and the public.



Great Lakes Fishery Investigations

SURVEY OF SAGINAW BAY COMPLETED FOR 1956 SEASON (M/V Cisco Cruise 9): This cruise, the last of the season, was planned to learn something of the factors influencing the spawning run of the lake herring (Leucichthys artedi) in Saginaw Bay. Gangs of nylon gill nets were set at several locations in Saginaw Bay, and night trawling was done in one area. A gang of gill nets (300 feet each of

2 $\frac{1}{4}$ -, 2 $\frac{1}{2}$ -, 2 $\frac{3}{4}$ -, 3-, and 4-inch mesh) set overnight in 3-4 fathoms north of Charity Island took 56 herring, 1 sauger (Stizostedion canadense), and 1 gizzard shad (Dorosoma cepedianum) indicating a fair number of herring in the area. Three days later, considerable night trawling in the same area resulted in a catch of only one herring, and the depth-recorder tracings indicated few fish. A few small smelt (Osmerus mordax) and alewives (Pomolobus pseudoharengus) were taken. Very heavy seas the day before the trawling operation may have affected the abundance of the herring in this shallow-water area. An oblique net was set in 6 $\frac{1}{2}$ fathoms NW. of Charity Island, on the same date as the above gang, and took 2 herring, both near the bottom.

A bull net (300 feet long, 120 meshes deep, 2 $\frac{1}{2}$ -inch mesh) set in 13 fathoms off East Tawas with the float line on the surface took only 9 herring while a similar net set nearby with the float line 20 feet beneath the surface caught 36 herring and 1 smelt. An oblique net in this area took 9 herring at the 20- to 40- foot level and 2 herring at the 40- to 60- foot level. Eight herring were caught in another oblique net set over 26 fathoms off East Tawas. They were scattered from surface to bottom. Also taken in this net were 3 smelt, one alewife, one sauger, and 12 Leucichthys kiyi. The latter were in spawning condition.

The same bottom gang of gill nets mentioned above was set in 3 to 4 fathoms off Sand Point, and a bull net was set on the bottom in the same area. Although none of the herring caught had spawned, they were very numerous at this station and some were ripe. The bull net took 1,632 herring (804 pounds), and 1,790 herring (958 pounds) were taken in the regular bottom gang of gill nets. The herring in any given mesh size were fairly constant in size, and the size of the fish increased with the mesh size. One very large herring weighing 2 pounds 9 ounces was taken in the 3-inch mesh.

A gang of gill nets consisting of 300 feet each of 2 $\frac{1}{2}$ -, 2 $\frac{3}{4}$ -, 3-, and 4-inch mesh was set northeast of Bay City in 3 $\frac{1}{2}$ fathoms. Only 31 herring were caught here. Other species included 33 perch (Perca flavescens), 31 white suckers (Catostomus commersoni), 2 smelt, 2 carp (Cyprinus carpio), 1 gizzard shad, 1 northern pike (Esox lucius), 2 saugers, and 1 walleye. The walleye was tagged and released.

A hydrographic transect was run from Bay City to East Tawas. Surface temperatures were recorded at all times the boat was under way. Water temperatures are generally about 2° C. cooler in the Bay than they are near the mouth of the Bay, where Lake Huron water predominates. Surface water temperatures ranged from 4.5° C. (40.1° F.) in the shallow water to 8.6° C. (47.5° F.) in the deeper areas, with no thermal stratification remaining in any area covered.



Gulf Exploratory Fishery Program

FISH SCHOOL SAMPLING AND SCALLOP EXPLORATIONS OFF ALABAMA AND FLORIDA (M/V Oregon Cruise 43): Sampling of fish schools and explorations for scallops along the Alabama and Florida coasts were the objectives of the Service's exploratory vessel Oregon during a 17-day cruise completed on February 21. A total of 31 fish-trawl and 54 scallop-dredge stations were made during the trip.

South of Mobile Bay 21 drags were made in 19 to 30 fathoms, using a 52-foot New England otter trawl, rigged with rollers and with a $\frac{3}{4}$ -inch cod-end liner. Most of the schools were found to be rough scad (Decapturus), chub mackerel (Pneumatophorus), and sardine (Sardinella). Large amounts of noncommercial or scrap fish (2,000 to 5,000 pounds a drag) were caught, consisting mostly of long-spined porgies (Stenotomus caprinus) and croakers. Red snapper, varying in weight from under 1 to over 30 pounds each, were caught in most tows. The best snapper catch was 200 pounds of mixed sizes, from 19 fathoms.

From off Cedar Keys to Tampa Bay, 10 fish-trawl drags were made in depths of 7 to 16 fathoms. Croaker, spot, grunts, pinfish, grouper, and snapper were caught in mixed quantities of from 500 to 1,500 pounds per one-hour tow. Small numbers of rough scad and round herring (*Etrumeus*) were caught in several drags. There were no depth-recorder indications of school fish in this area.

From south of Mobile to Cape St. George, Fla., 54 scallop-dredge stations were made in 9 to 27 fathoms. Catches of live scallops were small, although dead shells were very abundant. The best drag yielded 225 2- to 2½-inch *Pecten gibbus*. Meat yield averaged about 140 "eyes" a quart.



