

TRENDS AND DEVELOPMENTS

Alaska

COURT RULING ALLOWS ALASKA TO TAX FREEZERSHIPS OPERATING IN BRISTOL BAY:

An Alaska Court ruling probably will subject freezerships operating in Bristol Bay to an Alaska license tax even if the freezerships take on fish at sea from catcher vessels. According to the *Seattle Post-Intelligencer*, Sept. 6, 1962, the First District Superior Court of Alaska ruled on Sept. 5, 1962, that the territorial waters of Alaska in Bristol Bay are those waters within a line from Cape Newenham on the north side of Bristol Bay to Cape Mensehikof on the Alaska Peninsula. A line from Cape Newenham to Cape Mensehikof would pass at least 50 miles southwest of Nushagak Bay and would enclose all important salmon-fishing grounds in Bristol Bay.

The Alaska legislature imposed a license tax in 1951 on freezerships and floating cold storages equal to 4 percent of the value of the fishery products frozen by the vessel. Most freezerships operating in Bristol Bay buy salmon for canneries in the State of Washington. They move into Bristol Bay during the salmon season, take on a cargo of fish for freezing, and then return to their home ports where the fish are processed.



Alaska Fisheries Exploration and Gear Research

STOCKS OF KING CRABS LOCATED NEAR KODIAK:

M/V "Yaquina" Cruise 62-1 (July 7-August 19, 1962): Possible commercially-valuable stocks of king crabs were located as a result of exploratory fishing conducted by the U. S. Bureau of Commercial Fisheries chartered fishing vessel Yaquina, during a cruise in the vicinity of Kodiak.

Combined trawl and king crab pot sampling was undertaken by the Yaquina on a six weeks exploration of potential king crab fishing grounds in the Portlock Bank area east of Kodiak Island.

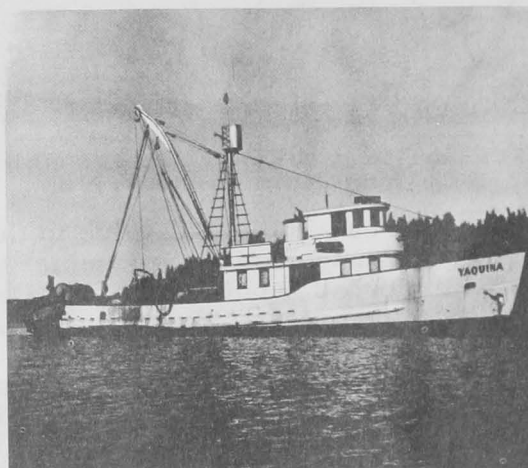


Fig. 1 - The 75-foot Yaquina chartered by the Bureau of Commercial Fisheries to conduct exploratory fishing surveys in Alaskan waters during 1962.

Depths from 42 to 120 fathoms were surveyed for crabs in a series of 61 one-hour tows with a standard 400-mesh eastern otter trawl. The trawled zones found most productive of king crabs were then fished approximately 24 hours each with units of 15 standard, 6-foot, round king crab pots equipped with vertical tunnel openings. Pot sampling was accomplished at 16 locations. Crabs were found on nearly all of 77 stations, representing preliminary examination of an area of about 5,500 square miles.

Marketable crabs in commercial quantities (more than 30 crabs per pot) were found at depths from 46 to 82 fathoms in a submarine gully extending about 40 miles southeast from the vicinity of Cape Chiniak. The best catches here were made along the northeast side of the gully, increasing in quality and abundance proceeding seaward and into deeper water. The average catch per pot of 48 pot sets in the 70-

to 82-fathom zone was 24 marketable male crabs averaging about 10 pounds each; the best catch by a single pot in Chiniak Gully was 58 such male crabs from 73 fathoms.

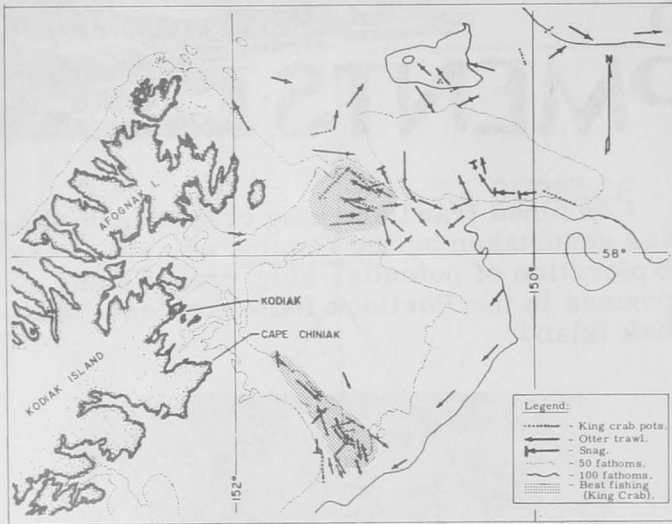


Fig. 2 - Grounds fished by M/V Yaquina cruise 62-1 (July 7-August 19, 1962). Vessel operates from Juneau, Alaska.

A second area of potential value to the commercial fishery during the summer period lies in a broad submarine gully at about 20 miles due east of Marmot Island. In this area 46 pots caught an average of 20 marketable crabs each, within a depth range of 59 to 94 fathoms. The best catch from a single pot here was a catch of 64 crabs. This pot was of a modified design and was fished in a depth of 92 fathoms.

Trawl catches also yielded information on other potentially-important species. Pacific ocean perch were frequently taken at rates ranging from 1,000 to 5,500 pounds per hour. Also in abundance were rock sole, caught in amounts up to 1,800 pounds during a one-hour tow in the Chiniak Gully area at depths from 42 to 60 fathoms.

Incidental to the exploratory operations, was the tagging and releasing of king crabs and halibut in cooperation with biologists of the Bureau and the International Pacific Halibut Commission. Specimens of marine life were preserved for later study by cooperating scientists.

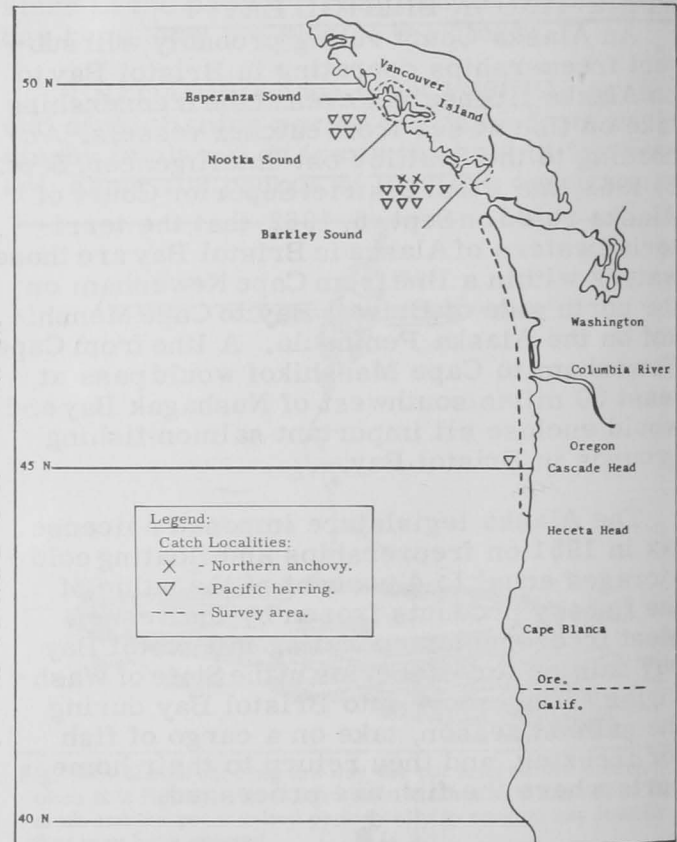
The chart shows the grounds fished and shaded areas where commercial fishing of king crabs might be possible. Three otter-trawl drags and one pot station near 58°35' north latitude, 148°30' west longitude, are not shown. These stations did not yield commercial quantities of crabs.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 62-A-3 (July 16-August 14, 1962): The three objectives of this cruise were: (1) to determine if there were any traces of the sardine population that formerly migrated to the Pacific Northwest in summer, (2) catch live sardines for sub-population studies, and (3) collect other pelagic species for density and distribution studies. The sounds of western Vancouver Island and the coastal waters of Washington, Oregon, and central California were the areas



Area of operations of M/V Alaska during cruise 62-A-3.

