

TRENDS AND DEVELOPMENTS

American Samoa

TUNA LANDINGS,
JANUARY-NOVEMBER 1959:

Species	November		Jan. -Nov.	
	1959	1958	1959	1958
	(1,000 Lbs.)			
Albacore	2,460	1,712	19,819	19,799
Yellowfin	161	239	3,779	4,924
Big-eyed	93	42	919	1,007
Skipjack	7	-	14	-
Total	2,721	1,993	24,531	25,730

Note: Most of these tuna were landed by Japanese vessels; a small amount by South Korean vessels.



Byproducts

U. S. FISH MEAL AND SOLUBLES SUPPLY, 1950-59:

The production of 385,000 short tons of fish meal and solubles in the United States plus imports of 144,500 tons of fish

Table 1 - U. S. Supply of Fish Meal and Solubles, 1950-59

Year	U. S. Production ^{1/}		Imports ^{2/}		Total Short Tons
	Short Tons	Percent	Short Tons	Percent	
1959 ^{3/}	385,000	72.7	144,500	27.3	529,500
1958	313,228	74.3	108,383	25.7	421,611
1957	325,221	79.0	86,442	21.0	411,663
1956	360,207	79.6	92,093	20.4	452,300
1955	319,962	76.3	99,544	23.7	419,506
1954	314,482	68.0	147,777	32.0	462,259
1953	238,851	64.5	131,473	35.5	370,324
1952	221,403	52.1	203,539	47.9	424,942
1951	209,756	62.0	128,478	38.0	338,234
1950	239,954	79.0	63,855	21.0	303,809

1/Includes homogenized-condensed fish and fish solubles.
2/Includes fish solubles
3/Partly estimated.
Note: Wet weight of solubles and homogenized-condensed fish have been converted to dry weight by reducing their poundage by one-half.

solubles added up to a record supply in 1959. The United States production in 1959 was 31.5 percent above the 10-year average (1950-59), and imports exceeded the average by 19.8 percent. The overall supply (United States production plus imports) was 28.1 percent above the 10-year average for the 1950-59 period.

U. S. PRODUCTION OF FISH MEAL, FISH SOLUBLES, AND HOMOGENIZED-CONDENSED FISH:

Fish Meal, 1958-59: Based on partially-estimated production statistics, the United States production of 295,000 tons of fish meal in 1959 will be close to the previous record production of 295,793 tons in 1956. Fish meal produced from menhaden in 1959 (219,000 tons) was up about 4.0 percent from the 210,582 tons produced in 1956.

Table 2 - U. S. Production of Fish Meal, 1958-59

Product	1959 ^{1/}	1958	Record Production Prior to 1959	
	Short Tons	Short Tons	Year	Short Tons
Herring, Alaska . .	8,440	6,253	1937	18,816
Menhaden	219,000	158,074	1958	210,582
Sardines, Pacific .	2,560	10,756	1936	121,739
Tuna & mackerel .	21,000	25,311	1956	26,266
Other	44,000	47,746	-	-
Total	295,000	248,140	1956	295,793

^{1/}Partly estimated.

Fish Solubles and Homogenized-Condensed Fish, January-October 1958-59: Production of fish solubles and homogenized-condensed fish during the first 10 months of 1959 of 167,602 tons was up 45.8 percent from the 144,984 tons produced in the same period of 1958.

Table 3 - U. S. Production of Fish Solubles and Homogenized-Condensed Fish, January-October 1958-59

January-October		Record Production Prior to 1959	
1959 ^{1/}	1958	Year	Short Tons
. (Short Tons)		1958	130,177
167,602	114,984		

^{1/}Preliminary.

U. S. IMPORTS OF FISH MEAL, AND FISH SOLUBLES, JANUARY-OCTOBER 1958-59:

Fish Meal: United States imports of fish meal during the first 10 months of

1959 of 123,744 tons were up sharply from the 85,780 tons imported during January-October 1958. The leading

Table 4 - U. S. Imports of Fish Meal by Countries, January-October 1958-59

Country	January-October 1959 ^{1/} / 1958		Record Imports Prior to 1959	
	Short Tons	Short Tons	Year	Short Tons
Canada	35,533	20,649	1956	57,127
Peru	46,622	31,955	1958	33,371
Chile	4,995	6,200	1958	8,160
Angola	20,738	16,691	1953	33,589
Union of So. Africa	7,852	5,142	1952	37,523
Norway	141	1,184	1952	50,181
Other countries . .	7,863	3,959	-	-
Total	123,744	85,780	1952	203,539

^{1/}Preliminary.

supplier of fish meal to the United States during the first 10 months of both 1958 and 1959 was Peru, followed by Canada and Angola. Peru, Canada, and Angola supplied about 83.2 percent of the United States imports in the first 10 months of 1959 and about 80.9 percent during the same period of 1958.

Fish Solubles: United States imports of fish solubles January-October 1959 jumped 268.5 percent from the January-October 1958 imports. Denmark increased shipments of fish solubles to the United

Table 5 - U. S. Imports of Fish Solubles, January-October 1958-59

Country	January-October 1959 ^{1/} / 1958		Record Imports Prior to 1959	
	Short Tons	Short Tons	Year	Short Tons
Canada	1,345	1,815	1957	4,024
Denmark	17,606	6,044	1958	9,943
West Germany . .	1,705	2/	2/	2/
Union of S. Africa	1,653	551	1958	1,063
Other Countries . .	812	110	2/	2/
Total	23,121	8,520	1958	14,567

^{1/} Preliminary. ^{2/} Data not available.
 Note: Imports from the Union of South Africa are believed to be on a dry-weight basis. All others are understood to be on a wet basis.

States during January-October 1959 as compared with the same period of 1958 by 243.3 percent.

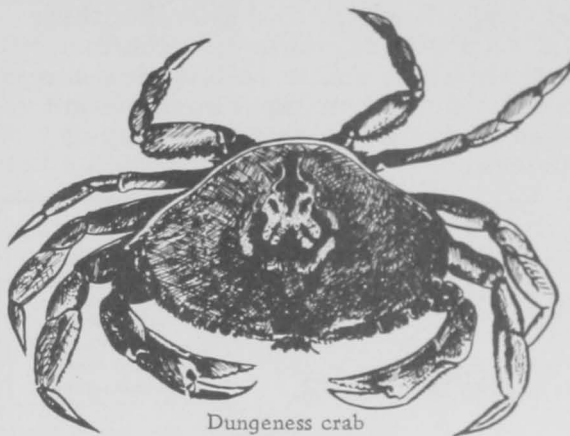


California

BIOLOGISTS PREDICT NORMAL STOCKS OF DUNGENESS CRAB:

The California Department of Fish and Game stated on December 18, 1959, that fewer Dungeness crabs were caught

off San Francisco in 1959 as compared with 1958, but the 1958 catch was above average. The crab catch in 1958 totaled about 5 million pounds, while the average catch for the central coast is 3½-4 million pounds.



Dungeness crab

California marine biologists report that the crab harvest fluctuates because of environmental conditions from year to year. It may even decline naturally over a succession of years, but this does not indicate the resource is being fished out.

On their research cruise before the 1959 season opening, Department of Fish and Game personnel found many crabs just under legal size. These will be of legal size in 1960, indicating that the resource is healthy.

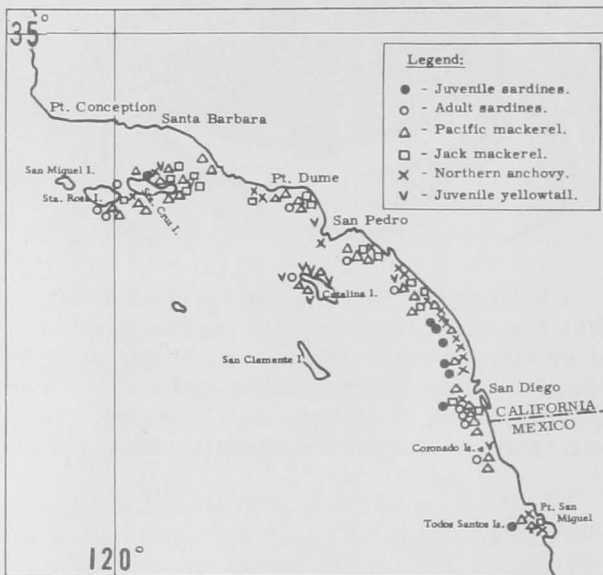
The Department's research crew made a cruise off the Eureka area in November and reported that the season there, which opened December 15, 1959, should be good. There were good numbers of crab, but the research vessel did not find any unusually large "jumbo" crabs, as have been found in some previous years.

PELAGIC FISH POPULATION SURVEY OFF COAST OF SOUTHERN AND CENTRAL CALIFORNIA CONTINUED:

M/V "Alaska" Cruise 59A8-Pelagic Fish: The coastal waters and islands of southern California from Santa Barbara to Todos Santos Bay, Baja Calif., was surveyed (September 21-October 10, 1959) by the California Department of Fish and Game research vessel Alaska

to sample young sardines for determining the relative abundance and distribution of fish resulting from the 1959 spawning.

Other objectives were to sample adult sardines, Pacific mackerel, jack mackerel, and anchovies to determine their relative numbers, their distributions, and their ages; and to collect live sardines for aquarium experiments conducted by the California Academy of Sciences.



M/V Alaska Cruise 59A-8-Pelagic (September 21 to October 10, 1959).

Pacific mackerel were taken at 38, sardines at 19, anchovies at 19, and jack mackerel at 16 of the 112 night light stations occupied.

Eight of the 19 sardine samples consisted of the 1959 year-class. These fish were smaller than normal for this time of year ranging from 43 to 115 mm. ($1\frac{3}{4}$ - $4\frac{1}{2}$ inches). Most were taken between San Diego and Carlsbad. They were lightly mixed with anchovies. Most of the adult sardine samples were collected in the vicinity of San Diego and the Channel Islands. Several light stations were occupied close to commercial vessels actively netting sardines, but no fish were attracted to the lights.

Pacific mackerel were present throughout most of the area and were taken on 34 percent of the stations. The percentage of successful stations for Pacific

mackerel was one of the highest recorded for surveys in this area. The dominant size group averaged about 260 mm. ($10\frac{1}{4}$ inches) fork length.

Large anchovies ranging from 120 to 162 mm. ($4\frac{3}{4}$ to $6\frac{3}{8}$ inches) in length were taken at San Diego and Santa Cruz Island. Fish of this size have been scarce in the southern California live-bait fishery for the past two years.

Bioluminescence ranged from fair to poor for visual scouting. In 444 miles of scouting, 20 schools were sighted-- 6 were identified as Pacific mackerel, 6 as anchovy, 4 as bonito, and 4 were unidentified.

A total of 32 juvenile yellowtail was collected at 11 stations off the Coronados, Santa Catalina and Santa Cruz Islands, and along the mainland off Dana Point and Rocky Point. These fish ranged in length from 84 to 160 mm. fork length ($3\frac{1}{4}$ to $6\frac{1}{4}$ inches) and probably represented successful spawning of yellowtail off southern California.

Several specimens of the sharpchin flyingfish, Fodiator acutus, were taken on 3 stations between Carlsbad and Dana Point. This species is rare this far north.

Approximately 50 live sardines were delivered to Marineland of the Pacific for aquarium experiments being conducted by California Academy of Sciences.

Sea surface temperatures ranged from 16.7° C. (62.1° F.) at Port Hueneme to 20.9° C. (69.6° F.) at Todos Santos Bay. The average temperature north of Point Dume was 19.2° C. (66.6° F.) and 19.7° C. (67.5° F.) south of the point.

Airplane Spotting Flight 59-17-Pelagic Fish: The inshore area from the Tijuana River to Fort Ross was surveyed from the air (October 13-16, 1959) by the Department's Cessna 180 (3632C) to determine the distribution and abundance of pelagic fish schools.

Weather and visibility varied from excellent north of Santa Monica Bay to very poor south of that point. Because

of low clouds, smog and haze, only spotty observations were possible south of Point Dume. No fish schools were seen.

Conditions for aerial observations were very good between Point Dume and Point Arguello, but only 6 schools (all bonito) were observed. They were about one mile offshore between Gaviota and El Capitan. All were quite large, and moving slowly in a "mill" formation.