Maine Sardines

ADVERTISING CAMPAIGN IN SOUTHERN STATES LAUNCHED: A spot radio campaign, utilizing more than 100 stations in ten southern states, will feature the Maine Sardine Council's promotional activities during the mid-winter Lenten period, a January 25 news release announces. The spots were scheduled to go on the air about February 4 and were to continue for 13 weeks at the rate of from 12 to 20 a week per station.

The area selected for coverage includes the states of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Texas, Louisiana, Mississippi, and Tennessee. The Council's over-all program would also include merchandising activity and special promotions in the South as well as other sections of the country.

The advertising theme will be based on "Sardines from Maine in the familiar flat can that you and your folks know so well." Both live and recorded commercials will tell the story.

"Maine sardines are in good supply and we expect our campaign to further stimulate demand in the southern states which is our best sales area," the Executive Secretary of the Maine Sardine Industry stated.

The Maine Sardine Council is a department of the State of Maine financed by a 25-cent a case tax imposed on the canners, at their request, for an industry development program. During the 1956 season the industry packed 2,221,000 cases of Maine sardines.

* * * * *

INDUSTRY LAUNCHES NEW PRODUCT DEVELOPMENT PROGRAM: A program of new product development was announced by the Maine Sardine Council on January 30, 1957. The developmental program will be conducted at its recently-established and well-equipped Bangor Research and Quality Control Laboratory.

The Executive Secretary said that a full-time expert would be engaged to experiment on different flavors, oils, and sauces for the existing types of sardine pack, as well as to develop entirely new sardine products.

"Our industry is entering this important field of research as it realizes the necessity of keeping abreast of the rapidly changing conditions in the food business," he stated.

The Council believes that there are many wide-open avenues for such research and that improved sardines and sardine products would be the eventual result.



Marketing Prospects for Edible Fishery Products, January-March 1957

United States civilian consumption of fishery products in the next few months is expected to average a little higher than a year earlier. Stocks of both canned and frozen products on January 1 were somewhat larger than on the same date last year. Imports through about mid-spring probably will not differ substantially from those in the closing part of 1956. Retail prices of fishery products during the next few months will likely be close to the record levels of a year earlier, reflecting continued strong demand.

Per capita consumption of fishery products in 1956 was up a little from the 1955 rate. Smaller increases occurred for both canned and frozen commodities, but the rate for the fresh items was about unchanged. Retail prices for fishery products as a group, judging from the wholesale prices, were the highest in recent years.

Commercial landings of edible fish and shellfish were about 4 percent higher in 1956 than a year earlier. Increases were the largest for the species used mainly for canning, and this was reflected in heavier packs of canned salmon, Maine sardines, tuna, and mackerel. The 1956 catch and the canned pack of California sardines was substantially lower than in 1955. The pack of canned tuna last year was a record one. A much greater proportion of the pack in 1956 was from tuna landed by American fisheries. In recent years a sizable part of the canned pack has been from frozen tuna imported from Japan, but the 1956 catch of tuna by Japanese vessels was smaller than in 1955.

The volume of fish and shellfish frozen commercially in the continental United States in 1956 was down from the preceding year. Stocks of frozen products at the end of the year totaled somewhat larger than a year earlier. The increase in stocks reflects mainly the much heavier imports of frozen fish fillets and shrimp in 1956.

Imports of fresh and processed fishery products in 1956 were noticeably higher than in 1955, but exports were a little lower. Canned salmon exports were reduced heavily.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture, in cooperation with the Fish and Wildlife Service, and published in the former agency's February 22 release of The National Food Situation (NFS-79).

NOTE: SEE COMMERCIAL FISHERIES REVIEW, DECEMBER 1956, P. 40.



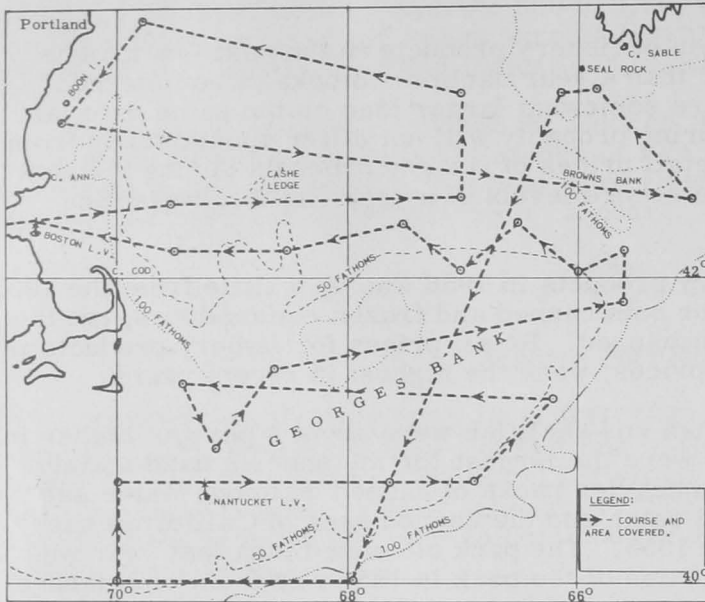
North Atlantic Fisheries Exploration and Gear Research

ABUNDANCE AND DISTRIBUTION OF HERRING LARVAE MEASURED (M/V Delaware Cruise 57-1) In order to measure the abundance and distribution of herring larvae and to record water temperatures over the Gulf of Maine and the Georges Bank area, over 2,000 miles were covered by the Service's exploratory fishing vessel Delaware on a 10-day cruise which ended February 5. A total of 51 one-meter plankton net tows and 172 bathythermograph casts were made.