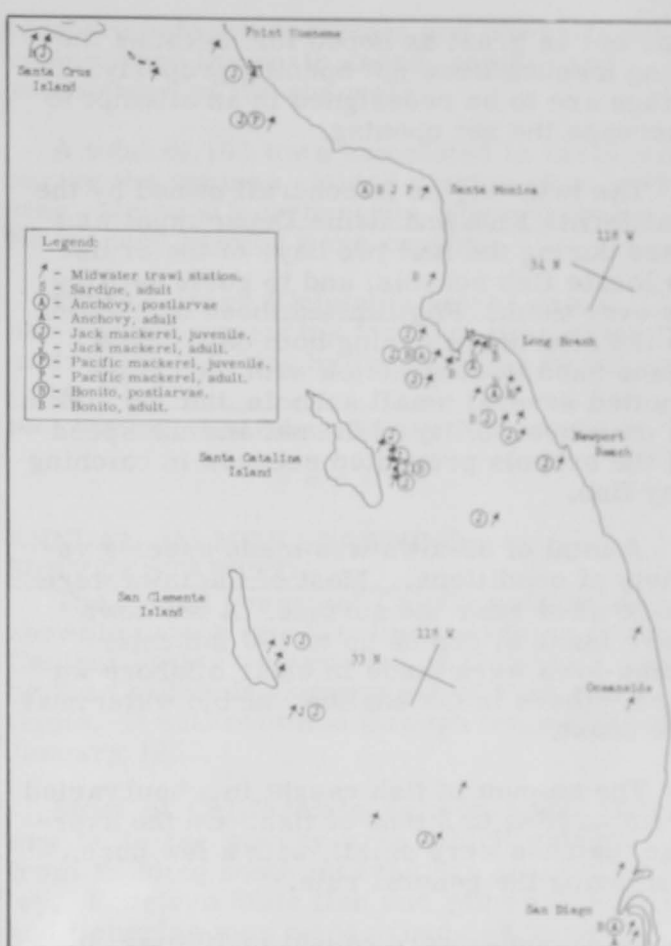
explored by the California Department of Fish and Game research vessel Alaska during cruise 62-A-3.

VANCOUVER ISLAND: No sardines were caught or observed off the Island. Night-light stations using a blanket net and visual scouting during both day and night failed to locate fish. Several fishermen reported seeing a few individual sardines in 1958, but most fishermen interviewed on this trip hadn't seen any for many years.

Pacific herring were abundant in the sounds and inlets. They were caught on 72 percent of the night-light stations and ranged from 60 to 200 millimeter (2.4 to 8.0 inches) standard length. The blanket net appeared to be an excellent sampling tool for herring in this area. Up to 7,000 herring were taken in single sets, with catches averaging about 1,000 fish. Excellent sea conditions and favorable fish behavior made the net effective.

Large northern anchovies ranging from 142 to 165 millimeter (5.7-6.6 inches) standard length, were caught in Barkley Sound. Young silver salmon 115 to 382 millimeter (4.6-15.3 inches) standard length were caught on 39 percent of the light stations. They were feeding on polychaete worms and small herring which were attracted to the light. Up to a half dozen were observed at once, but usually not more than two were caught in the net.

WASHINGTON-OREGON-CENTRAL CALIFORNIA: No sardines were caught or observed in these areas. Light stations were much less productive than those off Vancouver Island. One sample of Pacific herring was caught by blanket net and a school group of large adults was observed off Cascade Head, Oregon. A single albacore tuna was caught 65 miles west of the Columbia River.



Area of operations of M/V Alaska during cruise 62-A-4.

Catch Summary of Cruise 62-A-3 by M/V <u>Alaska</u>				
Area	No. of Stations	Samples		
		Herring	Anchovy	Young Salmon
Vancouver Island	18	13	2	7
Washington-Oregon	20	1	0	0
Central California	3	0	0	0
Totals	41	14	2	7

The midwater trawl is constructed with a square mouth opening of 63 feet on each side. The over-all length is 160 feet and the mouth, breast, and lead lines are 91 feet long. The wings and body are made from 4½-inch mesh webbing; the intermediate section is made from 3-, 2-, and 1-inch mesh, and the cod end, from ½-inch mesh. The net is 1,200 meshes in circumference behind the wings. All netting and lines are made of nylon.

Except for central California, fair weather prevailed over the areas surveyed during the cruise. Sea-surface temperatures ranged from 67.1° F. (19.5° C.) at Esperanza Sound to 52.2° F. (11.2° C.) off Cape San Martin. Temperatures in the sounds of Vancouver Island dropped sharply within a few feet of the surface.

The net is held open by quarter doors attached to the four corners of the net. Each quarter door is 32 by 48 inches, and is constructed of 1¼-inch marine plywood. The quarter doors are bridled with 45 fathoms of 5/16-inch cable. Two regular trawl doors are attached at the apex of the bridles, and provide the downward pull to sink the net to the desired fishing depth.

M/V "Alaska Cruise 62-A-4 (August 22-September 7, 1962): To evaluate a midwater trawl as a tool for sampling the pelagic environment in coastal waters (including those around the Channel Islands between Point Hueneme and San Diego) and to develop techniques for handling the gear on future sea surveys were the principal objectives of this cruise by the California Department of Fish and Game research vessel Alaska.

The net operated quite well during the cruise and only minor adjustments were necessary to produce the maximum attainable spread. The net spread to an opening of 35 to 40 feet, with all doors stable. That spread

was not as great as hoped for, because the wing meshes were not opening properly. The wings are to be redesigned in an attempt to increase the net opening.

The twin-engine Beechcraft owned by the California Fish and Game Department was used during the last two days of the cruise to locate fish schools, and to guide the Alaska over them. Fog limited those operations to the afternoons during both days. The plane used in conjunction with the cruise spotted several small schools, but the lack of maneuverability of the net and the speed of the schools prevented success in catching any fish.

A total of 39 tows was made under a variety of conditions. Most of the tows were made at or near the surface. A few tows were made at depths up to 100 fathoms. Some tows were made in clear offshore waters, others in the shallow, turbid water near the coast.

The amount of fish caught in a haul varied from nothing to 3 tons of fish. On the average, catches were small, with a few dozen fish being the general rule.

Adult bonito were caught in 10 tows, in amounts ranging from 2 to 118 fish. Young jack mackerel were netted in 17 tows. Adult jack mackerel were caught in 5 tows, including 1 tow which yielded about 50 pounds (1,500 fish) of mixed adult and young fish. Adult and young Pacific mackerel were each taken in another tow. A single adult sardine was found in a mixed haul of jack mackerel and jack smelt from Los Angeles harbor. Post larval anchovies were found hung up in the net meshes on 5 tows, and about 3 tons of adult anchovies were caught on 1 tow.