In San Luis Obispo Bay 55 poorly defined anchovy schools were scattered around the Avila piers in 2 to 4 fathoms of water. No other fish schools were seen south of Monterey Bay.

A total of 73 anchovy schools was counted in Monterey Bay. All were between the mouth of the Pajaro River and Santa Cruz Point inside the 10-fathom contour. Although not positively identified, 90 additional schools were seen in the Bay. These were mostly very large and deep and centered about 3 miles south of Needle Rock Point. An additional 15 very large unidentified schools were observed 2 miles northwest of Ano Nuevo Point.

Many small, fragmentary, anchovy spots were found between Ano Nuevo Point and Pescadero Creek. Also present in the area were: a large number of unidentified non-schooling fish, several large "pods" of sea lions, thousands of gulls, and 12 large basking sharks. The unidentified fish seemed to overlay the entire area and appeared to be about 12 inches in length, pale milky-gray in color and quite slow in their movements. The various groups of sea lions contained many hundreds of individuals, some of which seemed to be actively feeding while others were moving leisurely in the general direction of Ano Nuevo Point. The 12 large basking sharks were very close to shore off Pescadero Creek.

Only 11 anchovy schools were spotted north of Pescadero creek--10 over Four Fathom Bank just north of the Golden Gate, and one was one-half mile off Point Reyes Beach.

The water in the extreme inshore area from Pedro Point to Bodega Head was ex-

tremely dirty ranging from gray-green to a dark purple-brown.

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AERIAL CENSUS OF COMMERCIAL AND SPORT FISHING CONTINUED:

Airplane Spotting Flight 59-18-Abalone: The Channel Islands were surveyed from the air on October 23, 1959, by the California Department of Fish and Game Beechcraft to observe locations and numbers of commercial abalone diving boats.

Four diving boats were observed in operation at Santa Rosa Island in the vicinity of Johnson's Lee where red abalone (Haliotis rufescens) predominate.

Three diving boats were observed at Seal Cove on San Clemente Island. In addition to these conventional diving boats a mothership and four skiffs were observed at this location. This is the first time a skiff-type of operation, which utilizes hookah-type diving gear instead of "hard hat" has been observed among the Channel Islands.

Kelp growth showed considerable increase along the west coasts of Santa Rosa, San Clemente, and Santa Cruz Islands since the last observation flight September 20, 1959.

Observations were confined to Santa Cruz, Santa Barbara, Santa Catalina, and San Clemente Islands. Clearance could not be obtained from the military to fly over Anacapa and San Miguel Islands and fog obscured San Nicolas Island. (See chart p. 30.)

Airplane Spotting Flight 59-19-Abalone: The shoreline from Ft. Bragg to San Francisco was surveyed from the air by the Department's Cessna 182 to estimate the numbers of abalone sport fishermen, clam diggers, and shoreside sport anglers.

Observations were not complete as 2 small sections of coast were blanketed by tongues of fog extending over the coast from a solid bank at sea. One was the 6-mile section of coast from just below Big River to just north of Albion. The

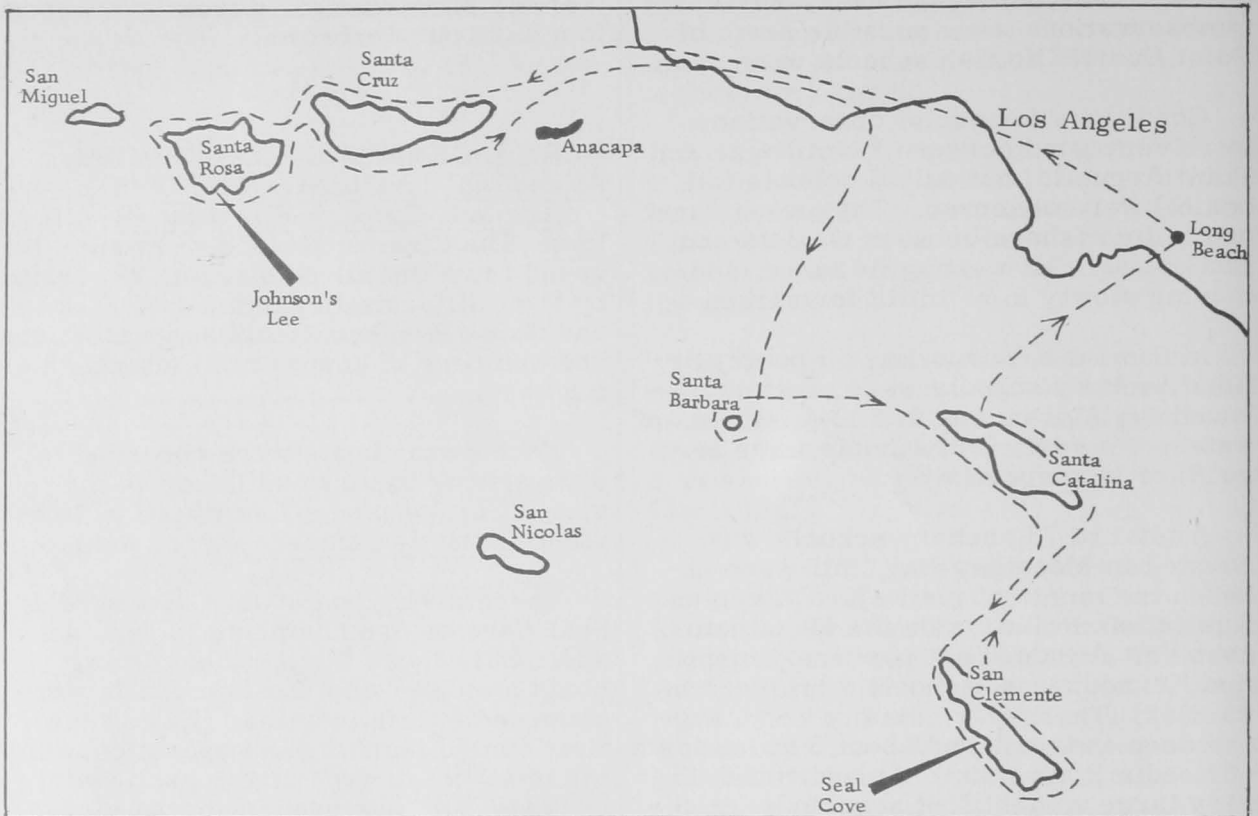


Fig. 1 - Airplane Spotting Flight 59-18 (October 23, 1959), to observe locations of commercial abalone diving activity.

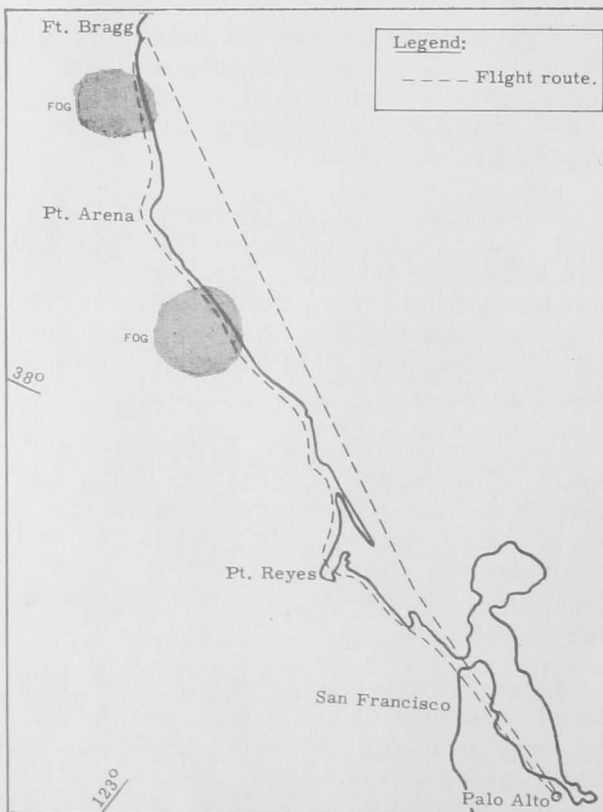
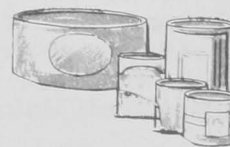


Fig. 2 - Airplane Spotting Flight 59-19 (November 1, 1959), to estimate numbers of abalone sport fishermen, clam diggers, and shoreside sport anglers.

other was the 10 miles of coast just north of Stewarts Pt. The Sunday afternoon flight was on a relatively warm day for the central California coast this time of year. There was a minus tide at sunset, the surf was definitely below average and the wind was light and variable; thus conditions were almost ideal for the sportsmen. This survey did not include Tomales Bay.



Cans--Shipments for Fishery Products, January-September 1959



Total shipments of metal cans for fishery products during January-September 1959 amounted to 93,049 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 94,284 tons in the same period of 1958. Fish

and shellfish canning activities in September 1959 were beginning to drop off seasonally from the high levels reached in July and August. Packs of salmon and Maine sardines were light in September and the pack of California sardines was way below predictions due to disputes over ex-vessel prices and scarcity of fish. Canned packs of tuna and shrimp in September of this year were good. Shipments of metal cans declined 0.3 percent from August to September 1959 and were down by 15.6 percent from September 1958 to September 1959.

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.



Central Pacific Fisheries Investigations

RESEARCH ON IDENTIFICATION OF TUNA LARVAE:

Several studies concerned with various aspects of the life history of the tunas, such as investigations of maturation and fecundity of adults, identification, distribution, abundance, and ecology of the larvae and juveniles, are being made by the U. S. Bureau of Commercial Fisheries' Honolulu Biological Laboratory. Since the studies require methods for sampling larvae and juveniles that will yield both qualitative and quantitative results, various types of nets (including small plankton nets and mid-water trawls with a mouth-opening of 1,200 square feet) have been used. Exchange of larvae and juveniles with various research institutions in the Pacific have augmented the number of specimens available for study. In addition, the laboratory received, on a loan basis, the collection of young Scombroids made from the Danish research vessel Dana during several cruises to the Atlantic and around the world between 1911 and 1938.

On the basis of morphological features, positive identification has been made of the following tuna and tuna-like larvae: skipjack (Katsuwonus pelamis), yellowfin (Neothunnus macropterus), black

skipjack (Euthynnus yaito, E. alletteratus), and the frigate mackerel (Auxis thazard). Yet to be identified are larvae of albacore (Thunnus germo), big-eyed (Parathunnus sibi), bluefin (Thunnus thynnus, T. orientalis, and T. maccoyi), and closely related forms such as the dogtooth tuna (Germo nuda).

In addition to studies of morphological features, other attempts at identification of larvae include the use of paper partition chromatography and serological techniques. It is possible to identify the adults of albacore, big-eyed, frigate mackerels (two species not distinguished), yellowfin, skipjack, and black skipjack through chromatography. However, this technique has technological limitations for use with larvae. Serological techniques, being conducted on Honolulu Biological Laboratory samples at the Seattle Biological Laboratory, await evaluation.

Better methods for capture of tuna larvae and juveniles are being developed. A high-speed sampler will be tested in the tropical waters of the Pacific during the spring of 1960. Nine out of 23 hauls with a midwater trawl yielded 39 juvenile tuna from those waters. Modifications of the trawl to increase its efficiency are being made. It will be used in an attempt to collect albacore tuna larvae next summer. A pumping system permitting continuous sampling from a vessel underway is also being considered. Installation of an aquarium system aboard the Bureau's research vessel Charles H. Gilbert, in which attempts will be made to fertilize tuna eggs and rear larvae and juveniles, is planned for the near future.

It is anticipated that studies utilizing specimens and samples presently available to Laboratory personnel, along with those from the future sampling programs, will result in: (1) identification of the important species of tuna and tuna-like larvae and juveniles; (2) increased knowledge concerning the life history of the tunas; and (3) a better understanding of the ecology, distribution, and abundance of the larvae and adults.