The offshore plankton survey was conducted in cooperation with the Service's Atlantic Herring Investigation, Boothbay Harbor, Maine.

Continuous plankton tows were made at the surface and at 10 meters with the automatic Hardy Plankton Sampler. Six hundred and thirty-six drift bottles were

released at 53 stations in the offshore area to obtain information on the circulation pattern during this period of the year.

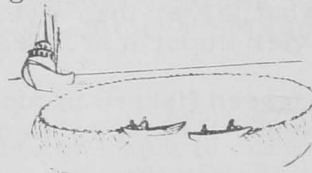


M/V DELAWARE CRUISE 1-57 (JANUARY 25-FEBRUARY 5, 1957).

The Delaware was scheduled to depart from East Boston on February 12, to conduct midwater trawl experiments and obtain material for technological studies.

A large Canadian-type 35-foot nylon herring midwater trawl was to be used in waters off the New England coast if sufficient concentrations of fish could be located with the electronic fish-indicating equipment installed aboard the Delaware. The first major objective was to locate concentrations of fish in midwater, for experience indicates that unless fish in concentrations are located in midwater with electronic equipment, chances for successful midwater tows are remote.

Two new instruments were to be used during the cruise; one, a newly-developed cable meter for $\frac{3}{4}$ - to 1-inch wire and, the second, an air-pressure depth indicator recently-developed by the Service's exploratory fishing and gear research station at Boothbay Harbor, Me.



North Atlantic Fisheries Investigations

UNDERWATER TELEVISION EQUIPMENT TESTED (M/V Albatross III Cruise 85): Underwater television equipment was tested in 40-60 feet of water in the vicinity of Woods Hole, Mass., during the daylight hours of December 19 and 20 by the Service's fisheries research vessel Albatross III. Comparative tests were made of the Scottish Marine Biological Association's CPS Emitron and the United States Fish and Wildlife Service's Image Orthicon. The two underwater television bottom-viewing cameras were lashed together within the SMBA lighting gantry and lowered to or near the bottom.

Tests were made to examine both the picture quality and relative performance of the auxiliary equipment by both natural and artificial light. Bottom organisms and bottom types were clearly seen, but turbidity limited viewing to within five feet of the bottom.



North Pacific Exploratory Fishery Program

EXPERIMENTAL MIDWATER TRAWLING OFF WASHINGTON-BRITISH COLUMBIA: Experimental midwater trawling will be the objective of a 7-week cruise by the Service's exploratory fishing vessel John N. Cobb, which was scheduled to

leave Seattle on February 25. The experimental fishing will be conducted off the coasts of Washington and British Columbia.

This is the first in a series of midwater trawling cruises scheduled during 1957 to determine the practicability of a commercial midwater fishery for such foodfishes as Pacific ocean perch, cod, ling cod, and other species which are known to spend at least part of their time off the bottom. If a successful midwater trawling method can be developed, it will open up vast new areas for commercial fishing, especially over rough and rocky bottom where the bottom trawlers cannot now operate.

First trials will be conducted using a 50-foot square-opening nylon midwater trawl designed and tested at the Service's gear research station at Coral Gables, Fla. An acoustic depth telemeter was to be employed to accurately determine and control the depth of the net at all times. A recording "Sea Scanar" was to be the principal instrument used for locating midwater schools of fish.

A previous test of this equipment during a cruise last year produced promising results. Catches of rockfish and hake were taken in midwater in quantities up to 5,000 pounds per 20-minute tow. Improvements in the fishing gear and electronic equipment have been made, which should increase their effectiveness. Considerable time will be spent during this cruise in studying the movements of fish in midwater and in learning to recognize different species on the echo-recording equipment, as well as in testing and improving the fishing gear itself.



Oregon

DUNGENESS CRAB STUDY IN YAQUINA BAY: In a project beginning in January 1957, biologists of the Oregon Fish Commission will attempt to determine the movement of dungeness crabs in Yaquina Bay, Ore.

The primary interest of the biologists is discovery of a suitable pattern for release of tagged crabs that can be applied to provide more extensive information in future larger-scale crab studies. To accomplish this objective, crabs tagged through the right corner of the upper shell with plastic Peterson discs were released at ten different locations in Yaquina Bay.

During the January-May 1957 period the investigators will be setting experimental crab pots at various points in the bay to trace the movements of the tagged crustaceans released in January. Should a large number of crabs move out of the bay and into the ocean, their departure is likely to be detected by a sudden scarcity of tagged individuals in the experimental crab pots.

The biologists claim that it may be possible to estimate the total number of crabs in Yaquina Bay with the type of information the experiment is expected to furnish. In addition, the study may also give some indication of what happens to crabs after increased flows of fresh water into bays during freshets. On several occasions in the past, crabs have been scarce in Yaquina Bay following freshets. It may be that during influxes of fresh water crabs burrow into mud on the bay bottom where salinities are more to their liking.

* * * * *

PLANS FOR NEW SALMON HATCHERY COMPLETED: Final plans have been completed for construction of the Cascade Salmon Hatchery on Eagle Creek, Columbia River Tributary just above Bonneville Dam, the Oregon Fish Commission announced February 16.