A number of less important species were caught frequently. Bat rays were caught in tows, molas in 5, and medusafish in 6. Two samples of jack smelt yielded about 175 fish each, and young Pacific hake were caught in 2 tows.

Invertebrates comprised a prominent part of the catch on this cruise. About 500 pounds of large jellyfish were collected on several tows, and large numbers of salps were frequently found in the cod end and hung up in the net mesh. Small amounts of several species of squid were caught occasionally.

Preliminary tows made on the cruise showed considerable promise for the midwater trawl as a sampling tool. The ability of the net to sample fast-moving bonito, its ability to catch a large sample of a dense concentration of anchovies, and its ability to collect consistent samples of young jack mackerel all demonstrated its effectiveness as a sampling tool. There are plans to test the net further during the fall months of 1962 so as to compare catches made using a blanket net with those made using the midwater trawl.

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Airplane Spotting Flight 62-8-Pelagic Fish (August 7-9, 1962): To determine the distribution and abundance of pelagic schools, the inshore area from the United States-Mexican Border to Bolinas Bay was surveyed from the air by the California Department of Fish and Game's Cessna "182" 9042T.

The first day's survey covered the area from Los Angeles Harbor to Point Conception. Seven anchovy schools were sighted below Point Dume, and in the area between Port Hueneme and Gaviota, there were 173 anchovy schools. So far this year the schools in that area, have been for the most part, between 1 and 2 miles offshore. On this spotting flight, the schools were very close (200 to 300 feet) to shore, and some were strung out along shore for about one-half mile. Where kelp beds were present, which is common in that area, the schools were between the inner edge of the kelp and shore.

On the second day of the flight, the area from Bolinas Bay to Point Sal was surveyed. The aircraft started at Moss Landing and flew along the coast to Bolinas Bay. Between the Pajaro River and Bolinas Bay, 519 schools of anchovies were counted. Between Half Moon Bay and the Pajaro River, 437 schools were counted, and 78 between Half Moon Bay and Bolinas Bay. What was believed to be four anchovy schools were sighted off Angel Island in San Francisco Bay. Red tide was prevalent in Monterey Bay, and was especially heavy from Santa Cruz to Moss Landing. There were numerous anchovy schools in the same area. It seemed that if they were not in the red tide, they were beneath it. Eighty-eight schools were counted from Pfeiffer Point to Cape San Martin. From San Simeon to Pismo Beach, 272 anchovy schools were observed--189 of them in Es-tero Bay. In the cove above Gamboa Point,

four purse seiners were reported to be looking for sardines. One boat was making a set but there were no fish in the net.

On the last day of the survey, the area from Redondo Beach to the United States-Mexican Border was covered. Eight anchovy schools were noted off Rock Point and one at Los Angeles Harbor. Two schools were seen off Bolsa Chica (Tin Can) Beach and six off Newport Pier. Off Capistrano Pier, 13 schools appeared to be mixed in with the red tide. A total of 57 anchovy schools were observed between Camp Pendleton and "The Barn." The usual concentration of anchovies was sighted between San Diego and the United States-Mexican Border where 62 schools were counted. Traces of red tide were also seen in that area.

No sardine or mackerel schools were seen on any days of the flight.

Note: See Commercial Fisheries Review, October 1962 p. 11.

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MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62-N-8a-Salmon (August 7-10, 1962) and 62-N-8b (August 20-24, 1962):

Mid-water trawl operations in the Carquinez Strait for marked salmon fingerlings on their seaward migration were continued by the California Department of Fish and Game research vessel Nautilus. A nylon midwater trawl with 25-foot square opening was used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were al-

ternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 101 tows completed in the Strait during the cruises yielded a catch of only 19 king salmon (Oncorhynchus tshawytscha). No marked salmon were caught.

Pacific saury (Cololabis saira) was a new species appearing for first time since mid-water trawling by the Nautilus began on April 10, 1961.

Note: See Commercial Fisheries Review, October 1962 p. 10.

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ANNUAL SALMON SPAWNING SURVEY STARTED:

The annual survey of California's salmon spawning stock on all salmon streams in the Central Valley was started on October 1, 1962, by the California Department of Fish and Game. It will continue through the middle of January 1963.

Most of California's salmon sport fishery is in the survey area which extends from Redding south into the San Joaquin Valley. Fourteen State fish and game assistants and fisheries men were scheduled to work full time on the project during the survey period.

The annual survey is made to estimate the number of king salmon spawners, their spawning success and distribution in the streams, and to detect any adverse conditions affecting California's salmon resource. The survey includes aerial counts of individual spawning beds and of concentrations of spawning fish. Because salmon die after spawning, ground observers keep a count of spawned-out salmon carcasses so as to avoid duplication.

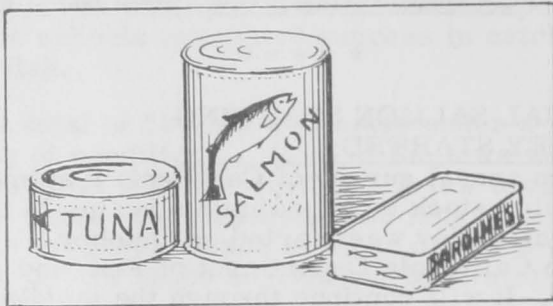
California's annual salmon spawning survey furnishes much of the basic information needed for managing its salmon resource, and provides data needed to evaluate water project developments which affect salmon.



Other Species Caught by the Nautilus on Cruises 62-N-8a and 8b	
Species	Number
Northern anchovy (<u>Engraulis mordax</u>)	134,000 est.
Pacific herring (<u>Clupea pallasii</u>)	1,500 est.
Jacksmelt (<u>Atherinopsis californiensis</u>)	1,300 est.
Striped bass (<u>Roccus saxatilis</u>)	368
American shad (<u>Alosa sapidissima</u>)	161
Sacramento smelt (<u>Spirinchus thaleichthys</u>)	84
King salmon (<u>Oncorhynchus tshawytscha</u>)	19
Sturfmelt (<u>Hypomesus pretiosus</u>)	17
Starry flounder (<u>Platichthys stellatus</u>)	4
Staghorn sculpin (<u>Leptocottus armatus</u>)	3
Northern midshipman (<u>Porichthys notatus</u>)	3
Shiner perch (<u>Cymatogaster aggregata</u>)	1
Rainbow trout (<u>Salmo gairdnerii</u>)	1
White croaker (<u>Genyonemus lineatus</u>)	1
White sturgeon (<u>Acipenser transmontanus</u>)	1
White catfish (<u>Ictalurus catus</u>)	1
Pacific saury (<u>Cololabis saira</u>)	1

Cans--Shipments for Fishery Products, January-July 1962

The amount of steel and aluminum consumed to make cans shipped to fish and shellfish canning plants during January-July 1962 was 4.5 percent above that used during the same period in 1961. Prior to this year, the figures covered only tinplate cans, but beginning with January 1962 aluminum cans are included. It is believed that only a small amount of aluminum is being used in cans used for fishery products at present.



A total of 1,827,187 base boxes of steel (tinplate) and aluminum were used in the manufacture of cans shipped to fishery plants during the first seven months of 1962, whereas in the same period of 1961 (when only tinplate was reported), 1,747,703 base boxes of steel were consumed. The increase was mainly due to larger packs of Maine sardines, shrimp, salmon, and tuna during 1962.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14"x20" size. The 1962 data are derived by use of the factor 21.8 base boxes per short ton of steel.