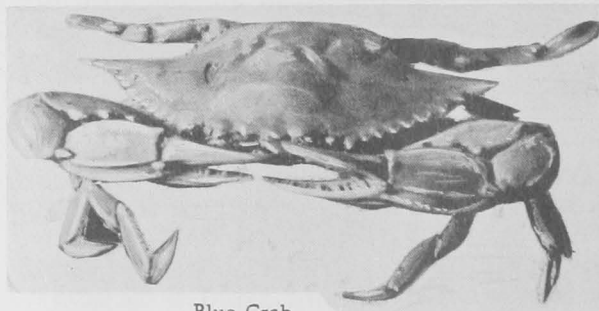


Crabs

CHESAPEAKE BAY BLUE CRABS SCARCE IN 1959/60 WINTER:

Beginning December 1, 1959, and for the following three months, over 150 Virginia vessels and motorboats, manned by more than 400 men, dredged for blue crabs in Chesapeake Bay. Dredgers were expected to be disappointed if they anticipated a large harvest for, according to marine biologists of the Virginia Fisheries Laboratory, blue crabs would probably be scarce and dredge-boat catches would be near the record low.

The forecast of a low catch was actually made in December 1958, following observations that the 1958 brood was



Blue Crab

very small. As additional evidence that the crop was small, the soft and peeler-crab catch at Tangier Island was about one-half normal size in the summer of 1959. Tangier Island usually produces about one-half of Virginia's soft crabs. Crabs reach commercial size a year after hatching, and are usually at least 18 months old when caught by the winter dredges. Since 1950, catches have been above average in 5 winters and below average in 4. After this winter the score will be even.

Crab dredgers have been disappointed with their catches the last three winters. Last year the hibernating crabs bedded down among millions of blue mussels which promptly attached themselves to the crabs, often 200 or more mussels per crab. Thousands of blue mussels were brought up by each dredge haul, and extra deck hands were hired to clean the crabs before they could be landed. Normally, the mussels set in the spring

grow to about one inch and then die during the heat of late summer. But in 1958, it is believed that the mussels survived because of the coolness of the summer. Most of the dredgers had never encountered as many mussels in previous years.

During a survey of the crab-dredging grounds in October 1959 from aboard the Laboratory's research vessel *Pathfinder*, the biologists found many dead mussels and only a few live ones, indicating that last year's problem will probably not be encountered this winter.

A bright ray of hope for the future for the blue crab industry was seen in October 1959 in a big crop of fingernail-size crabs, caught during one of the regular monthly surveys by Laboratory scientists. These crabs, hatched in mid-summer, will produce a better-than-average catch the winter of 1960/61.



Croakers

BIOLOGISTS SURVEY CHESAPEAKE BAY FOR 1959 YEAR-CLASS:

Fishery biologists from the Virginia Fisheries Laboratory aboard the research vessel *Pathfinder*, ranged over 1,000 miles of Chesapeake Bay and its tributaries during mid-November in search of the 1959 brood of croakers. They covered both Virginia and Maryland waters and were assisted by biologists from Maryland's Chesapeake Bay Laboratory. The purpose was to measure the success of the 1959 spawning of croakers which began in the fall of that year. "For the past two winters we have found young croakers in the rivers during the late fall but later on they were killed off, apparently by the unusually severe cold which persisted for several days keeping temperatures below freezing," the Virginia biologist in charge of the survey reported.

Croakers are known to spawn in the ocean outside of the Capes and the young come into Chesapeake Bay in fall and winter and move up into fresh water where they spend the first few months of their lives. When Virginia's scientists

surveyed the entire Bay in the spring of 1959 they located no young croakers anywhere. Although the Bay produced some fish of large size, 1959 croaker fishing was very poor, as had been predicted by the Laboratory's biologists. For instance, sport fishermen had to spend eight hours fishing during the summer of 1959 to catch as many croakers as they had landed in one hour in previous seasons and the commercial catch was generally low.

"The future of the croaker fishery depends on successful spawning in the ocean and survival of young fish that migrate into the Bay," the biologist emphasized. Although croakers leaving the Bay in fall are full of eggs, it is known that they do not deposit them until they reach ocean waters. In December 1959 explorations were started in the Atlantic in an attempt to locate areas where eggs are laid and where larval croakers may be found. One of the objectives of these research programs is to explain why the numbers of croakers available to fishermen varies so widely over the years. Work already completed indicates that all croakers caught by commercial and sport fishermen together has little effect on depleting numbers present in the Bay. Apparently the change in numbers is chiefly influenced by natural causes, but more work is necessary before we can know what factors affect croaker populations the most.



Virginia Fisheries Laboratory's research vessel Pathfinder.

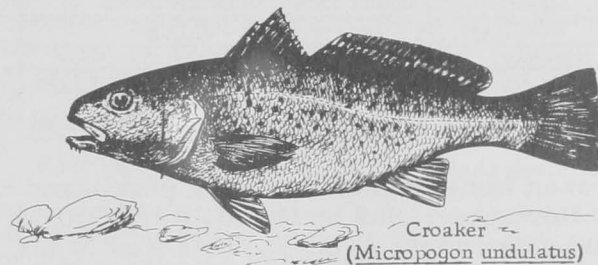
On the 1959/60 surveys, biologists from Virginia's marine laboratory will carry on a cooperative study of menha-

den spawning with the U. S. Bureau of Commercial Fisheries, and will also release numerous drift bottles for studying ocean currents in conjunction with the Woods Hole Institution of Oceanography. Although this last phase of the program is intended primarily for oceanographers, the information obtained about ocean currents will also be helpful in clarifying puzzling questions about the movements of very young fishes. Drift bottle current studies will also yield more detailed knowledge about the movements of inshore currents which is necessary in dealing with the problems of the disposal of radioactive wastes and other pollutants in the sea.

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VIRGINIA BIOLOGISTS SEEK BREEDING AREAS IN ATLANTIC:

A search for croaker breeding grounds was made December 7-10, 1959, by the research vessel Pathfinder of the Virginia Fisheries Laboratory. Areas in



the lower part of Chesapeake Bay and the Atlantic Ocean were surveyed. A total of 30 stations was occupied in areas extending 60 miles along the Atlantic coast south of Cape Henry, Va., and 50 miles out to sea. The ship hove-to at designated stations every 10 miles to take water samples, record water temperatures, and to release drift bottles for ocean current studies. Plankton tows were made with large plankton nets and a specially-designed deep-water sampler.

"Most of the work was done at night," the chief biologist reported, "because the chances of larval fish being near the surface are greater at that time." Bottom plankton samples were collected with a Gulf III plankton-sampler (developed by the Galveston Biological Laboratory of the U. S. Bureau of Commercial

Fisheries), a medium-speed sampler used for towing near the bottom.

This is the first exploration made specifically to locate areas where the croaker spawns and larval croakers develop. The biologists anticipate making trips every month during 1960 to establish the time and place of spawning not only for croaker, but also for menhaden, spot, grey sea trout, and other fish.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-NOVEMBER 1959:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 1.4 million pounds (value \$0.7 million) of fresh and

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, November 1959 with Comparisons

QUANTITY				VALUE			
November		Jan.-Nov.		November		Jan.-Nov.	
1959	1958	1959	1958	1959	1958	1959	1958
. . . (1,000 Lbs.) (\$1,000) . . .			
1,443	1,499	20,876	20,881	713	908	10,748	11,967

frozen fishery products were purchased in November 1959 by the Military Subsistence Supply Agency. This was lower than the quantity purchased in October by 25.8 percent and 3.7 percent under the amount purchased in November 1958. The value of the purchases in November 1959 was lower by 32.9 percent as compared with October and 21.5 percent less than for November 1958.

During the first eleven months of 1959 purchases totaled 20.9 million pounds (valued at \$10.7 million)--about the same in quantity, but lower by 10.2 percent in value as compared with the similar period in 1958.

Prices paid for fresh and frozen fishery products by the Department of Defense in November 1959 averaged 49.4 cents a pound, about 5.2 cents less than the 54.6 cents paid in October and 11.2 cents less than the 60.6 cents paid during November 1958.

Canned Fishery Products: Salmon was the principal canned fishery product purchased for the use of the Armed Forces during November 1959. In the first eleven months of 1959, the purchases of canned tuna were down 40.5 percent, canned salmon lower by 67.5 percent, and canned sardines were up about eight-

Table 2 - Canned Fishery Products Purchased by Military Subsistence Supply Agency, November 1959 with Comparisons

Product	QUANTITY				VALUE			
	November		Jan.-Nov.		November		Jan.-Nov.	
	1959	1958	1959	1958	1959	1958	1959	1958
Tuna . . .	355	1,035	2,957	4,966	154	542	1,357	1/
Salmon . .	414	553	1,085	3,336	267	341	737	1/
Sardine . .	1	18	1,026	111	1	6	166	1/

1/Unavailable.

fold as compared with the same period in 1958.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.



Great Lakes Fisheries Exploration and Gear Research

WESTERN LAKE ERIE SURVEYED FOR COMMERCIAL FISH STOCKS:

M/V "Active" Cruises 7 and 8: Exploratory fishing for commercial fish stocks in west central and western Lake Erie (between Fairport and Port Clinton, Ohio), was continued by the U. S. Bureau of Commercial Fisheries chartered fishing vessel Active between October 20 and November 23, 1959. Cruises 7 and 8 were planned to obtain additional information on the availability of smelt and other fish stocks to commercial fishermen.

Fishing operations during both cruises were hampered by high winds, rough seas, and hazardous ice formations. Fish concentrations were found to be widely scattered over the entire area and no commercial scale catches were taken.

A total of 31 trawl tows were completed in the 2-12 fathom depth range with a 50-foot, 2-seam balloon trawl net with 1½-inch and 2¼-inch mesh cod ends. Individual trawl catches, which did not exceed 100 pounds per tow, were composed of mostly yellow perch and emerald shiners with smaller amounts of smelt, white bass, gizzard shad, alewife, whitefish, carp, and catfish. One seine set was made in Fairport Harbor on sizable echo-sounder indications with a 300-foot by 10-foot beach seine. All but a few pounds of emerald shiners escaped through the seine's one-inch mesh.

Surface water temperatures recorded during the cruises ranged from 59° F. in late October to 36° F.

at the termination of cruise 8. Bottom temperatures recorded were found to vary little from the surface temperatures indicating that thermal stratification of the lake waters had disappeared prior to cruise 7.

Cruise 7 was interrupted on October 25 at Vermilion, Ohio, for the purpose of demonstration of trawl gear to observers representing the Ohio Commercial Fishermen's Association and Ohio Sportsmen's and Conservation organizations.

Cruise 8 was the last exploratory fishing and gear research cruise scheduled for calendar year 1959. The M/V Active returned to Port Clinton, Ohio, November 23 for winter storage.



Great Lakes Fishery Investigations

WESTERN LAKE SUPERIOR FISHERY SURVEY CONTINUED:

M/V "Siscowet" Cruise 9: Abundance and distribution of spawning whitefish and the physical characteristics of whitefish spawning grounds were studied by U. S. Bureau of Commercial Fisheries personnel aboard the research vessel Siscowet during November 9-21, 1959. Gangs of approximately 3,000 feet of large-mesh nets (5- to 6-inch mesh, stretched measure) and 300 feet of small-mesh nets (1½- and 2½-inch mesh) were set over spawning grounds. Through the guidance of commercial fishermen in the area, the following grounds were selected: Outer Island Shoals (west side), Cat Island Shoal, Big Bay on Madeline Island, Presque Isle Bay on Stockton Island, and Rocky Island Shoal. The bottoms of the various grounds were: Outer Island Shoals, small boulders and sand; Cat Island Shoal, broken bed-rock; Big Bay, smooth bed-rock; Presque Isle Bay, small boulders and sand; Rocky Island Shoal, large boulders.

The catch of spawning whitefish was meager at all locations. The largest catch was 19 whitefish (16 males, 3 females) on Rocky Island Shoal in water 3½ to 9 fathoms deep. Two large-mesh nets floated about 1 foot below the surface in water 3½ fathoms deep took no fish. Whitefish taken at other locations were as follows: Outer Island Shoals (3½-7 fathoms), 2; Cat Island Shoal (3½-8 fathoms), 5; Presque Isle Bay (5-13 fathoms), no catch; Big Bay (4-7 fathoms), 5. All of the whitefish were ripe males except 1 ripe female taken at Big Bay. Twenty-one of the fish were tagged and released at the point of capture.