The supervising engineer in charge of Columbia River development projects for the Oregon Fish Commission said the new fish plant will have facilities for raising $11\frac{1}{4}$ million salmon annually. Fall chinook salmon will be the primary species propagated, but production of approximately one million chum and silver salmon each year is anticipated.

Cascade Hatchery will be the second new salmon propagating station constructed by the Commission under the federally-financed Columbia River Development program. Four other Fish Commission hatcheries have been completely renovated and enlarged under the program.

"One of the main considerations in selection of the Cascade site is the ample supply of satisfactory water in Eagle Creek," the engineer stated. The supply is not likely to change drastically in the foreseeable future because the Eagle Creek watershed lies entirely within Mt. Hood National Forest. More than 3,000 feet of 36-inch pipe will be used to supply water for operation of the hatchery.

A special use permit to operate the hatchery has been granted to the Fish Commission by the U. S. Forest Service, since the Cascade site is located on the Eagle Creek forest camp and picnic area.

Among the primary features of the new station will be 30 concrete rearing ponds, an adult holding pond which mature fish will reach via a fishway connecting to Eagle Creek, and two modern residences for hatchery personnel.

Salmon eggs will be hatched in a large hatching house with 7,200 square feet of floor space. Included in the hatching house will be a 100-ton capacity cold-storage room for holding fish food, a food preparation room, and an office for the hatchery superintendent. Another large building will house a workshop, vehicles, and other equipment.

Native runs of fall Chinook salmon now existing in Eagle Creek will be the main source of eggs for operating the Cascade Hatchery. Chum and silver salmon are not known to spawn in Eagle Creek at the present time, but stocks will be introduced from other streams in an attempt to establish regular sources of eggs from these two species for the hatchery.

* * * * *

SALMON CONSERVATION PROGRAM TO CONTINUE: A program of salmon conservation will be continued in Oregon coastal streams by the Fish Commission of Oregon provided there is no cut in appropriations for coastal salmon work by the legislature.

This view was expressed by the Commission at its monthly meeting in Portland in November 1956. The Commission Chairman said recent voter approval of a measure closing streams south of the Columbia River to commercial fishing for salmon has resulted in several inquiries as to whether or not the Commission intends to disband its present coastal salmon management work. The program includes fish propagation at five hatcheries, construction of fishways, removal of log jams and other barriers to migration, and biological studies to determine the factors affecting salmon production in the streams.

"By law, the Fish Commission is charged with maintaining the food fishery resources of Oregon," the Chairman stated. "Prohibition of commercial fishing in the coastal streams does not alter the Commission's delegated responsibility for safeguarding and conserving salmon and other food fish resources in these areas."

Salmon runs in Oregon coastal streams must still be considered food fish resources, the Commission pointed out, because the offshore troll salmon fishery depends upon fish produced in the streams. The Commission further stated that a biologically-sound program of fisheries management is still necessary to maintain stocks of salmon in the coastal streams, a November 27, 1956, news release from the Commission announces.



Pacific Oceanic Fishery Investigations

ALBACORE TUNA DISTRIBUTION BOUNDARIES FOUND IN PACIFIC: Although albacore tuna--the source of choice white-meat tuna--probably does not realize it, it is actually fenced in by an "isotherm," a "thermocline," and a food boundary. So report the two Fish and Wildlife Service research vessels--the John R. Manning and the Charles H. Gilbert--which have completed fall surveys in the broad Pacific, verifying data which had previously been assembled.

It seems that water colder than 57° F. has no appeal to the albacore. In hundreds of miles of experimental fishing, temperature-taking and water sampling, the crews of these vessels could find no albacore on the cold side of the "isotherm"--the meandering unstable line along which the temperature is 57° F.

Likewise, the researchers verified information that the albacore stays above the "thermocline," an imaginary sheet which separates the warm waters of the surface from the very cold waters below. The thermocline is sometimes only a few feet down and sometimes 200 feet or more below the surface.

The third limit to the distribution of albacore--the "food boundary"--is the barren water where few of the microscopic animals which are the basis for fish food exist. This boundary can sometimes be recognized by the color of the water and sometimes only by scrutinizing samples of the water with a microscope.

All of this may seem relatively unimportant to the landsman, but to the men in the boats--the men who help feed America by bringing in the fish--such findings are important. Showing these fishermen where not to look can make the difference between well-utilized hours and a lot of wasted time--for much of the albacore fisherman's time is spent in seeking fish.

Nor is the albacore the only fish limited by such things as isotherms, thermoclines, and food supplies. Each species of fish, like every other animal, has its habitat--conditions under which it can live and conditions under which it can't. There are some 200 kinds of fishes in the ocean which are currently being used for food. As the ocean is a restless mass, these various boundaries with their high sounding names continually change.

Correctly reading the pattern of the distribution of fishes in the wide waters of the ocean leads to more efficient and economical fishing operations, hence the value of research.

NOTE: SEE COMMERCIAL FISHERIES REVIEW, FEBRUARY 1957, PP. 25-27.