Central Pacific Fisheries Investigations

FIRST RAFT EXPEDITION TO STUDY FISH BEHAVIOR NEAR OCEAN FLOTSAM:

Raft "Nenu" (September 26-October 13, 1962): A new and unique floating laboratory consisting of a 12-foot square raft called the Nenu was recently used off the Kona coast of Hawaii to study the makeup and behavior of the mixed fish communities which form under drift logs and other flotsam in the ocean. This first raft expedition (described as Koalana I) by the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries was in conjunction with operations of the Bureau's research vessel Charles H. Gilbert. The raft was

used as a floating laboratory by three of the Bureau's scientists from September 27 to October 9.

The Charles H. Gilbert with the Nenu aboard sailed on September 26 for the raft's planned launching position off Napoopoo, Kona. The expedition was to return to its base at Kewalo Basin, Honolulu, on October 13.

The vicinity of any sizable drifting object often provides excellent fishing, particularly for dolphin (mahimahi) in Hawaiian waters, and is also an indication of tuna concentrations in some parts of the Pacific. The scientists studying tuna behavior are seeking information on (1) the association between fish and flotsam, (2) how the various members of such an aggregation react, and (3) how their reaction might be put to practical use in the commercial fisheries.

The Nenu is built of timbers, with a bamboo facing to provide a base for growth of seaweeds and sessile animals such as barnacles. Six oil drums under the raft give additional buoyancy. From the middle of the raft a 6-foot metal cylinder, closed at the bottom and equipped with six glass-viewing ports, protrudes down into the water. A small house protects the observers from the weather and shades the inside of the observation capsule for better visibility.

The observers worked aboard the raft, one in the underwater chamber and one on deck. The fish, birds, and marine mammals which gathered under and around the Nenu were recorded and photographed. Detailed notes were taken on their behavior toward the raft and toward one another. At the same time, similar observations were made from the deck and the underwater observation chamber of the Charles H. Gilbert at various distances from the raft. Plankton collections, water temperature and salinity measurements, and weather observations also were made from the accompanying research vessel. The work was limited principally to daylight hours.

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MACHINE TABULATING EQUIPMENT USED TO ANALYZE CRUISE OBSERVATIONS:

The fishery resources and oceanic environment of the central Pacific Ocean have been studied for the past 12 years by biologists of the U. S. Bureau of Commercial Fish-

eries Biological Laboratory at Honolulu, Hawaii. More than 150 cruises have been made between 1950 and 1962 by the laboratory's research vessels and chartered fishingboats. Many of those cruises were long trips over immense stretches of the Pacific, extending from the Society Islands and New Caledonia in the South Pacific to the Aleutians on the north, and from the United States coast to Wake Island in the northwestern Pacific. Routine watches for fish schools and bird flocks (which indicate the presence of fish schools) were kept on each cruise, and all sightings have been recorded. Laboratory records of these cruise observations were recently tabulated on IBM machine-sort cards in a way that permits their analysis in terms of sightings per hour of scouting.

The observations data have been compiled to show the geographical and seasonal distribution of sightings of bird flocks, all fish schools, and schools identified as skipjack tuna. The result is a series of 12 charts, each covering 3 months of the year and showing the number of sightings per 10 hours of scouting for each 5-degree square.

Within the area between latitudes 20° S. and 30° N., longitudes 110° W. and 180°, the charts make certain features of the distribution immediately apparent. Fish schools and bird flocks are most numerous near island groups, and are very scarce throughout the intervening oceanic areas. Sightings of all fish schools, of skipjack schools, and of bird flocks were most frequent in the Marquesas, Tuamotu, and Society Islands of French Polynesia, followed by the Line Islands and then the Hawaiian Islands. Skipjack schools were 6 times as numerous in the Marquesas as in the Hawaiian area during December to February, while from June to August they were seen in about equal numbers in both regions. The heaviest concentration of bird flock sightings appears in the Christmas Island area of the Line Islands.

These charts also prominently show the seasonal changes in the apparent abundance of schools and bird flocks. In the Hawaiian area there is a definite seasonal trend with sightings at a maximum from June to August. In the waters around the Marquesas Islands, the seasonal trends are less well defined, especially in the sightings of bird flocks, but there was a maximum of schools seen from December to February. The Line Islands did not show the uniform pattern of seasonal

distribution that might have been expected from their location close to the Equator. Sightings of bird flocks and of all fish schools were at a maximum during March-May, with a secondary peak in fish school abundance indicated from September to November.

For the Hawaiian area, the charts point up a marked contrast between the northeastern sector, where sightings were conspicuously infrequent, and the higher sighting rates recorded for waters to the southwest of the Islands. Only during the summer months from June to August were bird flocks and fish schools at all numerous more than 100 miles northeast of the Hawaiian chain. At other seasons of the year they were either absent or present in very small numbers.

This series of charts is part of a projected summary of the past records of cruise observations by the Honolulu Biological Laboratory's scientists and fishermen. The use of automatic data processing methods will make it possible to produce similar graphic condensations of the results of extensive long-line, pole-and-line, and troll fishing in much of the same area.



Fishy Odors and Flavors

CONTRACT STUDY COMPLETED:

The final report on a project to investigate the origin and the nature of compounds responsible for undesirable fishy odors and flavors that develop in fish oils was submitted in September 1962 to the U. S. Bureau of Commercial Fisheries. The contract for the project, which is now completed, was awarded by the Bureau to the Hormel Institute, University of Minnesota, Austin, Minn. The project was under the supervision of the Bureau's Seattle Technological Laboratory.

The methods used in the study included separation of the odors and attempts to associate them with different components of the oil, isolation and identification of the highly volatile compounds present in fish oil, and studies on the auto-oxidation of purified fish oil methyl.

Note: See Commercial Fisheries Review, September 1962 p. 20.



Great Lakes Fishery Investigations

LAKE TROUT DISTRIBUTION STUDIES IN WESTERN LAKE SUPERIOR CONTINUED:

M/V "Siscowet" Cruise 6 (August 27-September 7, 1962): Studies to obtain information on the abundance and distribution of young lake trout in the Apostle Islands region of Lake Superior were continued during cruise 6 of the research vessel Siscowet (operated by the U. S. Bureau of Commercial Fisheries). Semiballoon trawls were used on this cruise. They were towed at 15 locations, at depths ranging from 6 to 31 fathoms. Small lake trout were caught at almost every station; one 15-minute tow east of Basswood Island yielded 137 small trout from six different plantings. Nearly all of the lake trout were found at depths between 20 and 25 fathoms.

Out of a total of 605 young lake trout caught during the cruise, 599 (99 percent) were fin-clipped. About 500 of the fish were returned alive to the water after removal of the anal fin, in an attempt to obtain information on population density. Only one of the re-marked fish was caught a second time.

The table lists the number of hatchery-reared lake trout caught in the Apostle Islands area to date in 1962 with completion of cruise 6, and the percentage of the total contributed by different plantings.

Season and Year of Release	No. of Fish Planted	Age Group of Fish			
		I		II (And Older)	
		No. of Fish Caught	% of Total Caught a Second Time	No. of Fish Caught	% of Total Caught a Second Time
Spring 1962 (Bayfield, St. Croix Falls)	256,500	286	69.6	-	-
Spring 1962 (Pendills Creek)	120,800	125	30.4	-	-
Spring 1961 (Bayfield)	108,800	-	-	218	34.5
Spring 1961 (Pendills Creek)	108,200	-	-	215	34.0
Spring 1960 (Bayfield)	161,350	-	-	170	26.9
Spring 1959 (Bayfield)	226,600	-	-	29	4.6

Note: Recaptures of less than 10 fish from a single planting are not listed; the rearing station is given in parentheses in the first column.