The whitefish taken on the spawning grounds were relatively small. They varied from 17.3 to 23.7 inches long and averaged 19.8 inches.

Lake herring and menominee whitefish dominated the catch in the small-mesh nets at each location. Lesser catches were made of longnose suckers and burbot. The average weight of the 195 lake herring taken in the 2½-inch mesh nets was 0.7 pound. All of the mature lake herring and menominee whitefish were ripe and appeared to be in spawning condition.

A short gang of chub nets (2½-inch mesh) was set in 45 fathoms between Madeline and Stockton Islands to investigate the spawning of chubs (*Leucichthys* sp.). Only 14 chubs were captured (12 *L. hoyi*, 2 *L. zenithicus*). One *L. hoyi* was spent and 11 were nearly ripe. The *L. zenithicus* were not ripe. Almost all of 78 lake herring in this lift were nearly ripe.

Bathythermograph casts showed water to be homothermous down to 45 fathoms. Surface temperatures varied from 37.4° F. at Big Bay to 41.8° F. at Outer Island Shoals.

Cruise 10: This cruise (November 23-December 26, 1969) explored the distribution of the lake herring during the spawning season and collected eggs from certain species of chubs (*Leucichthys* sp.). Gill nets were fished south of Stockton Island, and trawl tows were made south of Stockton Island and in Pike's Bay. A recording echo-sounder was operated over large areas among the Apostle Islands to learn more of the areal and vertical distribution of the lake herring at different periods of the day and night.

Concentrations of fish were recorded by the sounder in nearly all areas visited among the islands. The heaviest concentrations appeared at about 15 fathoms in water 25 to 50 fathoms deep. Vertical distribution was practically the same day and night. During the night some of the fish seemed to move along the 15-fathom level from deeper waters to inshore areas where they appeared just above bottom. It was assumed that fish that made traces on the sounder chart were lake herring as commercial nets were taking up to 3 tons per lift. Trawl tows by the Siscowet failed, however, to take lake herring in these areas.

Four night-time trawl tows were made south of Stockton Island at depths ranging from 7 to 45 fathoms. The sounder recorded fish concentrated on or near the bottom only at depths of 15 fathoms or less in this area. Tows made at 7 to 21 fathoms caught predominately smelt, trout-perch, and slimy muddlers. Twenty-eight whitefish (6 to 19 inches) and 7 lake trout (6 to 15 inches) were taken in three 12-minute tows. No lake herring were captured.

A 12-minute trawl tow made at 45 fathoms took 82 *L. hoyi* and lesser numbers of slimy muddlers, spoonhead muddlers, and ninespine sticklebacks. One lake herring was captured in this tow. The sounder recorded no concentration of fish on or near the bottom at this depth.

Two night-time trawls tows made in Pike's Bay at depths of 18 to 20 fathoms. The sounder recorded heavy concentrations of fish just off the bottom but they could not be positively identified as lake herring. The catch from two 12-minute tows consisted mainly of smelt and slimy muddlers. Four lake herring, 2 lake trout, 1 whitefish, and 1 *L. hoyi* were also taken.

Gangs of gill nets (2¼- and 2½-inch mesh) were set south of Stockton Island at 51 to 53 fathoms to capture spawning chubs (*Leucichthys* sp.). A set made on November 23 captured 161 *L. hoyi*, 4 *L. kiyi*, 20 *L. zenithicus*, 611 lake herring, and 48 burbot. Eggs were collected and fertilized from all ripe *L. hoyi* and *L. kiyi*. About 75 percent of the *L.*

hoi were green, 15 percent ripe, and 10 percent spent. Fifty percent of the *L. kiyi* were ripe and 50 percent green. All of the *L. zenithicus* were green and all of the lake herring were ripe. A set over the same grounds on December 2 captured 243 *L. hoi*, 4 *L. zenithicus*, 272 lake herring, and 8 burbot. At least 95 percent of the *L. hoi* were green and only 6 individuals were spent. All of the *L. zenithicus* were green and all lake herring were ripe or spent.

Chub eggs were taken to the Wisconsin Conservation Department fish hatchery at Bayfield where they will be held to the eyed stage. At that time they will be transferred to the hatchery at Northville, Mich., for hatching and study.

Bathythermograph casts showed homothermous conditions down to 53 fathoms. Surface temperatures ranged from 35.5° F. at Pike's Bay to 37.8° F. south of Stockton Island.

Note: Also see *Commercial Fisheries Review*, January 1960 p. 38.



Gulf Fishery Investigations

Following are some of the highlights of the studies conducted by the Galveston, Tex., Biological Laboratory of the U. S. Bureau of Commercial Fisheries during October-December 1959.

MIGRATIONS OF SHRIMP: As of the fourth quarter of 1959, 27 of 7,084 pink shrimp stained and released in Barnes Sound, Fla., in early July 1959, were recovered. All were recaptured in Barnes Sound, excepting one caught at the entrance to Little Card Sound, immediately north of Barnes Sound. Results of this experiment suggest that the range of some pink shrimp populations is quite restricted.

Preliminary analysis of growth rates of Barnes Sound recoveries (predominately females) indicates an increase in mean carapace length of approximately 3.0 mm. a month. Mean carapace length at release was 19.5 mm. This represents a weight increase of from 115 to 87 count, heads off, during the first month after release.

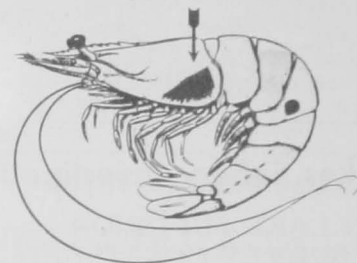
During November 2-6, a total of 16,638 pink shrimp were stained with fast green and released in the Shark River area of Everglades National Park. The purpose of this experiment was to determine if pink shrimp nurtured in that locality contribute to the Tortugas fishery, to the Sanibel fishery, or perhaps to both. As of the end of 1959, four marked specimens were recovered by commercial shrimp vessels on the Tortugas grounds, the first of these was taken 35 days after being released. None were reported taken on the Sanibel grounds.

As the fourth quarter of 1959 closed, staining equipment was being transported to Bahia Honda Key for a shrimp marking operation to be conducted in Hawk Channel in the Atlantic southwest of Marathon. The purpose is to determine whether or not pink shrimp migrate from the Atlantic Ocean to the Tortugas grounds.

STAINED SHRIMP 50¢ REWARD

Shrimp have been marked with blue, green and red biological stains — in order to obtain information on migrations and growth. The color appears only on both sides of the head (in the gills) as shown in the illustration.

Look for color here



A reward of 50¢ will be paid for stained shrimp when returned with the following information:

1. Exact place the shrimp was caught.
2. Date the shrimp was caught.

NOTIFY BY MAIL THE U. S. FISH AND WILDLIFE SERVICE, BIOLOGICAL LABORATORY, P. O. BOX 3098, GALVESTON, TEXAS, OR CONTACT ANY FISH AND WILDLIFE SERVICE AGENT OR REPRESENTATIVE.

Stained shrimp must be verified by Fish and Wildlife Service biologist before payment. The stains used are approved for this use by the Food and Drug Administration.

Typical poster distributed in shrimp ports in Gulf States to encourage the return of stained shrimp by fishermen, dealers, and processors.

Several collections of gravid female shrimp were made in support of the project concerned with identification of larvae. Ripe females brought to the laboratory were placed in containers and observed in hopes they would spawn viable eggs. On October 7, a single female seabob (*Xiphopeneus krøyeri*) was caught in a trawl haul at one of the Gulf sampling stations and returned to the laboratory where she spawned. Overnight trips to offshore spawning grounds (15-25 fathoms) southeast of Galveston were made on October 22, and November 19. Over 100 ripe brown shrimp (*Penaeus aztecus*) were collected each trip and brought back to the laboratory where several spawned. Plankton samples taken on the spawning grounds were found to contain penaeid nauplii and later stages. These should aid in assembling a complete series of larval instars.

SHRIMP LARVAL STUDIES: In addition to maintaining a small number of miscellaneous shrimp species (*Eusicyonia* sp., *Xiphopeneus krøyeri*, *Trachypeneus* sp., and *Hippolytidae*, species unknown), three of commercial importance, *Penaeus aztecus*, *P. duorarum*, and *P. setiferus*, have been maintained in substantial numbers in the laboratory under conditions of varying diet, tempera-

ture, and lighting for a period of more than six months. Although molts have occurred at regular intervals and examination of casts of recently molted shrimp have revealed that copulation did occur on several occasions among individuals held in the aquaria, we have had no success inducing these shrimp to attain a spawning condition. In fact, it has been noted that shrimp brought into the laboratory with partially mature gonads actually have them regress after remaining in the laboratory for as long as a month. Only those shrimp possessing mature gonads at the time of capture have spawned in the laboratory, usually very shortly after arrival. It was from such individuals that early larval stages of two species of shrimp were obtained.

Because of the lack of success in obtaining spawn from shrimp maintained under artificial conditions for long periods of time, the number being kept in the laboratory has been reduced somewhat. Efforts are now being directed toward securing females most likely to spawn immediately after being deposited in laboratory tanks.

On October 7, one ripe female seabob, *Xiphopeneus krøyeri*, was taken during a regular off-shore plankton collecting trip. Held in a fifteen-gallon plastic aquarium, it spawned the following day. The eggs, only slightly heavier than sea water, were carefully siphoned from the bottom of the aquarium and transferred to two four-liter beakers for closer observation. Continuous observations were recorded as the eggs hatched and the larvae developed through five naupliar instars into the first protozoa.

On October 24, the day following their capture, several gravid brown shrimp, *P. aztecus*, spawned in the laboratory. Two days later one female taken during the same collecting trip was observed while in the act of spawning. Unfortunately, high microorganism densities proved detrimental to the developing eggs and larvae; consequently, only a few individuals reached the first protozoal stage. As in the October *Xiphopeneus* spawn, a continuing record was kept and specimens of each larval stage were preserved.

Gravid brown shrimp were again brought into the laboratory on November 20. Spawning began the following day and continued over the next three days, resulting in a large number of eggs being obtained. Several instances of abortion were noted during this period. By carefully planning and making adequate preparation beforehand, much of the contamination experienced during previous spawns was avoided. As a consequence, a large number of eggs hatched and hence a larger number of nauplii were carried through to the first protozoal stage. Specimens of each developmental stage were again preserved and all observations and other pertinent data recorded to provide for later description of the species during the stages observed.

Preliminary work toward a detailed description of successive developmental stages in the life history of *P. aztecus* has begun. Accurate drawings and tracings are being made with the aid of camera lucida, stained mounts, and photo-micrographs which were taken of both living and preserved organisms. Staining, clearing, and mounting techniques have been satisfactorily worked out and a

number of specimens have been permanently mounted for ease and convenience of study, and for future reference. Comparative study of early stages of species made available thus far will begin shortly.

BAIT SHRIMP PRODUCTION, GALVESTON BAY: The statistical canvass of bait-shrimp dealers and suppliers in the Galveston Bay area continued on a routine basis. Estimates of total production (volume consumed) and gear effort expenditure indicate vigorous growth of the local bait-shrimp industry. Whereas, approximately 676,000 pounds were handled during the two-year period ending May 30, 1959, about 419,000 pounds were landed and sold commercially during July through November 1959. Brown and white shrimp were by far the dominant species taken, the latter being the more important on a year-round basis.

INDUSTRIAL FISHERY STUDIES: Age determinations of menhaden by scale analyses were completed for the 1958 menhaden samples collected at Moss Point, Miss. One-year-old fish comprise 54.8 percent of the specimens, compared to 23.3 percent for this age group in 1957. Two-year olds declined from 66.8 percent in 1957 to 20.5 percent possibly reflecting the small percentage of one-year olds in 1957. The percentage of three-year olds increased from 9.0 percent in 1957 to 19.4 percent which might be expected from the very high percentage of two-year-old fish in 1957. Young of the year (zero's) increased from 0.3 percent to 2.8 percent. Most of these fish were taken in late summer. The remaining 2.4 percent were made up of 4- and 5-year olds.