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LIVE-BAIT TILAPIA CULTURE EXPERIMENTS: In an effort to find ways of supplementing the live-bait supply in Hawaiian waters, POFI is investigating the feasibility of culturing tilapia in tanks. During six weeks (December 1956-1957) 32 females in one of the tanks produced approximately 4,500 young. In a second tank, located in the shade and with water temperatures 1°-2° F. lower, no young were produced during the same period.

In studying the suitability of these fish for chum to be used during live-bait fishing, it was discovered that bait-size tilapia (less than 3 inches) may be transferred directly from salt to fresh water without any mortality. On the other hand, they must be gradually acclimatized, during a 12-hour period, when transferred from fresh to sea water.

* * * * *

TAGGED YELLOWFIN TUNA HINTS VERTICAL MIGRATION PATTERN: In at least one instance a yellowfin tuna--normally found near the surface--has taken to deep-water swimming in the open sea, United States Fish and Wildlife Service fishery research has disclosed.

Late in 1955, a Fish and Wildlife Service research vessel tagged and released a troll-caught yellowfin tuna near Christmas Island in the mid-Pacific. Thirteen months later the same fish was recaptured by a Japanese fishing boat some 700 miles to the east and deep down in the ocean. This is the first time a "surface-schooling" yellowfin has been known to have been taken as a deep-swimming fish in the open sea. The fish had grown considerably in the 13-month interval--from 55 pounds to 95 pounds.

The finding of this one yellowfin as a deep swimmer is not a conclusive item, fishery biologists say, but it does indicate a "vertical pattern of migration" not hitherto demonstrated.

Data relative to horizontal migration habits of the various tuna varieties is being slowly accumulated. Last year, an albacore was taken--15 months after tagging--2,670 miles away. It had gained 40 pounds in weight. Another one traveled more than 2,000 miles. Big-eyed tuna have been known to migrate as much as 800 miles. Still another variety, the skipjack, has a much less pretentious travel record--one was caught only 30 miles away after 252 days; another went 40 miles in six days; others just "hung around" and were taken weeks later near the point of tagging.

Man's knowledge of sea dwellers is far short of his knowledge of land animals. For many reasons the migration patterns of fish are important not only to the biologist but to the fishing industry. But getting the migration pattern has been, and still is, a monumental task. In the first place it took a long time to develop tagging techniques which were not fatal to a high percentage of the fish tagged. It also took time to develop the type of tags which would withstand the rigors of many months in the ocean water. Then, too, the ocean is wide and fish are numbered by the millions, and the odds of recapturing a tagged fish are not too high.

Tags and tagging techniques are improving and as more fish are tagged the odds of retaking some of them are better. Thus, little by little, fishery biologists are learning more about the ocean and the fish that dwell in it--and the recapturing of the surface-schooling yellowfin as a deep-swimming fish is another bit to be added to the information about the species, information which will be of value to those who seek these fish for the American table.



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

The Tracy Fish Screen, built by the U. S. Bureau of Reclamation, was tested in February 1957 when the Bureau turned on all six pumps of the mammoth Tracy Pumping Plant on the Delta-Mendota Canal in Central California for the first time.

While the test was designed as a "shakedown" for the huge pumps, and not as a test for the screen, it did afford fish biologists an opportunity to observe the effectiveness of the screen.

The biologists estimated "several hundred thousand" small striped bass, shad, and smelt were screened away from the big pumps and into four collection tanks. This rough figure was considered significant because the test was made at a time when it was estimated there were very few fish in the stream and the downstream migration of small salmon had not started.

The rescued fish were trucked beyond the pump area and replanted in waters of the Sacramento-San Joaquin delta, points out the California Department of Fish and Game in a February 22 news release.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, NOVEMBER 1956, P. 49.



South Atlantic Exploratory Fishery Program

FLORIDA EAST COAST DEEP-WATER SHRIMP SURVEY (M/V Combat Cruise 7): Deep-water shrimp trawling activities along the Florida east coast between St. Augustine and Stuart, and along the northern side of Little Bahama Bank were continued by the U. S. Fish and Wildlife Service-chartered shrimp trawler Combat from January 8 to February 6, 1957. In depths of 160-250 fathoms, 56 drags were made using 40-foot and 56-foot flat trawls.

From January 8 to 16, the Combat fished the area from off St. Augustine to New Smyrna Beach. Successful 3-hour drags north of N. latitude $29^{\circ}40'$ caught royal-red shrimp (Hymenopenaeus robustus) at rates of 178 pounds, heads-on weight (75 percent 21-30 count; 25 percent 50 or more count, headed). South of $29^{\circ}30'$ N. latitude, drags averaged 330 pounds of heads-on shrimp (57 percent 21-30 count; 43 percent 40 or more count, headed). The best single catch yielded a total of 650 pounds of heads-on shrimp.

From January 28 to February 6, trawling was carried out from off New Smyrna Beach to Stuart. At this time, catches in the New Smyrna area averaged 249 pounds of heads-on shrimp a drag (60 percent 21-30 count; 40 percent or more count, headed). South of 29° N. latitude, catches averaged about 30 pounds of shrimp (81 percent 21-30 count; 19 percent 35 or more count, headed). The highest catch south of Cape Canaveral contained 105 pounds of royal-red shrimp.

Highest concentrations during this period centered in the Daytona Beach to New Smyrna area. Six 3-hour drags on February 4-5 caught 1,470 pounds of heads-on royal-red shrimp.