Other species caught in the trawls included Coregonus hoyi chubs (as many as 116 in one 15-minute tow), smelt, pygmy whitefish, sculpins, and ninespine sticklebacks. Chubs (C. hoyi) and smelt were taken most commonly in tows which yielded large

numbers of lake trout. Sticklebacks and sculpins were most common in areas where few or no lake trout were caught.

Experimental gill nets (1- to 5-inch mesh by 1/2-inch intervals) set in 25 fathoms in Presque Isle Bay caught few fish, most of which were chubs.

Surface water temperatures ranged from 59.4° F. east of Bear Island to 66.2° F. in Punky Bay.

Note: See Commercial Fisheries Review, October 1962 p. 17.



Gulf Exploratory Fishery Program

SHRIMP MARKING STUDY IN GULF OF MEXICO CONTINUED:

M/V "George M. Bowers" Cruise 42 (September 19-October 4, 1962): The catching, staining, and release of brown shrimp (Penaeus aztecus) and white shrimp (Penaeus setiferus) were the main objectives of this cruise by the U. S. Bureau of Commercial Fisheries research vessel George M. Bowers. The vessel operates from the Gulf and South Atlantic Exploration and Gear Research Base at Pascagoula, Miss. This was another cooperative trip made jointly with the Bureau's Galveston Biological Laboratory, and was part of the initial phase of a continuing study to obtain a preliminary estimate of growth, mortality, and migration patterns of those shrimp species.

Staining of white shrimp was conducted in two areas off the Louisiana coast. In one of the areas, between Trinity and Tiger Shoals, 1,900 shrimp were stained with fast green dye and released in the 2- to 5- fathom depth range. In the other area between Cameron and Sabine, 2,200 shrimp were stained with a Trypan blue dye and released in the same depth range.

On this cruise, trawling was also conducted between Grand Isle and Trinity Shoal but too few shrimp were caught, and none was stained. The same situation existed in the 10- to 14-fathom depth range southeast of Freeport, Texas. Bad weather ended cruise operations at that point.

Note: See Commercial Fisheries Review, August 1962 p. 26.

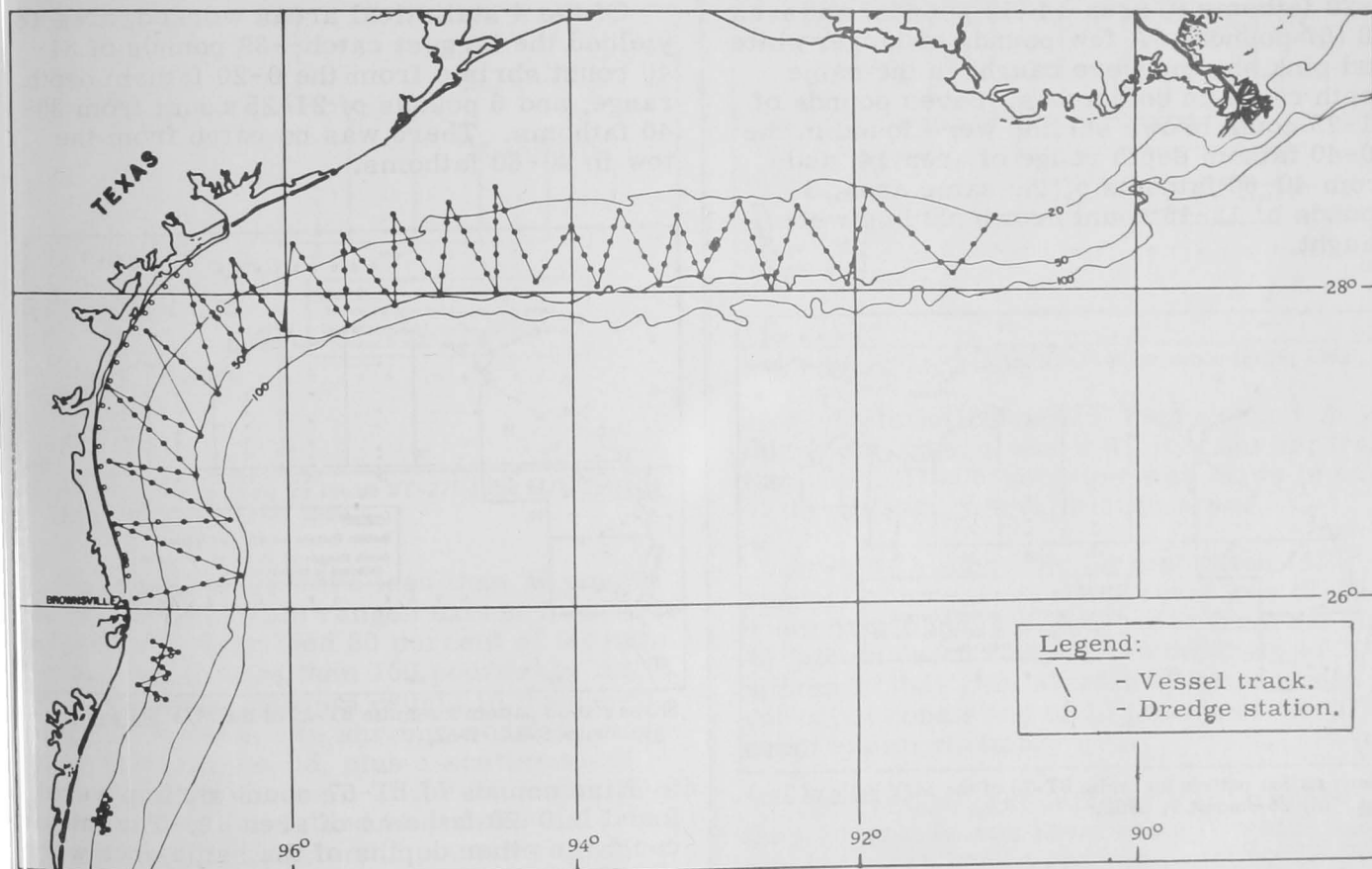
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CLAM AND SCALLOP DISTRIBUTION IN NORTHWESTERN GULF OF MEXICO STUDIED:

M/V "Oregon" Cruise 81 (September 11-October 2, 1962): To obtain seasonal information on offshore clam and scallop distribution along the Louisiana and Texas coastal areas were the main objectives of this cruise. The northwestern Gulf of Mexico was the general area explored during this 22-day trip by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon. A total of 231 exploratory dredge hauls lasting from 15 to 30 minutes each were made during the trip.

these were generally small. Both species showed an apparent preferential depth range of 21 to 40 fathoms. Catch rates fluctuated widely on this exploratory cruise, and only general patterns of density were determined.

The frequent incidence of Gulf clams and paper-shell scallops in the middle shelf zone was observed during earlier shrimp explorations by the Oregon. A preliminary evaluation of meat quality and yield for both these species indicated a commercial potential, but concentrations and seasonal condition and yield would first have to be delineated.



Shows the station pattern for cruise 81 of the M/V Oregon (September 11-October 2, 1962).

Two hundred 5- and 6-foot tumbler dredge stations were made in the 4 to 80 fathom depth range between Ship Shoal, La., and Brownsville, Tex. An additional 31 tumbler dredge stations were made south of Brownsville off Laguna Madre, Mexico.