During October 1959, croaker (*Micropogon undulatus*) contributed approximately 40 percent by weight to the industrial fish catches sampled, spot (*Leiostomus xanthurus*) 10 percent, and white trout (*Cynoscion nothus*) 14 percent. These three species made up roughly 64 percent of the catches sampled during that month. The remaining 36 percent was made up of numerous other species in varying amounts.

During November croaker roughly contributed 60 percent of the weight of the catches sampled; spot, 6 percent; and white trout, 7 percent. Combined, these three species made up 72 percent of the total weight of the catches sampled. The species list now includes 63 families and 141 species.

The industrial fish catches sampled during October and November were taken in waters between Gulf Shores, Ala., to the east and Timbalier Bay, La., on the west. Ninety-seven percent of all catches sampled were made between Gulf Shores and the mouth of the Mississippi River, and 67 percent of the catch was made between the mouth of Mobile Bay and a line running from Horn Island down the eastern shore of Chandeleur Island to the mouth of the Mississippi River. Most fish were caught in waters of 3 to 7 fathoms during October and November with the peak at 4 fathoms.

Studies of the life histories of several important species contributing to this fishery have been limited to a weekly catch sample for length, weight, and spawning condition studies. Personnel assigned to this project have been occupied with sampling for species composition, gathering catch statistics, and working up the data to a form usable for publication.

The study of the demersal fish utilized for industrial products such as pet food, mink food, and fish meal for animal foods is being carried on in much the same manner as described in previous reports this year, except that starting December 1, 1959, sampling intensity was reduced.

Sampling as of that date was reduced to two days a week to prepare past data for publication and to allow more time for other phases of the study. As many vessels as possible are sampled during the two days each week. In order to minimize any bias due to the days of the week sampled, it is tentatively planned to advance the sampling time to two calendar days each week. For instance, it will be done on Monday and Tuesday this week, Wednesday and Thursday next week, and Thursday and Friday the third week. The cycle will start over again the fourth week. In case no vessels land on the days scheduled, the following day's landings will be sampled.

During October 68 vessels were sampled. Their total catch was 1,874,213 pounds. The average weight per catch was 27,562 pounds. During November, 53 landings were sampled. They had a combined weight of 960,101 pounds. The average catch was 18,115 pounds. This made a total for the two months of 121 vessels sampled, a total of 2,834,314 pounds of fish, and an average catch of 23,424 pounds per vessel.

Note: See Commercial Fisheries Review, March 1959 p. 38.



Maine Sardines

CANNING SEASON FOR 1959 CLOSES WITH A SHORT PACK:

The Maine sardine packing season officially closed at midnight December 1, 1959, with a total canned pack of approximately 1,750,000 cases (100 $3\frac{3}{4}$ -oz. cans), which was far short of the industry's preseason goal of 2,100,000 cases.

The subnormal pack will result in a complete sellout of stocks by all canners before the 1960 season gets under way next June with shortages of many types and varieties occurring by midwinter, the Maine Sardine Council predicts.

The comparatively small carryover from the 1958 pack would not make up the deficit in the disappointing pack in 1959.

The short pack was due to an uncertain, spotty, and thoroughly unsatisfactory fish supply. The small-size herring were late in arriving on the coast and there was limited production in June, which is normally one of the best months of the year.

From then on, it was a case of continuous uncertainty which was topped off by failure of the usual fall run of highly desirable canning fish to materialize. Many plants closed in mid-October and those that kept open through November enjoyed only sporadic operations.



The "western" and "eastern" areas produced a major percentage of the fish while the traditionally steady supply in the middle area from Milbridge to Rockland failed for the first time in years. The situation was not an abnormal one for the 1950's as shortages also occurred in 1951 and 1955. Scientists blame poor spawning and survival conditions rather than any major or permanent dislocation of the fish supply.

The market for Maine sardines is normal with prices firm, and is expected to continue so for an indefinite period.

A total of 35 plants operated for varying lengths of time during the season with but few of them getting the sizable pack necessary for efficient operations. Generally speaking it was also a poor year for the sardine fishermen.

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CANNED STOCKS, NOVEMBER 1, 1959:

Distributors' stocks of Maine sardines totaled 296,000 actual cases on November 1, 1959--16,000 cases or 5.1 percent less than the 312,000 cases on hand November 1, 1958. Stocks held by distributors on July 1, 1959, amounted to 176,000 cases, and on April 1, 1959, totaled 254,000 cases, according to estimates made by the U. S. Bureau of the Census.

Canners' stocks on November 1, 1959, totaled 1,001,000 standard cases (100 $3\frac{3}{4}$ -oz. cans), a decrease of 36,000 cases (3.5 percent) as compared with November 1, 1958.

Table 1 - Canned Maine Sardines--Wholesale Distributor's and Cannery's Stocks, November 1959 with Comparisons^{1/}

Type	Unit	1959/60	1958/59				
		11/1/59	11/1/58	1/1/59	4/1/59	6/1/59	7/1/59
Distributors	1,000 Actual Cases	296	312	268	254	197	176
Cannerys	1,000 Standard Cases ^{2/}	1,001	1,037	891	474	272	422

^{1/}Based on marketing season from November 1-October 31.

^{2/}100 $3\frac{3}{4}$ -oz. cans equal one standard case.

The 1959 pack (from the season which opened on April 15, 1959, and ended on December 1, 1959) amounted to about 1,750,000 standard cases as compared with 2,100,000 cases packed in the 1958 season. The pack for the 1957 season totaled 2,117,151 standard cases.

The total supply (pack plus carry-over on April 15, 1959) at the cannery's level as of November 1, 1959, amounted to 2,121,000 standard cases or 6.3 percent under the total supply of 2,263,000 cases as of November 1, 1958. Cannery's shipments from April 15, 1959, to November 1, 1959, amounted to 1,120,000 cases as compared with 1,226,000 cases during the April 15-November 1, 1958, period.



Maryland

CONTROLLABLE PITCH PROPELLER ON HYDRAULIC DREDGE VESSELS MAY REDUCE SOFT-CLAM HARVESTING COSTS:

A Maryland State shellfish biologist cooperating with a private shipyard on December 18, 1959, disclosed an equipment improvement which promises to reduce soft-clam harvesting costs by 20 percent.

The shellfish biologist of Maryland's Chesapeake Biological Laboratory has tested satisfactorily a controllable-pitch propeller which cuts power needs of a typical clam rig in half. He proposed the development of this new powering system to a number of propeller manufacturers and a Connecticut shipyard engineered the final product, which is now being field-tested. If further tests confirm the excellent results from preliminary tests, the propeller will be on the market in the spring of 1960.

The new propeller eliminates one of the two large power plants presently required on most of Maryland's soft-clam vessels. One of the engines propels the vessel while the other drives a powerful water pump which literally blows clams out of the bottom mud in the Chesapeake Bay.

The pump engine must work at high speed to develop the necessary water pressure, but the boat itself should move very slowly. The biologist combined the two requirements by using one engine to serve both purposes; the "flattened" blades of the propeller bite only small slices of water on each turn, even with the engine running fast enough to drive the water pump. When clam harvesting operations are finished, the clammer disengages the water pump, adjusts the propeller bite to a sharp angle, and heads home at a normal cruising speed.

Besides eliminating an engine (usually 80-120 hp.) and its initial high cost, the propeller will cut gasoline consumption by about 20 percent, the biologist believes. The deadweight of the boat will also be reduced, storage space will be gained, and engine maintenance costs should be lower.

The design was made purposely simple enough to withstand long-term high-load clam harvesting operations, the biologist said. It has been tested aboard the Laboratory's research vessel John A. Ryder.

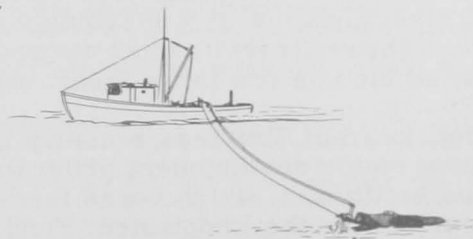
In 1959, the number of licensed clam boats in Maryland was 224. The year's harvest will be about 300,000 bushels, worth \$1.2 million, or more than the rest of the Nation's combined output of soft clams.

The Director of the laboratory states that while their research doesn't ordinarily extend to design and development of commercial harvesting gear, their extensive studies of clams and the new clam dredge have made them unusually aware of the young industry's problems.

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LITTLE FALLS FISHWAY NEARS COMPLETION:

After many years of effort by the U. S. Fish and Wildlife Service and the Maryland fishery agencies, the proposed fishway at the new Corps of Engineers dam at Little Falls on the Potomac River near Brookmont, Md., is rapidly becoming a reality. It was over 80 percent complete in October 1959, and is expected to be ready for operation in the spring of 1960.



North Atlantic Fisheries Exploration and Gear Research

SURVEY OF DEEP-WATER WHITING ABUNDANCE IN WINTER OFF NEW ENGLAND:

M/V Delaware Cruise 60-1: To determine the abundance of whiting (*Merluccius* sp.) in deep water during the winter months was the purpose of a January 5-31, 1960, scheduled cruise to the Georges Bank area and the continental shelf south of Block Island of the U. S. Bureau of Commercial Fisheries' exploratory fishing vessel Delaware.

Fishing tests along the Continental Shelf south of Block Island were to be made with both bottom and midwater trawls.



Oceanography

WOODS HOLE OCEANOGRAPHIC INSTITUTION RECEIVES GRANT FOR RESEARCH VESSEL:

A \$3 million grant from the National Science Foundation for the design and construction of a new oceanographic research vessel was announced November 25, 1959, by the Woods Hole Oceanographic Institution, a private nonprofit research organization. This is the largest gift or grant the Institution has received in its 29 years of existence.

In 1930, the Rockefeller Foundation and the Carnegie Corporation provided about \$2 million to the Institution to erect its first laboratory, to design and build a research vessel, and to employ a small professional staff. Since that time other grants have made it possible for the Institution to increase its scientific staff to about 135 investigators and a total staff of nearly 400. The Institution's fleet consists of 5 seagoing vessels and three aircraft, while its shore facilities include two large laboratories.

The Board of Trustees recently adopted a major development program for the Institution, which hopes to raise \$38 million for the Endowment Fund, to

increase its staff, provide more fellowships, endow four Chairs in oceanography, build a third laboratory, and renovate its fleet.

The Institution designed and built the research vessel Atlantis in 1931. Today that famous vessel still is the only United States deep-sea vessel especially designed for oceanographic work. The vessel has sailed some 1.5 million miles in all oceans and is out to sea some 250 days each year. Apart from the fact that the ship is old and may soon have to be laid up, the Atlantis has grown too small. One of the difficulties in oceanography has been that students do not have the opportunity to go to sea. The new vessel will have accommodations for 19 scientists as opposed to 9 on board the Atlantis and most of the Institution's other ships. It is expected that a number of students will be taken aboard the new vessel.

In addition to the Atlantis, the Institution has had the use of other ships--yachts, fishing boats, naval vessels, etc. Most of these vessels were acquired to fill an immediate need and were adapted to do the job as well as possible. Such conversions are costly to accomplish and to operate and less efficient than specially designed ships.

The selection of the new vessel has resulted from a close examination of the needs of modern oceanography. A committee has worked hard to develop a ship, 175 feet long, that would incorporate the unique qualities and features necessary for the Institution's work.

For instance, it is planned to control the rolling of the ship with tanks whose liquid contents are synchronized to the rolling period of the ship. A center well in the hull will make it possible to lower instruments from below decks, while a bow propulsion unit will enable precise maneuvering of the ship. An underwater observation chamber will be placed in the bulbous bow and the ship will be able to creep along at very slow speeds when desired. She will have a range of 7,000 miles at 12 knots. Also, the ship is to be as quiet as possible in machinery and propulsion so as to have as little ship

noise as possible while making underwater sound studies. About ten winches are planned--some will be used to lower equipment for shallow depths while others will be capable of reaching to the ocean bottom. The new ship will have high standards of living quarters.

The new vessel will be the best equipped research ship afloat and is expected to be the most modern in design. Her superior facilities will enable her to carry out the increasingly complex phases of modern oceanographic field work.