M/V COMBAT CRUISE 7 (JAN. 8-FEB. 6, 1957).

Five drags were made in depths of 180-230 fathoms off the northwestern edge of Little Bahama Bank (Matanilla Shoal). No royal-red shrimp were caught in any of these drags.

* * * * *

SHRIMP-TRAWLING GEAR STUDIES: Systematic studies of shrimp-trawling gear will be a major activity at the Service's Gear Research and Development station located at Miami, Fla., during 1957.

The Service's gear research vessel the George M. Bowers will be used to conduct experimental fishing operations in Florida and Gulf of Mexico waters, with underwater television and divers with camera gear to observe and record the operational characteristics of representative types of commercial shrimp-trawling gear in use in the Southeastern shrimp industry. Studies will be made of the behavior of the nets, trawl doors, towing cables, floats, and other accessory gear under various towing speeds and fishing conditions. Attempts will be made to record the reaction of shrimp and fish to capture by the trawls.

Reports on the progress of the work will be issued periodically. A moving picture film of shrimp trawling gear in operation will also be produced.



United States Fishing Fleet^{1/} Additions

JANUARY 1957: A total of 26 vessels, of 5 net tons and over, received first documents as fishing craft during January 1957--9 more than in January 1956. The

Table 1 - Vessels Issued First Documents as Fishing Craft, By Areas, January 1957

Area	January		Total
	1957	1956	1956
 (Number)		
New England	1	1	15
Middle Atlantic	2	2	26
Chesapeake	8	5	138
South Atlantic	8	4	119
Gulf	1	3	100
Pacific	2	1	76
Great Lakes	-	-	6
Alaska	4	1	40
Hawaii	-	-	1
Total	26	17	521

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

Table 2 - Vessels Issued First Documents As Fishing Craft, By Tonnage, January 1957

Net Tons	Number
5 to 9	13
10 to 19	4
20 to 29	1
30 to 39	7
40 to 49	1

Chesapeake and South Atlantic areas led with 8 vessels each, followed by Alaska with 4, the Middle Atlantic and Pacific areas 2 each, and the Gulf and New England area 1 each.

^{1/} INCLUDES BOTH COMMERCIAL AND SPORT FISHING CRAFT.



United States and Alaska Fisheries Landings, 1956

TREND IN FOOD FISH LANDINGS IS DOWNWARD: Although the commercial food fish and shellfish landings in 1956 were 100 million pounds more than in 1955, they were still about 12 percent below the 1947-1950 average. Food fish taken

in 1956 totaled 2.8 billion pounds. This is 400 million pounds below the 1947-50 average.

Had the 1947-1950 rate of food fish landings been maintained in 1956, the landings would have totaled close to 3.6 billion pounds or 30 percent more than the actual landings, the U. S. Fish and Wildlife Service estimated.

United States and Alaska commercial landings of both food and industrial fish and shellfish in 1956 amounted 5.2 billion pounds--an all-time record. The previous record was 4.9 billion pounds in 1951. The 1955 landings totaled 4.8 billion pounds. In 1956, the landings consisted of 2.8 billion pounds of food fish and shellfish and 2.4 billion pounds of industrial fish.

The big catch of menhaden (an industrial fish used for manufacturing fish meal, oil, and solubles) in the Atlantic ocean and in the Gulf of Mexico was a principal factor in the 1956 record harvest. The menhaden landings totaled more than 2.0 billion pounds. This was the first time landings of two billion pounds were reported for any one variety in the United States. The menhaden landings in 1956 were up 200 million pounds over those for 1955 and marked the sixth consecutive year that the menhaden landings have broken the record set the previous year.

Analysis of the annual landings over the past several years indicates a sharp increase in the amount of industrial fish being taken by United States fishermen--one billion pounds in ten years--but a decline in the amount of fish harvested for human food--a 400-million-pound drop from the 1947-50 average.

Segments of the fishing industry, particularly the New England groundfish and the Pacific Coast tuna producers, point out that the food fish landings are far below the production capabilities of the United States and Alaska fishing fleets. Tie-up of fishing craft in some areas for as high as 90 days because of lack of markets is cited as evidence of this. The tuna fleet, which once numbered 214 large clippers, now numbers only 153 because of these long periods of inactivity.

Other species taken in considerably greater quantity in 1956 than in the previous year were tuna, 330 million pounds (271 million pounds in 1955); Pacific and jack mackerel 124 million pounds (59 million pounds in 1955); Alaska herring 103 million pounds (64 million pounds in 1955); and Maine herring 133 million pounds (99 million pounds in 1955). The landings of salmon amounted to 331 million pounds, up 21 million pounds from the low 1955 landings. Haddock landings likewise increased, amounting to 150 million pounds as compared with 135 pounds in 1955.

Landings of a number of important species were down sharply in 1956; Pacific sardines amounted to only 66 million pounds compared with 146 million pounds the previous year; shrimp (heads on) amounted to only about 220 million pounds compared with 236 million pounds the previous year; ocean perch totaled 151 million pounds, down 5 million pounds compared with 1955.

CONSUMPTION: Despite the decline in the catch of food fish during recent years, the per capita consumption of fish has remained fairly constant at 10-11 pounds edible weight, but has not increased principally because since 1950 the United States population increased by about 20 million. Large increases in imports which have displaced domestically-caught fish made this possible.