Paper-shell scallops (Amusium papyraeus) and deep-water Gulf of Mexico clams (Pitaria cordata) were observed throughout the survey area, although concentrations of

The relatively small individual catches made during cruise 81 were not significant enough for conclusive yield studies.

The vessel made port calls at Galveston on September 17, and at Brownsville on September 23.

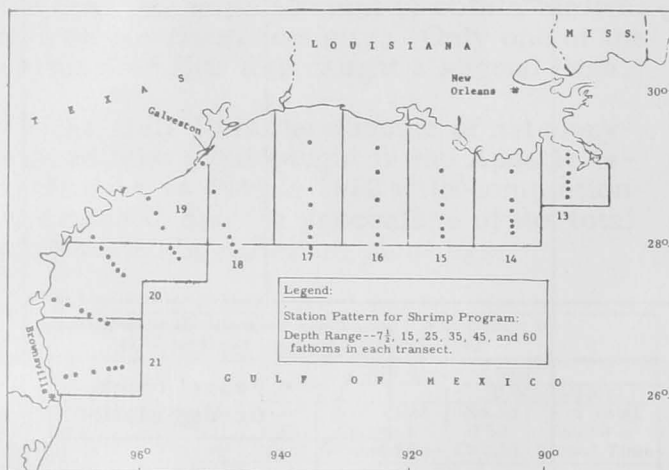


Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-24 (July 26-August 1, 1962): Five statistical areas were covered on this cruise and a 45-foot shrimp trawl was used. One 3-hour tow was made in each of the 3 depth ranges in each area. The vessel (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico) returned to her home port on August 1.

Concentrations of medium brown shrimp counting 31-40 to the pound were found at 0-20 fathoms in area 14 (12 pounds) and area 16 (67 pounds). A few pounds of larger white and pink shrimp were caught in the same depth range in both areas. Seven pounds of 21-25 count brown shrimp were found in the 20-40 fathom depth range of area 14, and from 40-60 fathoms of the same area, 3 pounds of 12-15 count brown shrimp were caught.



Shows station pattern for cruise BT-24 of the M/V Belle of Texas, July 26-August 1, 1962.

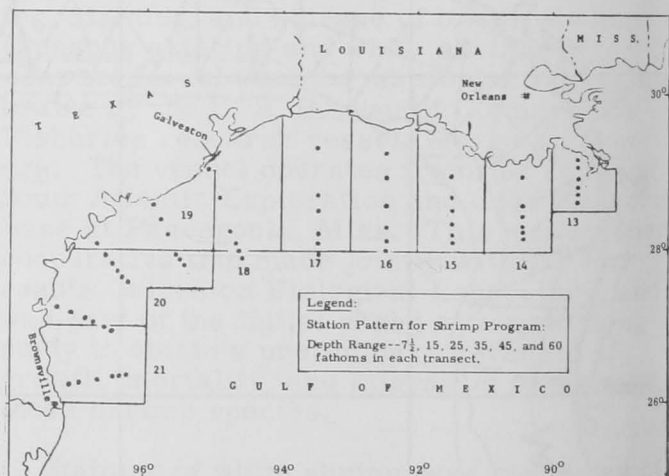
Area 16 yielded 12 pounds of 12-15 count brown shrimp from the 20-40 fathom depth range and 3 pounds of the same size and species from 40-60 fathoms, as well as the larger catch of medium shrimp from the shallower depth.

Tows in the 3 depth ranges of areas 13, 15, and 17 yielded small catches of various sizes of brown shrimp--in area 13, only 3 pounds of 12-15 count shrimp from 40-60 fathoms, and 10 pounds each of 41-50 count in 0-20 fathoms and 21-25 count from 20-40 fathoms.

In area 15, brown shrimp (13 pounds) 12-15 count were caught at 40-60 fathoms. Six pounds of 12-15 count brown was taken from area 17 evenly divided between 2 depth ranges; nothing was caught in 0-20 fathoms of that area.

M/V "Belle of Texas" Cruise BT-25 (August 9-14, 1962): In all areas covered by the M/V Belle of Texas during this cruise nearly all brown shrimp were caught, except for less than one pound each of large white and pink shrimp. A 45-foot shrimp trawl was used, and one 3-hour tow was made in each of the 3 depth ranges.

Of the 4 statistical areas worked, area 18 yielded the largest catch--69 pounds of 31-40 count shrimp from the 0-20 fathom depth range, and 6 pounds of 21-25 count from 20-40 fathoms. There was no catch from the tow in 40-60 fathoms.



Shows station pattern for cruise BT-25 of the M/V Belle of Texas, August 9-14, 1962.

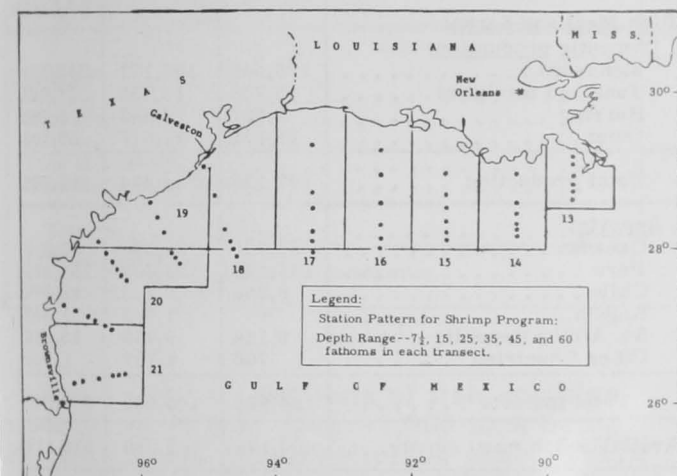
Nine pounds of 51-67 count shrimp were found in 0-20 fathoms of area 19. The amount caught in other depths of the same area were small--only one pound of 12-15 count at 20-40 fathoms, and 3 pounds of 9-12 count at the 40-60 fathom depth.

The catch from 0-20 fathoms in area 20 was 36 pounds of 51-67 count shrimp and only negligible amounts of white and pink shrimp. Larger shrimp of 15-20 count were caught in 40-60 fathoms of the same area.

Shrimp 12-20 count were found in area 21 at depths of 20-40 and 40-60 fathoms--3 pounds from each depth range. The tow in 0-20 fathoms yielded only one pound of small shrimp.

M/V "Belle of Texas" Cruise BT-27 (September 7-12, 1962): Shrimp catches by the research vessel Belle of Texas were almost negligible and confined mostly to small and medium brown shrimp from the 0-20 fathom depth range. The few pounds of white and pink shrimp caught in that depth range were all 21-25 count to the pound.

Each of the 4 statistical areas (18 through 21) covered on this cruise were off the coast of Texas from Galveston down to Brownsville. A 45-foot shrimp trawl was used, and one 3-hour tow was made in each of the 3 depth ranges of the areas worked.



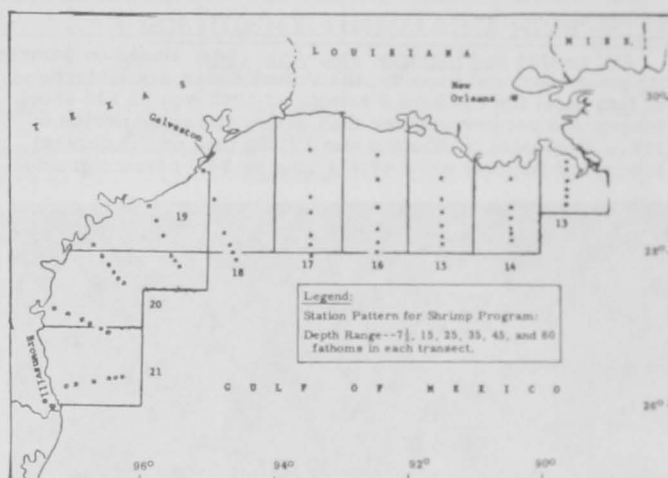
Shows the station pattern for cruise BT-27 of the M/V Belle of Texas, September 7-12, 1962.