Oregon

USE OF MONOFILAMENT IN SALMON GILL NETS PROHIBITED:

On December 8, 1959, the Oregon Fish Commission voted to prohibit the use of monofilament gill-net mesh in Oregon. This action will tie in with the state of Washington's present ban on monofilament nets.

Monofilament, in use for sportfishing lines for several years, has only recently been woven into gill nets. It is more effective than conventional linen or nylon nets because it is practically invisible in water and permits effective use in daylight hours.

Oregon and Washington fishery biologists stated that use of the nets possibly could increase catches and necessitate other restrictions on the already severely restricted Columbia River gill-net fishery for salmon.



Oysters

OBSERVATIONS ON CONDITION OF MARYLAND'S GROUNDS:

A three-agency biological check of Chesapeake Bay's public oyster bars yielded some good news and some bad, Maryland's Chesapeake Biological Laboratory reported on December 18, 1959.

The Laboratory, the Maryland Tidewater Fisheries Commission, and the U. S. Bureau of Commercial Fisheries cooperated in checking representative productive oyster bars from upper Chesapeake Bay to the Virginia line. The senior shellfish biologist of the Laboratory reported the following:

Favorable Observations: The Bay's oysters are healthy. Those above the Chesapeake Bay Bridge are especially fat and have grown rapidly because rains during the summer of 1959 held off and allowed the upper Bay to become saltier than usual. Upper Bay oysters thrive and fatten in such conditions. In addition, no sign was seen of the heavy oyster mortalities such as have recently plagued nearby states. Scientists noted the best set of baby oysters in Tangier Sound since 1945.

Unfavorable Observations: The set of oyster spat above the Chesapeake Bay Bridge was again very poor. The shellfish biologist states "The last good set there was in 1955 and that is what they are working on now. The Western Shore north of Cove Point showed near zero set for its sixteenth consecutive year."

"The adult oyster population, therefore, is decreasing steadily in these regions, as it is in many other Maryland areas."

The survey was made aboard the Commission's survey vessel, Maryland. Samples were taken by dredge from oyster bars in the Bay, the Choptank River, Potomac River, and parts of Tangier Sound.

Data collected from 121 locations showed the pattern of the 1959 oyster set typical of recent years. Very few bars had enough young oysters to provide useful seed. Many beds have a low rate of replacement, and most of the bottom area which produced oysters 50 years ago has no young oysters.

It was noted that while Maryland benefited in the upper reaches of Chesapeake Bay because of the dry spring and summer, Virginia's oyster crop suffered up to 50 percent mortality from a fungus which prefers unusually high salinities. In addition, the biologist stated, Virginia benefits from a rainy summer, when the upper bay generally has poorer oysters.

The scientist emphasized that the late fall 1959 survey was of broad open waters only; surveys in the spring of 1959 of tonging bars in tributaries revealed good sets of Bay oysters in several areas. The survey was the twentieth annual look at the oyster beds wherein Maryland research and management agencies cooperated.

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OBSERVATIONS ON OYSTER SET IN MARYLAND WATERS, SUMMER-FALL 1959:

Except for Smith Creek, the summer and fall 1959 oyster set on test shells planted in Maryland's Chesapeake Bay waters was a little better than the 1958 set, but with no periods of heavy setting such as sometimes occur. Survival and growth of oysters were good in most areas. No evidence of unusual mortality was found except for an accumulation of oyster shells on Cinder Hill in Holland Straits. Many of these shells can be accounted for as a result of oxygen-depleted water invading the area in late 1958 when a fish kill and kill of crabs in pots also occurred. Oysters were fair to fat in the upper half of the Bay but generally poor elsewhere at the time of the survey. By mid-October the Chesapeake Biological Laboratory, Solomons, Md., stopped observing the set on test shells as there was little likelihood of any further set beyond that period since water temperatures in mid-October fell rapidly to levels at which oysters do not spawn.

The primary purpose of test-shell exposure is to determine the time and relative intensity of oyster setting on similar clean shell surfaces at a given location. The amount and type of fouling at different seasons also are shown. Counts of spat on test shells do not represent the commercial set present at the end of the season because many of the newly-attached spat are smothered or otherwise destroyed.

A marked spell of lower temperatures in mid-June 1959, following abnormally high temperatures in late May and early June, is believed to have caused a loss of early larvae and a delay in the start of the first wave of general setting. A period of exceptionally heavy rains in July may also have accounted for the dispersal and loss of larvae at that time. Fouling by barnacles and Bryozoa generally was light except

for a July barnacle set in Hooper Straits and the beginning of a heavy fall barnacle set during October in the Bay, lower Patuxent River, and Piney Island Swash.

A survey of oyster bars in Chesapeake Bay, Tangier Sound, Choptank River, and Potomac River was made in the fall of 1959 in cooperation with Maryland's Department of Tidewater Fisheries and the U. S. Bureau of Commercial Fisheries. This showed a generally better set than that of last year but again no heavy sets were found. Practically no setting occurred at the head of the Bay and along the western shore above Flag Pond (Calvert County). Catches on natural cultch generally ranging from about 20 to 150 per bushel were found along the eastern side of the Bay below Kent Point, the western side below Cove Point, in the lower Choptank River, Tangier Sound, and the extreme upper and lower parts of the Potomac River. The highest count recorded was 890 spat per bushel on newly-planted shells off Fry Cove in Holland Straits.

The smaller tributaries of the Chesapeake Bay, where setting usually is heaviest, were not examined. Especially in the southern half of the State, many of the spat were from a late set and were quite small. For that reason further counts were postponed until spring 1960 when the spat would be larger and less difficult to recognize in the field. (Special Oyster Bulletin, 59-29E, Chesapeake Biological Laboratory, Solomons, Md.)



Salmon

COLUMBIA RIVER CATCH NORMAL IN 1959:

The commercial catch of salmon and steelhead on the Columbia River in 1959 was quite comparable to that of recent years, about 7.05 million pounds.

The spring chinook run was down, summer-run chinook were in relatively good abundance, and although the fall chinook catch was the lowest on record, the escapement of fall chinook was quite good as compared with recent years. Egg takes of fall chinook at U. S. Fish and Wildlife Service hatcheries were second only to the record year of 1958. There has been an encouraging return of adult silver salmon to the Service's new Eagle Creek hatchery.

Three new hatcheries, constructed under the Columbia River Fisheries Development Program went into operation in the fall of 1959; they are the Gnat Creek hatchery in Oregon and the Kalama and Abernathy hatcheries in Washington.

* * * * *

HEARING ON FISH-HANDLING FACILITIES AT OXBOW DAM:

The Federal Power Commission granted the Idaho Power Company a hearing

on an existing order which prescribes the construction of permanent fish-handling facilities at Oxbow Dam in the Pacific Northwest. The hearing took place on December 7, 1959.

The Department of the Interior notified the Commission that it did not see the need for the scheduled hearing. The Department recommended that the Commission direct the company to proceed with the construction of the facilities already ordered for the Oxbow Dam powerhouse and that appropriate plans be developed for passing both upstream and downstream migrants at Hell's Canyon Dam.

The Company advocates the elimination of the fish protective facilities at Oxbow Dam and the construction of similar facilities at their lowermost dam, Hells Canyon. In so doing, the streams tributary to the Hells Canyon reservoir would be taken out of production and the fish would be subjected to a longer truck-hauling trip which, in turn, would subject them to greater hazards.



South Atlantic Exploratory Fishery Program

HARD CLAMS FOUND IN COMMERCIAL QUANTITIES OFF NORTH CAROLINA COAST:

M/V "Silver Bay" Cruise 20: Exploratory clam and scallop dredging and fish and shrimp trawling operations were conducted off the North Carolina coast during the 23-day cruise of the U. S. Bureau of Commercial Fisheries chartered fishing vessel Silver Bay, which ended on December 13, 1959.

CLAMS: Preliminary test fishing, using a 14-tooth Fall River clam dredge, from 10 miles west of Beaufort Inlet to Cape Lookout, N. C., yielded catches of hard clams (*Mercenaria* sp.) that indicate the presence of an extensive commercial clam bed from about 4 miles west of the inlet to Cape Lookout. This area (see Chart A p. 43) had been previously tested with a hydraulic dredge with unsatisfactory results. Catch rates

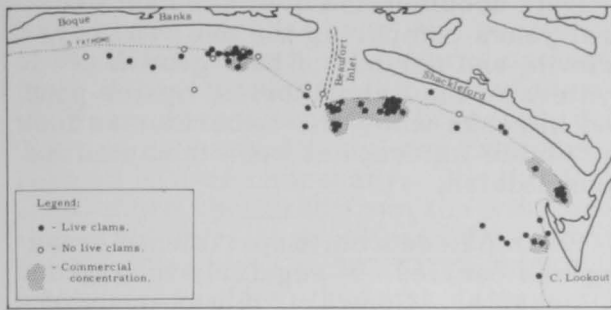


Chart A - M/V Silver Bay Cruise 20.

varied from 0 to 6½ bushels per 30-minute drag throughout the area. Simulated commercial fishing using a single dredge at 34° 39.7' N. lat., 76° 38.3' W. long. (about two miles east of the inlet) in 4 to 6 fathoms, produced 45 bushels of large (3" to 4") hard clams in 6 hours.

Dredging in the vicinity South and Southwest of Cape Lookout Bight produced clams at varying rates up to 5 bushels per hour. Seven stations south of Drum Inlet yielded large quantities of dead shells, but no live clams.

Clam sizes varied from 2" to 5", but were predominantly large or chowder size (over 3"). One bushel yielded approximately one gallon of meats.

SCALLOPS: A total of 14 drags were made with an 8-foot scallop dredge (see Chart B). No new areas were located. Meat yield from sampling drags made in the previously reported area east of Core Banks ran approximately 3½ pints per bushel--about 30 percent lower than during September 1959.

SHRIMP: No commercially-significant catches of shrimp were made during the cruise. A few white, brown, and pink shrimp were caught in some of the shallower trawl tows.

FISH TRAWLING: A 54/74-foot two-seam fish trawl utilizing 6-inch wooden rollers and constructed of 4½ inch stretched-mesh netting was used at 31 trawling stations. Twenty-five of the drags were made between Cape

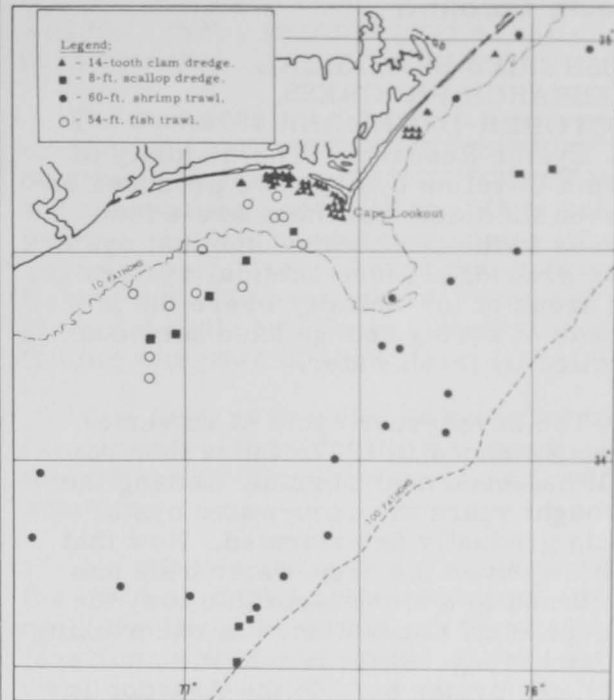


Chart B - M/V Silver Bay Cruise 20 (Nov. 21-Dec. 13, 1959).

Fear and Cape Lookout, N. C. Mixed fish catches were highest in the 12-14 fathom depth range with catches ranging from 350 to 3,400 pounds per hour.



Fig. 1 - A load of hard clams on the deck of the M/V Silver Bay.

Catches consisted primarily of small croakers, porgies (*Stenotomus*), and butterfish (7-8 per pound). Large anchovies were numerous in some of the drags.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, OCTOBER-DECEMBER 1959:

Oyster Research: The majority of South Carolina oysters are produced between the tides, but there are a few areas in the State where subtidal oysters are growing. These subtidal oysters are in areas of low salinity where the inroads of boring sponge have been controlled by fresh water.