IMPORTS: During the years 1947-1950, imports of edible fish and shellfish averaged 860 million pounds (round-weight basis). In 1956 these imports totaled about 1.5 billion pounds. Imports supplied about 35 percent of the domestic supply of edible fishery products in 1956, compared with an average of 21 percent during the years from 1947 to 1950.

Imports received in considerably greater volume in 1956 were frozen groundfish fillets, canned salmon, and fresh and frozen shrimp. Receipts of fresh and frozen tuna were below the record 145 million pounds received in 1955.

TOTAL UTILIZATION: Total utilization of fish for all purposes--human food and industrial--in 1956 was 7.6 billion pounds round weight, of which more than a third, or 2.4 billion pounds (round weight), were imports.

EX-VESSEL VALUE: The 1956 record commercial fish and shellfish landings for both food and industrial use were worth \$363 million ex-dock or ex-vessel. This compares with \$338 million in 1955.

LANDINGS FOR LEADING PORTS: San Pedro, Calif., which has been the leading food and industrial fish landing port in the United States for many years, again captured that honor in 1956. Landings in San Pedro in 1956 (largely tuna, mackerel, and sardines) totaled 383 million pounds. The value of the catch ex-dock or ex-vessel was \$29 million.

Gloucester, Mass., led other food fish ports with receipts of 250 million pounds, worth \$7,600,000 ex-vessel. Gloucester landings were mainly ocean perch and whiting.

Boston, Mass., the Nation's principal port for the food fish such as haddock, cod, and pollock reported landings of 147 million pounds, worth \$10 million to the fishing vessels.

San Diego, Calif., largely a tuna port, trailed Boston in poundage landed but surpassed the eastern city in the ex-vessel value of the landings. Landings at San Diego amounted to 135 million pounds, with a value of almost \$19 million ex-vessel. New Bedford, Mass., famous for the scallop and flounder landed there, has 88 million pounds of fish and shellfish, valued at \$12 million ex-vessel. Portland, Me., largely an ocean perch port, followed with landings of 58 million pounds, valued at almost \$2 million ex-vessel.

NOTES: 1. STATISTICS ON UNITED STATES FISH AND SHELLFISH LANDINGS AND IMPORTS AS GIVEN IN THIS ARTICLE ARE BASED ON ROUND WEIGHT OR WEIGHT AS CAUGHT FOR FISH AND CRUSTACEANS AND WEIGHT OF THE MEATS FOR MOLLUSKS. IMPORT DATA WERE CONVERTED TO ROUND WEIGHT FOR FISH AND CRUSTACEANS AND WEIGHT OF THE MEATS FOR MOLLUSKS.

2. SEE COMMERCIAL FISHERIES REVIEW, DECEMBER 1956, P. 51.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, NOVEMBER 1956: Imports of edible fresh, frozen, and processed fish and shellfish in November decreased 37 percent in quantity and 36 percent in value as compared with October 1956. Compared with November

Table 1 - United States Foreign Trade in Edible Fishery Products, November 1956 With Comparisons

Item	Quantity			Value		
	Nov.	Year	Year	Nov.	Year	Year
	1956	1955	1955	1956	1955	1955
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish and shellfish:						
Fresh, frozen & processed ^{1/}	57.3	73.2	769.5	16.5	21.2	206.4
Exports:						
Fish and shellfish:						
Processed ^{1/} only (excluding fresh & frozen)	9.1	14.3	88.3	2.3	3.3	21.6

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

1955 the imports for November 1956 were lower by 22 percent in both quantity and value. November 1956 imports averaged 28.8 cents a pound as compared with 29.0

ents a pound for the same month in 1955. Groundfish fillet (including ocean perch) imports in November 1956 were down sharply from the record high level of October 1956 and were also lower by about 50 percent from November 1955.

Exports of processed fish and shellfish in November 1956 declined about 23 percent in quantity as compared with the previous month, and were 37 percent below November 1955. The November 1956 value of these exports was 21 percent lower than the previous month, and down about 30 percent from the same month a year earlier. Exports of California sardines in November 1955 were close to double the total for November 1956.

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GROUND FISH FILLET IMPORTS HIGHER IN JANUARY 1957: Imports of groundfish (including ocean perch) fillets and fish blocks during January 1957 amounted to 19.0 million pounds, an increase of 23 percent over the 15.4 million pounds reported for the same month in 1956.

The increase was primarily due to more imports from Canada (up 2.6 million pounds) and Iceland (up 887 thousand pounds). Imports from Norway, Denmark, the United Kingdom, and France also were somewhat larger while receipts from the Netherlands and West Germany were less than in January 1956. Canada and Iceland accounted for 92 percent of the total January imports.

NOTE: SEE CHART 7 IN THIS ISSUE. ALSO, SEE P. 57 OF THIS ISSUE.



Virginia

NEW FISHERIES RESEARCH VESSEL: With the launching of the Pathfinder, the research vessel which is to be used to investigate problems relating to Virginia's



THE PATHFINDER, A NEW VIRGINIA STATE FISHERIES RESEARCH VESSEL, WAS LAUNCHED IN MARCH AT A SHIPYARD IN WEST NORFOLK, VA.

multimillion dollar sea-food industry, State scientists at the Gloucester Point Laboratory look to a new day in fisheries research. This is the first boat specifically designed for marine research in the Chesapeake Bay estuarine and coastal waters.