Shrimp catches were less than 10 pounds per haul in all depth ranges except from 0-20 fathoms which yielded 80 percent of the total shrimp catch (less than 150 pounds) in the 4 areas covered. Shrimp caught in that depth range were all brown shrimp, counting mostly 41-50 to the pound, plus a scattering of white and pink shrimp. The 0-20 fathom depth range in area 21 yielded 30 pounds of 21-25 count brown shrimp, and 2 pounds of pink shrimp of the same size.

The largest catch of any area was slightly less than 50 pounds in area 19--44 pounds of 41-50 count brown shrimp and about 3 pounds of 21-25 count white and pink shrimp. The same area yielded only a handful of larger brown shrimp of 9-15 count from the 20-60 fathom depths. The other 3 areas worked on this cruise yielded an average of 9 pounds each of larger shrimp of 9 to 15 count, and

some 15-20 count from the 20-60 fathom depth ranges.

M/V "Belle of Texas" Cruise BT-28 (September 18-25, 1962): Large brown shrimp counting 12-20 to the pound predominated in catches by the research vessel Belle of Texas (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries) in studying the distribution of shrimp in the Gulf of Mexico.



M/V Belle of Texas cruise BT-28 (September 18-25, 1962).

Five statistical areas were worked on this 8-day cruise, and a 45-foot shrimp trawl was used. One 3-hour tow was made in each of the 3 depth ranges in each area.

Area 16 yielded the largest catch (43 pounds) of any area--75 percent was 12-15 count brown shrimp, most of it from the 20-40 fathom depth range. The depth up to 20 fathom in that area accounted for the rest of the catch consisting of 10 pounds of 15-20 count brown shrimp.

The next largest catch of a little more than 20 pounds was from area 17 which also yielded large brown shrimp counting 12-20 to the pound from all depth ranges. Less than one pound each of 12-15 count white and pink shrimp were caught in 0-20 fathoms of that area.

Shrimp catches in the other 3 statistical areas covered on the cruise were small, ranging from 12 to 18 pounds. These were mostly large shrimp from all of the 3 depth ranges except 0-20 fathoms which yielded very small amounts of 31-40 and 51-67 count

brown and white shrimp. There was also a catch of 7 pounds of 26-30 count brown shrimp from 0-20 fathoms in area 14.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.

(2) See Commercial Fisheries Review, October 1962 p. 21.



Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, Jan.-Aug. 1962: Based on domestic production and imports, the United States available supply of fish meal for the first 8 months of 1962 was 33,135 short tons or 9.0 percent greater than during the same period of 1961. Domestic production was 16,299 tons or 7.3 percent lower, but imports were 49,434 tons or 34.0 percent greater



Fig. 1 - Steam power is needed in fishery byproducts plant. It is used to cook the raw fish, evaporate the water in making condensed fish solubles, and in many plants, for heating the meal dryers. This is a scene in a plant at Moss Point, Miss.



Fig. 2 - Raw fish at the dock of a menhaden industrial products plant in Moss Point, Miss. The large hose at the right is clamped to a standpipe through which the menhaden are pumped from the bottom of the hold when the vessel is unloaded.

than in the same 8 months of 1961. Peru continued to lead other countries with shipments of 146,195 tons during the first 8 months of 1962--52,462 tons above the imports in the same period of 1961.

The total United States supply of fish meal in calendar year 1961 of 529,100 tons exceeded the peak year 1959 when the quantity amounted to almost 440,000 tons.

The United States supply of fish solubles (including homogenized fish) during January-August 1962 was 9,378 tons more than during the same period in 1961. Domestic production increased 8.0 percent, but imports jumped 123.5 percent.

U. S. Supply of Fish Meal and Solubles, January-August 1961 and Total for 1961			
Item	Jan.-Aug.		Total 1961
	1/1962	1961	
 (Short Tons)		
Fish Meal and Scrap:			
<u>Domestic production:</u>			
Menhaden	175,649	193,177	247,551
Tuna and mackerel	13,728	13,458	21,243
Herring	2,627	4,462	5,268
Other	15,171	12,377	37,203
Total production	207,175	223,474	311,265
<u>Imports:</u>			
Canada	30,765	29,590	38,218
Peru	146,195	93,733	151,439
Chile	8,146	9,743	12,074
Angola	-	1,543	1,543
So. Africa Republic	9,184	9,756	13,026
Other Countries	706	1,197	1,545
Total imports	194,996	145,562	217,845
Available fish meal supply ..	402,171	369,036	529,110
Fish Solubles:			
<u>Domestic production</u> ^{2/}			
	89,079	82,474	112,241
<u>Imports:</u>			
Canada	1,126	819	1,001
So. Africa Republic	1,091	946	1,351
Other Countries	2,801	480	4,387
Total imports	5,018	2,245	6,739
Available fish solubles supply.	94,097	84,719	118,980

^{1/}Preliminary.
^{2/}50-percent solids. Includes production of homogenized condensed fish.

U.S. FISH MEAL, OIL, AND SOLUBLES:

Production, August 1962: During August 1962, a total of 39,000 tons of fish meal and scrap and 4.3 million gallons of marine-animal oils were produced in the United States. Compared with August 1961, this was a decrease of 18,600 tons or 32 percent in meal and scrap production and 2.3 million gallons or 35 percent in oil yield.

Menhaden meal amounted to 33,400 tons--accounting for 86 percent of the August 1962 meal total. Oil from menhaden (3.9 million gallons) comprised 91 percent of the August 1962 oil production.

U.S. Production of Fish Meal, Oil, and Solubles, August 1962, with Comparisons

Product	August		Jan.-Aug.		Total
	1/ 1962	1961	1/ 1962	1961	1961
..... (Short Tons)					
Fish Meal and Scrap:					
Herring	788	1,179	2,627	4,462	5,268
Menhaden 2/	33,366	51,818	175,649	193,177	247,551
Sardine, Pacific	2/17	-	2/706	-	2,518
Tuna and mackerel	2/2,111	2,080	2/13,728	13,458	21,243
Unclassified	2,673	2,460	14,465	12,377	14,757
Total	38,955	57,537	207,175	223,474	291,337
Shellfish, marine-animal meal and scrap	3/	3/	3/	3/	19,928
Grand total meal and scrap	3/	3/	3/	3/	311,265
Fish solubles	15,883	16,883	81,014	73,777	100,551
Homogenized condensed fish	-	2,802	8,065	8,697	11,690
..... (Gallons)					
Oil, body:					
Herring	194,068	230,773	527,725	637,530	818,017
Menhaden 2/	3,918,942	5,955,991	20,761,354	24,061,049	31,355,570
Sardine, Pacific	2/1,373	-	2/20,484	-	86,167
Tuna and mackerel	2/77,246	82,352	2/402,799	375,177	762,509
Other (including whale)	134,337	353,251	608,394	1,046,199	1,386,542
Total oil	4,325,966	6,622,367	22,320,756	26,119,955	34,408,805

1/ Preliminary data.
 2/ Includes a small quantity produced from thread herring.
 3/ Not available on a monthly basis.