The seven-year cycle of extreme drought ended in 1947. Since then rainfall has been near normal. During the drought years the deep-water oyster beds gradually deteriorated. Now that salinity over the deep-water beds has returned to a more favorable low, the Bears Bluff Laboratories is undertaking a fairly large-scale rehabilitation of one of these oyster beds in the Ashepoo River. The potential deep-water beds in that river have been located and ranges for determining their exact position have been set up in the marshes upstream from the Interacoastal Waterway almost to Bennetts Point. This covers a distance of approximately 3,000 yards.

Intertidal oysters from a higher salinity area near the mouth of Ashepoo are now being moved to these deep-water beds. It is projected that several hundred bushels of seed will be moved monthly, so that the effect of seasonal transplantation can be noted. The entire program is planned sufficiently large to demonstrate the feasibility of rehabilitating the State's deep-water beds. It is realized that successful planting largely depends on continuing normal precipitation.

Damage to oysters in South Carolina as a result of Hurricane Gracie was apparently rather light and scattered. It is probable that this damage, evident in the form of excessive mortality in certain areas, was due in part to wave action associated with the ebb of the storm tide and in part to the excessive rainfall during the several weeks following the storm. Despite this rainfall, however, a heavy set of spat extending into the first week of October was noted in most areas.

Data accumulated over the past several years comparing the mortality, growth, and periods of best growth of oysters in the Laboratories' oyster pond and in racks under the Laboratories dock in outside waters, has been tabulated and consolidated.

Shrimp Research: Experimental trawling was carried out regularly throughout this quarter. Comparison was made of trawl catch records for November 10-December 8, 1958, and the same period in 1959, using catch per unit of effort as a measurement of abundance of croaker, spot, and commercial shrimp. Trawl stations were grouped into three categories: rivers, sounds, and offshore. Catch data was then tabulated to determine relative abundance at each of these areas for the 1958 and 1959 periods.

This analysis reveals that spot and brown shrimp, very abundant in the sounds and offshore in 1958, were few in number at all locations in 1959. On the other hand, croaker and white shrimp were found to have increased quite markedly in the rivers in 1959, and to a lesser extent in the sounds. The great increase in white shrimp possibly is the result of the high precipitation and correspondingly lower salinities observed during 1959. It is more likely, however, that the comparative abundance of white shrimp in 1959 represents the comeback of the species following the killing winter of 1957/58, during which practically all the brood stock was destroyed.

Pond Culture: A shallow, one-quarter acre experimental salt-water pond at Bears Bluff was drained December 1, 1959, just after the onset of cold weather. It was found that the drop in temperature had resulted in the total mortality of the commercial shrimp which had been stocked in the pond. The harvest was small--only 64 shrimp were collected when the pond was drained. Presumably the susceptibility to predators and low temperatures caused the failure of the shrimp crop in the pond. When the pond was refilled, the stocking of fluke in it was begun in an attempt to cultivation of that species. To date, a number of Southern fluke and small forage fishes have been released in the pond, and stocking will continue into next year.

The three commercial shrimp ponds built in the marshes near the upper end of St. Helena Sound, all suffered damage from Hurricane Gracie. In two of them the dams were completely breached, the flood gates washed away, and extensive repairs will be necessary. The third pond, more sheltered from the wave action of the hurricane, withstood the storm, but its dikes were completely inundated by hurricane tides, thus making the harvest from the pond suspect. The pond was harvested with difficulty in November 1959. The difficulties encountered were largely engineering. The results were not spectacular, but were sufficiently good to encourage further attempts at pond cultivation of shrimp as a commercial venture. (Progress Report No. 42, Bears Bluff Laboratories, Wadmalaw Island, S. C.)

Note: See Commercial Fisheries Review, December 1959 p. 59; October 1959 p. 36.



Striped Bass

MARYLAND HAS RECORD CATCH IN 1959:

The 1959 commercial catch of striped bass (or rock fish) was the largest in Maryland history, reports the State's Chesapeake Biological Laboratory, Solomons, Md. The supply of this fish also looks good for 1960.

The catch for the first nine months of 1959 was 3.8 million pounds, or 0.9 million pounds greater than the 12-months total for 1958. The 1958 catch was one of the best years previously reported.

The catch during the summer quarter (July, August, September), a traditionally slow period, was just above 0.5 million pounds in the Chesapeake Bay and tributaries, 50 percent greater than in the same 1958 quarter. Although the haul seines take the lion's share, only four-fifths of the gear was in use in 1959. The unusual summer catch followed record catches in the winter and spring of 1959.

The record catch verifies a prediction made last winter by the Laboratory, which also predicts that 1960 should equal or exceed 1958 and possibly 1959. If this

occurs, Maryland commercial fishermen will have three years of good striped bass catches.

The striped bass catches follow a general upward trend despite a continuing relatively stable commercial fishery and a mushrooming sports effort. Only one jarring note has popped up to date. The Director said "We've heard that sports fishing luck has been spotty. Some anglers did well, but others complained that fishing was poor in 1959.

"One thing is certain, as revealed by the commercial catch: the fish were out there to be caught--winter, spring, and summer.

"No one can say with certainty whether the over-all angling catch was poor or not," the Director continued, "because Maryland has no state-wide system for determining the sports catch. There is urgent need for accurate data on our tremendous and important recreational fishery. With such data, the research agency can vastly improve understanding of Maryland's fisheries, improve fish crop forecasting, and effectively aid in developing the wisest and best use of Maryland's fish."

He has proposed a starting point for gathering such information, by licensing for-hire boats and requiring regular catch reports. The proposal will be presented to the 1960 session of the Maryland Assembly.



United States Fishery Landings

JANUARY-NOVEMBER 1959:

Landings of fish and shellfish in the United States during the first 11 months of 1959 were about 9 percent more than for the same period of 1958. Landings, amounting to 4.3 billion pounds, were 336 million pounds more than in the same period of 1958, indicating that the domestic catch of fishery products for the year 1959 would amount to about 5.05 billion pounds.

The principal increase in production occurred in the landings of menhaden--estimated to reach 2.2 billion pounds by the end of 1959. Such an increase (approximately 636 million pounds) over the 1.5-billion-pound catch of 1958 would also exceed the record menhaden catch of 2.1 billion pounds established in 1956. A gain was also reported in the production of Alaska herring--up 21 million pounds over 1958. The Alaska salmon fishery, however,

Table 1 - United States Fishery Landings of Certain Species for Periods Shown, 1959 and 1958 ^{1/}					Table 2 - United States Fishery Landings by States for Periods Shown, 1959 and 1958 ^{1/}				
Species	Period	1959	1958	Total 1958	Area	Period	1959	1958	Total 1958
Anchovies, Calif.	10 mos.(1,000 lbs.)..... 2,400 6,922 11,603			Maine	10 mos.	241,400	286,101	316,955
Cod:					Massachusetts ^{2/}:				
Maine	10 mos.	2,500	2,600	2,735	Boston	11 mos.	104,200	115,412	123,764
Boston	11 "	16,600	15,436	16,183	Gloucester	11 "	224,400	222,212	230,218
Gloucester	11 "	2,900	2,895	3,189	New Bedford ...	11 "	103,100	106,821	111,669
Total cod		22,000	20,931	22,107	Provincetown ..	11 "	26,700	24,885	25,754
Haddock:					Total Mass, ...		458,400	469,330	491,405
Maine	10 mos.	3,000	3,600	3,997	Rhode Island ^{3/} ...	10 mos.	96,700	92,443	104,610
Boston	11 "	67,900	78,593	81,509	New York ^{3/} ...	10 "	31,500	34,369	42,063
Gloucester	11 "	11,900	9,415	9,798	New Jersey ^{3/} ...	10 "	46,400	41,872	50,933
Total haddock ..		82,800	91,608	95,304	North Carolina ^{3/} ...	10 "	54,200	49,133	54,866
Halibut ^{2/}:					South Carolina ^{3/} ...	10 "	15,300	13,426	15,359
Wash. and Oreg. ..	10 mos.	17,700	15,600	16,088	Georgia	10 "	17,600	17,186	20,066
Alaska	10 "	21,500	20,000	20,000	Florida ^{3/}	10 "	107,100	120,189	158,724
Total halibut ..		39,200	35,600	36,088	Alabama	8 "	9,600	6,906	10,343
Herring:					Mississippi ^{3/} ...	8 "	12,700	9,947	82,476
Maine	10 mos.	109,100	154,100	170,977	Louisiana ^{3/} ...	5 "	24,600	28,800	75,237
Alaska	Year	110,000	88,801	88,801	Texas ^{3/}	10 "	70,300	66,262	80,478
Industrial fish:					Ohio (Mar.-Sept.) ..	9 "	15,900	15,200	19,145
Maine & Mass, ^{3/}	11 mos.	102,400	123,600	126,388	Oregon ^{2/}	10 "	46,900	54,340	59,467
Mackerel, Calif.:					Washington ^{2/}	10 "	124,800	133,463	164,987
Jack	10 mos.	24,800	19,406	22,066	California ^{2/}:				
Pacific	10 "	33,100	15,710	27,648	Certain species ^{4/}	10 mos.	405,000	536,006	580,314
Menhaden,	Year	2,185,000	1,549,098	1,549,098	Other	7 "	50,900	52,604	94,570
Ocean perch:					Total Calif, ...		455,900	588,610	674,884
Maine	10 mos.	65,300	63,847	71,068	Rhode Island, Middle Atlantic, Chesapeake, South Atlantic, and Gulf States (menhaden only)	Year	2,149,600	1,545,265	1,545,265
Boston	11 "	3,000	2,439	2,625	Alaska:				
Gloucester	11 "	57,000	72,595	74,951	Halibut ^{5/}	10 mos.	21,500	20,000	20,000
Total ocean perch		125,300	138,881	148,644	Herring	Year	110,000	88,801	88,801
Salmon:					Salmon	Year	141,700	241,255	241,255
Wash. ^{4/}	10 mos.	36,400	49,118	54,363	Shrimp	10 mos.	11,500	4,856	7,862
Oreg. ^{4/}	9 "	4,700	7,736	8,179	Total of all above items ...		4,263,600	3,927,754	4,325,181
Alaska	Year	141,700	241,255	241,255	Others (not listed)		6/	6/	410,664
Sardines, Pacific	thru Dec. 11	63,300	189,296	207,446	Grand total		6/	6/	4,735,845
Scallops, sea, New Bedford (meats)	11 mos.	17,500	14,330	15,253	^{1/} Preliminary.				
Shrimp (heads-on):					^{2/} Landed weight.				
South Atl. & Gulf	10 "	182,300	161,344	195,938	^{3/} Excluding menhaden.				
Washington	10 "	2,900	6,556	6,730	^{4/} Includes catch of anchovies, jack and Pacific mackerel, Pacific sardines, squid, and tuna. Data on tuna are through December 5 and on Pacific sardines through December 11. Data on squid are for first nine months.				
Oregon	9 "	2,700	1,395	1,523	^{5/} Dressed weight.				
Alaska	10 "	11,500	6,293	7,862	^{6/} Data not available.				
Squid, Calif.	9 "	15,700	4,862	7,457	Note: Data principally represent weight of fish and shell- fish as landed except for mollusks which represent the weight of meats only.				
Tuna, Calif.	thru Dec. 5	265,700	299,810	304,094					
Whiting:									
Maine	10 mos.	23,300	23,577	23,577					
Boston	11 "	600	581	596					
Gloucester	11 "	62,100	58,603	58,927					
Total whiting ..		86,000	82,761	83,100					
Total of all above items ...		3,666,500	3,309,413	3,431,924					
Others (not listed)		597,100	618,341	1,303,921					
Grand total		4,263,600	3,927,754	4,735,845					
^{1/} Preliminary.									
^{2/} Dressed weight.									
^{3/} Excluding menhaden.									
^{4/} Landed weight.									

experienced a disastrous year with the catch falling to about 142 million pounds--nearly 100 million pounds below the 1958 level and the lowest since 1900.