"The Pathfinder will be a floating marine laboratory to further our knowledge of the sea and its myriad forms of life," the Director of the Virginia Fisheries Laboratory declared.

The pioneering nature of the research program at the Laboratory is suggested by the name of the new vessel. The Pathfinder will enable scientists to continue their work under conditions which could not be weathered by the present vessel, the Virginia Lee. The new vessel will be equipped with winches for hauling dredges and trawl nets. A depth recorder will make tracings of the contours of the floor of the ocean and Bay. A quick-freeze box will preserve specimens until they can be carefully examined by scientists. Live tanks, properly aerated, will hold fish and other marine forms for delivery to the Gloucester Point Laboratory. A chemical laboratory for analysis of seawater is an integral part of the new vessel.

The keel for the Pathfinder was laid at a shipyard at West Norfolk in April 1956. She is 55 feet long, 16.5 feet in beam, and will be driven with a 120 horsepower Diesel engine. The steering devices are so arranged that the boat may be handled either from the pilothouse or from the flying bridge on top of the deckhouse. Installation of the engine, rigging, and other machinery will be completed after the new vessel is afloat.



Wholesale Prices, January 1957

United States fishing fleets resumed normal activities after the usual lay-ups during the year-end holidays, but many inland and coastal areas were hit by gales, snow, and ice. The January 1957 wholesale price index (121.8 of the 1947-49 average) for all edible fish and shellfish (fresh, frozen, and canned) was higher by 4.8 percent when compared with the previous month, but was slightly below (0.4 percent) the January 1956 index.

The drawn, dressed, and whole finfish subgroup index for January increased 13.1 percent as compared with December due to the usual price increases that follow periods of bad weather and a pick-up in demand when the New Year starts. January 1957 prices for the items in this subgroup did not go up as much as a year earlier and consequently were 6.6 percent lower as compared to January 1956. Prices for large drawn haddock, Lake superior whitefish, and domestic lake trout were lower by 11-31 percent, but halibut, salmon, and yellow pike were up 6-21 percent as compared with the same month in 1956.

The price changes in the fresh processed fish and shellfish subgroup from December to January were slight (up 4.2 percent). Fresh haddock fillets were up rather sharply at Boston and fresh shucked oysters were slightly higher at Norfolk. Compared with January 1956, this subgroup index for January 1957 was higher by 4.9 percent with the lower haddock fillet price more than offset by higher fresh shrimp and oyster prices. Fresh shrimp prices at New York during the month were higher by 8.7 percent as compared with January 1956.

The January 1957 subgroup index for frozen processed fish and shellfish was up 3.8 percent from December and 4.3 percent from the same month in 1956. Frozen haddock fillets were higher by 7 percent this January as compared with

December and about 2 percent higher than in January 1956. Frozen ocean perch fillet prices also increased this January by 3.6 percent over December, but were unchanged from January a year ago. Frozen shrimp prices at Chicago continued to be firm with a 3.2-percent increase over December and were 7.3 percent above the same month in 1956.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, January 1957

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices ^{1/}		Indexes			
			(\$)		(1947-49=100)			
			Jan. 1957	Dec. 1956	Jan. 1957	Dec. 1956	Nov. 1956	Jan. 1956
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					121.8	116.1	118.4	122.
Fresh & Frozen Fishery Products:					136.2	126.6	130.9	136.5
Drawn, Dressed, or Whole Finfish:					134.1	118.6	128.0	143.5
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.14	.09	143.6	92.7	122.1	208.2
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.35	.35	108.3	108.3	112.9	89.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.64	.64	143.8	143.8	144.9	135.4
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.59	.61	146.3	151.2	146.3	171.0
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.70	.71	141.5	143.6	149.6	141.5
Lake trout, domestic, No. 1, drawn, fresh	Chicago	lb.	.57	.71	116.8	145.4	143.4	131.1
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.60	.36	140.7	84.4	80.3	117.3
Processed, Fresh (Fish & Shellfish):					140.3	134.7	135.5	133.7
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.46	.30	158.2	103.8	117.4	217.7
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.82	.82	128.8	129.6	128.8	118.5
Oysters, shucked, standards	Norfolk	gal.	6.12	6.00	151.6	148.5	148.5	136.1
Processed, Frozen (Fish & Shellfish):					122.7	118.2	118.6	117.6
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	103.4	103.4	103.4	104.7
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.30	.28	94.2	87.9	87.9	92.6
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.28	.28	114.8	110.8	108.8	114.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.84	.82	130.0	126.0	127.3	121.1
Canned Fishery Products:					101.5	101.2	100.6	102.2
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	85.1
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	9.00	9.00	105.0	105.0	97.4	81.7
Sardines, Maine, keyless oil, No. 1/4 drawn (3-1/4 oz.), 100 cans/cs.	New York	cs.	7.95	7.70	84.6	81.9	81.9	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.

The market for canned fishery products was firm in January 1957 with prices unchanged from the previous month, except for an increase of 25 cents a case for Maine sardines. The index for this subgroup for January 1957 was less than 1 percent below January 1956. The California sardine canning season ended January 31 with a poor pack. The only extensive fish canning in January 1957 was by the California canners.