Compared with the same period of the previous year, California tuna landings through December 5, 1959, amounting to 266 million pounds, were down 34 million pounds and the catch of Pacific sardines through December 11--63 million pounds--was 126 million pounds less

than the 1958 landings. In New England the catch of haddock was down 9 million pounds compared with the first eleven months of 1958 and landings of industrial fish (used in the manufacture of meal and oil) fell 21 million pounds during the same period. Landings of ocean perch and Maine herring, for which ten-months figures are available, were also down sharply.

Landings of shrimp were about 24 million pounds greater than in 1958. Most of the increase occurred in Louisiana, Texas, and Alaska. Landings in Florida were down sharply.

* * * * *

**LANDINGS IN 1959
EXCEEDED 5
BILLION POUNDS:**

The United States domestic fish catch in 1959 exceeded 5 billion pounds for the second time in history, according to the U. S. Bureau of Commercial Fisheries. The record was 5.3 billion pounds in 1956; the 1958 catch was 4.73 billion pounds. (Landed weight, except that mollusks are weight of meats only.)



Shrimp trawlers docked at Brownsville, Tex.

The catch of menhaden in 1959 of 2.2 billion pounds exceeded the previous record of 2.1 billion pounds landed in 1956.

For the first time, the landings of fish used for other than human food exceeded that used for human food.

The larger catch in 1959 was due to the big increase in the catch of menhaden. Menhaden is the Nation's most important industrial fish. The 1959 harvest of that species was more than half a billion pounds greater than the 1958 harvest, and more than offset, in poundage, the decreases in landings of salmon (100 million pounds), California sardines (130 million pounds), tuna (35 million pounds), Maine herring (45 million pounds), ocean

perch (13 million pounds), and haddock (9 million pounds).

The "other than human food" category includes menhaden (which in 1959 made up 43 percent of the total United States landings), Alaska herring (2 percent), other species used for pet and other animal food, and mussel shells manufactured into buttons.



U. S. Foreign Trade

**EDIBLE FISHERY PRODUCTS,
OCTOBER 1959:**

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during October 1959 increased by 18.1 percent in quantity and 16.3 percent in value as compared with September 1959. The increase was due primarily to higher imports of groundfish fillets and blocks (up 14.2 million pounds), and frozen shrimp (up 7.8 million pounds), and to a lesser degree, an increase in the imports of canned tuna in brine. The increase was partly offset by a 0.4-million-pound decrease in the imports of lobster and spiny lobster.

Item	Quantity			Value		
	October	Year	October	Year	Year	
	1959	1958	1958	1959	1958	1958
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish & shellfish:						
Fresh, frozen, & processed 1/ . .	112.8	98.3	956.8	29.9	27.9	278.4
Exports:						
Fish & shellfish:						
Processed only (excluding fresh and frozen) . . .	6.3	11.1	41.2	1.9	5.8	15.6
1/ Includes pastes, sauces, clam chowder and juice, and other specialties.						

Compared with October 1958, the imports in October 1959 were up by 14.8 percent in quantity and 7.2 percent in value due to higher imports of groundfish fillets and blocks (up 5.7 million pounds), frozen albacore and other tuna (up 4.6 million pounds), and frozen shrimp (up 3.8 million pounds). Lower imports of lobster and spiny lobster (down 1.2 million pounds) partially offset the increases.

United States exports of processed fish and shellfish in October 1959 were lower by 18.2 percent in quantity and 50.0 percent in value as compared with September 1959. Compared with the same month in 1958, exports in October 1959 were lower by 44.7 percent in quantity and 67.2 percent in value because of the light pack of California sardines and Pacific salmon available for export to foreign markets. Exports of Pacific salmon to the United Kingdom from the 1959 pack were made prior to October this year.

* * * * *

GROUND FISH FILLET IMPORTS, NOVEMBER 1959:

During November 1959, imports of groundfish (including ocean perch) classified as fillets into the United States amounted to 4.3 million pounds, according to data obtained from the U. S. Bureau of Customs.

Canada was the leading supplier with 2.5 million pounds, or 58 percent of the month's total. Iceland was next with 1.5 million pounds. Imports from six other countries made up the remaining 302,000 pounds.

During the first eleven months of 1959, imports of groundfish and ocean perch classified as fillets (but not including fish fillet blocks since September 15, 1959) into the United States totaled 141.7 million pounds. Canada, with 73.2 million pounds accounted for 52 percent of the 1959 eleven-months total. Imports from Iceland (37.0 million pounds) represented 26 percent of the total, while Denmark followed with 14.1 million pounds, or 10 percent, and Norway with 11.4 million pounds, or 8 percent. Seven other countries supplied the remaining 6.0 million pounds, or 4 percent.

Note: See Chart 7 in this issue.



Wholesale Prices, December 1959

The December 1959 wholesale price index (122.7 percent of the 1947-49 average) for edible fishery products (fresh, frozen, and canned) continued to vary over a narrow range as compared with the preceding month (up 1.7 percent) and the previous nine months. The December 1959 wholesale price index was down 9.0 percent compared with the same month of 1958. The over-all wholesale price index in April 1959 stood at 122.7 percent and during the April-December

1959 period has varied from a high of 123.5 percent in June to a low of 119.8 percent in August. The December 1959 wholesale price index at 122.7 percent was the lowest since 1955 (122.6 percent).

Due to substantially higher wholesale prices for large drawn haddock at Boston and fresh round whitefish at New York, plus slight increases for frozen halibut and salmon, the drawn, dressed, and whole finfish subgroup price index increased 5.2 percent from November to December 1959. The increase was partially offset by lower wholesale prices for fresh yellow pike and Lake Superior drawn whitefish at Chicago. Compared with December 1958, prices were lower by 12.8 percent. All of the subgroup items were lower in December 1959 as compared with the same month in 1958. Prices for large drawn haddock at Boston were down 30.3 percent, Lake Superior whitefish down 38.0 percent, frozen halibut lower by 7.5 percent, fresh yellow pike down 9.2 percent, frozen king salmon down 3.2 percent, and round whitefish lower by 2.7 percent.



Fig. 1 - Unloading fish from a trawler at the Boston Fish Pier.

Fresh processed fish and shellfish wholesale prices in December 1959 were up slightly (0.4 percent) from the preceding month. Higher primary wholesale prices for fresh haddock fillets (up 8.9 percent) more than offset a drop of about 1/2 cent a pound in fresh shrimp prices at New York. Shucked oyster prices were unchanged from November to December. From December 1958 to December 1959, the subgroup index declined 9.1 percent, with prices for haddock fillets down 21.0 percent and fresh shrimp down 26.7 percent. Higher shucked oyster prices partially offset the lower prices for shrimp and haddock.

The wholesale price index for frozen processed fish and shellfish in December 1959 was about unchanged from the preceding month. Frozen headless shrimp at Chicago advanced (2.1 percent) for the second straight month and more than compensated for a 2.4-percent drop in frozen haddock and a 0.7-percent drop in flounder fillet prices. In December 1959 a sharp drop (23.7 percent) occurred in the wholesale price index for this subgroup as compared with the same month of 1958. The decrease was due to sharply lower prices for frozen shrimp down 29.5 percent, at Chicago, haddock fillets (down 24.4 percent), ocean perch fillets (down 12.9 percent), and flounder fillets (down 9.7 percent).

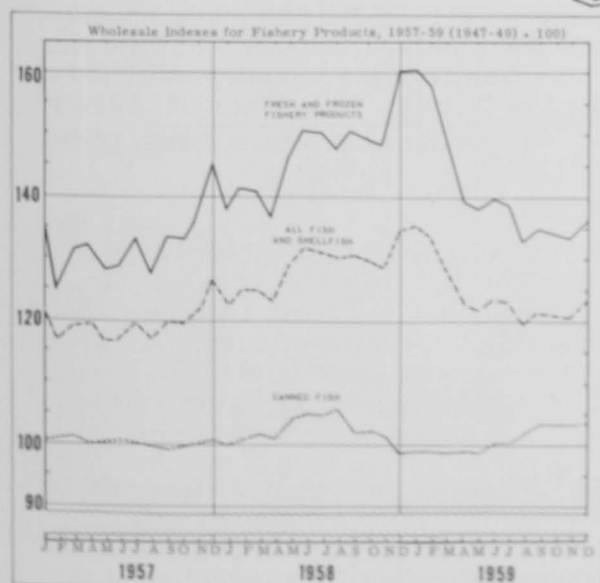
Primary broker prices for canned fish in December 1959 increased by a fraction of one percent due to a 50-cents a case increase in the California sardine price as compared with November 1959. The pack at the end of the season on December 31, 1959, of 745,000 cases was down 67 percent from the 2,256,000 cases packed in 1958. Other subgroup canned fish prices were unchanged from November to December 1959. Fish canning activity was confined largely to tuna in December. Nearly all canned items were in lighter supply at the end of 1959 as compared with the end of 1958. Increases in the primary prices for canned pink salmon (up 13.9 percent) and Maine sardines (up 3.3 percent) from December 1958 to December 1959 resulted in an increase of 5.6 percent in the canned fish subgroup index. Higher prices for those two items were partially offset by lower prices for California tuna (down 1.8 percent) and California sardines (down 3.1 percent).

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, December 1959 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/		Indexes			
			(\$)		(1947-49=100)			
			Dec. 1959	Nov. 1959	Dec. 1959	Nov. 1959	Oct. 1959	Dec. 1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					122.7	120.7	121.1	134.8
<u>Fresh & Frozen Fishery Products:</u>					136.4	133.4	134.0	160.1
<u>Drawn, Dressed, or Whole Finfish:</u>					154.8	147.2	153.8	177.5
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.16	.13	163.9	129.2	127.9	235.0
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.31	.31	96.4	95.9	98.5	104.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.76	.75	171.3	168.5	177.2	176.9
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.47	.73	115.3	179.7	185.9	185.9
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.88	.63	177.0	126.4	202.3	182.0
Yellow pike, L. Michigan & Huron, rnd., fresh .	New York	lb.	.59	.70	138.4	164.2	161.8	152.4
<u>Processed, Fresh (Fish & Shellfish):</u>					134.6	134.0	128.9	148.0
Fillets, haddock, sml., skins on, 20-lb. tins . .	Boston	lb.	.49	.45	166.7	153.1	144.6	211.0
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	.65	.65	101.9	102.7	98.7	139.0
Oysters, shucked, standards	Norfolk	gal.	7.00	7.00	173.2	173.2	167.1	148.5
<u>Processed, Frozen (Fish & Shellfish):</u>					106.8	106.4	106.4	140.0
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.38	.38	96.1	98.8	99.5	108.0
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.31	.32	97.3	99.7	102.0	128.7
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.27	.27	108.8	108.8	108.8	124.9
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.64	.63	98.4	96.4	95.3	139.6
<u>Canned Fishery Products:</u>					103.8	103.4	103.4	98.3
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . .	Seattle	cs.	24.50	24.50	127.8	127.8	127.8	112.2
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.),	Los Angeles	cs.	10.80	10.80	77.9	77.9	77.9	79.3
48 cans/cs.								
Sardines, Calif., tom. pack, No. 1 oval (15 oz.),	Los Angeles	cs.	8.00	7.50	93.9	88.1	88.1	96.9
48 cans/cs.								
Sardines, Maine, keyless oil, No. 1/4 drawn	New York	cs.	8.75	8.75	93.1	93.1	93.1	90.1
(3-3/4 oz.), 100 cans/cs.								

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.

Note: Corrections for figures previously published: Indexes for September 1959: Fillets, flounder, skinless, 1-lb. pkg., 96.8.



SALES CONTESTS FOR WHOLESALERS DESCRIBED IN NEW LEAFLET

The Small Business Administration has recently issued a leaflet on sales contests for wholesalers. A well-planned contest can boost the salesmen's morale as well as increase the firm's sales. The five steps, outlined in this leaflet, that are involved in setting up a successful contest are: (1) establishing the purpose, (2) deciding on a scoring method, (3) selecting a theme and prizes, (4) promoting, and (5) awarding the prizes.

Write to the Small Business Administration, Washington 25, D. C., for a free copy of *Sales Contests for Wholesalers*, Small Marketers Aids No. 47.