There were 15,900 tons of fish solubles produced in August 1962--1,000 tons below the same month of the previous year. There was no homogenized condensed fish produced in August 1962 as compared with 2,800 tons in the same month of 1961.

During the first 8 months of 1962, meal and scrap production totaled 207,200 tons--



Adjusting valve on a steam pump in the fish solubles unit of a fishery byproducts plant in Empire, La.

16,300 tons below the same period of 1961. The marine-animal oil yield totaled 22.3 million gallons--a drop of 3.8 million gallons as compared with the same period in 1961.

MAJOR INDICATORS FOR U.S. SUPPLY, SEPTEMBER 1962:

For the first nine months of 1962, United States fish meal and fish oil production was lower by 4.1 percent and 8.0 percent, respectively, as compared with the same period of 1961. Fish solubles production increased 8.3 percent.

Major Indicators for U. S. Supply of Fish Meal, Solubles, and Oil, September 1962					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Fish Meal:					
Production 1/:					
November	-	10,058	8,725	10,797	9,749
October	-	16,852	24,455	22,026	11,630
September	31,800	28,642	36,239	36,874	33,185
Jan.-Aug.	207,175	220,559	180,152	191,089	144,415
Jan.-Dec. prelim. totals 2/	-	289,039	257,969	275,396	216,510
Jan.-Dec. final tots.	-	311,265	290,137	306,551	248,140

(Table continued on following page)

Major Indicators for U. S. Supply of Fish Meal, Solubles, and Oil, September 1962 (Contd.)					
Item and Period	1962	1961	1960	1959	1958
.....(Short Tons).....					
Imports:					
November	-	25,649	6,149	3,673	6,082
October	-	9,425	12,515	3,821	5,899
September	-	13,941	9,487	9,224	5,079
August	28,253	19,026	8,340	5,695	5,310
January-July	166,743	126,536	79,506	105,004	69,492
January-December	-	217,845	131,561	132,925	100,352
Fish Solubles:					
<u>Production</u> ^{3/} :					
November	-	5,140	3,524	4,628	8,888
October	-	8,459	7,192	12,487	8,867
September	12,600	11,232	12,573	23,979	23,049
January-August	89,079	82,654	72,743	118,836	83,068
Jan.-Dec. totals	-	112,241	98,929	165,359	130,177
Imports:					
November	-	3,649	232	3,089	867
October	-	110	-	1,908	2,548
September	-	263	38	1,732	253
August	422	318	180	4,718	2,819
January-July	4,596	1,927	2,614	14,783	2,900
Jan.-Dec. totals	-	6,739	3,714	26,630	14,567
..... (1,000 Gallons)					
Fish Body Oils:					
<u>Production:</u>					
November	-	1,360	1,202	1,147	1,028
October	-	1,901	3,024	2,176	1,139
September	4,000	3,224	3,939	2,888	3,689
January-August ^{4/}	22,321	25,392	17,482	16,187	13,726
Jan.-Dec. prelim. totals	-	33,471	26,690	24,418	21,625
Jan.-Dec. final tots.	-	34,409	27,853	24,945	21,977
Exports:					
November	-	190	1,952	813	2,037
October	-	2,027	591	1,911	3,591
September	-	1,269	1,861	1,129	665
August	4,436	1,774	186	2,449	752
January-July	8,418	9,673	12,457	10,351	5,111
Jan.-Dec. totals	-	16,331	19,154	19,264	12,539

^{1/}Does not include crab meat, shrimp and miscellaneous meals.
^{2/}Preliminary data computed from monthly data. Fish meal production reported currently comprised 86 percent of the annual total for 1958, 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961.
^{3/}Includes homogenized fish.
^{4/}Preliminary data computed from monthly data. Represents over 95 percent of the total production.
 Note: Data for 1962 and 1961 are preliminary.



Nautical Charts

FOLDED INTRACOASTAL CHARTS FOR SMALL CRAFT NAVIGATION:

Plans to produce a "compact series" of Intracoastal Waterway Charts were announced by the Coast and Geodetic Survey, U. S. Department of Commerce, on October 7, 1962, following one of the most active boating seasons in the Nation's history. The plan is to produce a chart format that will not be awkward and unwieldy when used for small craft navigation.

New Intracoastal Charts will be accordin folded, measuring only 7-3/8 by 15 inches and easy to handle even in the smallest skiff or dinghy.

In recent years the largest market for Intracoastal Charts has been among the pleasure boatmen; in many areas, particularly along the Gulf Coast, however, commercial traffic in the waterway has contributed substantially to the economic stability of many coastal communities. In reshaping these charts for greater handling ease and utility, the Coast and Geodetic Survey has considered both the commercial boatman and the small craft operator. The chart quality has not been compromised in any way that would impair navigational safety.



WATCH HILL TO NEW HAVEN

RHODE ISLAND - CONNECTICUT



Long Island Sound

SMALL-CRAFT SERIES
CHARTS 116-1, 116-2, 116-3



U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
WASHINGTON, D. C.

FIRST EDITION 1962 PRICE \$1.50

Although Intracoastal Waterway Charts are not new, having first been published in 1936, the Agency's cartographers and a cross-section of boat owners are quite enthusiastic about the folded format.

"We are providing the boat operator with much more than just a chart in this folded edition," commented the Chief of the Agency's Nautical Chart Division. "Within its protective wrap-around cover, the folio contains just about everything the mariner needs to know, including annual tide tables, a complete tabulation of supplies and facilities, direction and velocity of tidal currents, information on marine weather services, and much more--all in the package," he said.

The Intracoastal Waterway is a protected route, with some exceptions, for vessels between Boston, Mass., and the Rio Grande, a distance of approximately 2,900 miles. Navigation is restricted, however, by the limiting depths which in some places is only 5 feet. Generally the project depth is 12 feet or more. Long canals have been cut through dry land in several areas such as the canals between Norfolk, Va., and Albemarle Sound, N.C.

More than 60 Intracoastal Waterway Charts rim the Atlantic and Gulf Coasts of the United States from Norfolk, Va., to Brownsville, Texas.

The first remodeled charts are scheduled for issue early in 1963. These are No. 824, Sandy Hook to Little Egg Inlet,

New Jersey, and No. 829, Norfolk, Va., to Albemarle Sound, N.C.

With the exception of the New Jersey chart, reconstruction will begin at Norfolk and generally progress southward to Florida and into the Gulf of Mexico area.

It is contemplated that additional offshore hydrography will be added to the new editions, if space permits, to provide continuity for vessels plying between the waterway and the open sea. The expanded hydrography should render these charts more useful to the fishing fleets and the sports fishing industries.

In many ways, the new Intracoastal Chart folios will be comparable to the popular Small Craft Chart Series. Similar in size and utility, the new Intracoastals will be revised and published annually, usually to coincide with the boating season in each area.

Several years will be needed to convert all charts to the new compact format, to check out the boating facilities through field inspection, and to assemble other complementary information planned for this unique Series. But Coast and Geodetic Survey chart-makers are going to keep a close watch on boating trends and developments in coastal areas and bolster the program where it is needed.



North Atlantic Fisheries

Exploration and Gear Research

OTTER-TRAWL NET WITH ELECTRIC FIELD TESTED:

M/V "Delaware" Cruise 62-9 (July 11-August 24, 1962): To test and evaluate the effect, if any, of an electric field upon the catch of a commercial otter trawl net when the field is used as an adjunct to the net, was the primary purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The tests were conducted in marine waters and in areas and at depths where commercial species could be fished. Positive results encourage both further research into this principle of fishing and the development of specific gear by which this method might be applied within various segments of the fishing industry. The electrical equipment used was experimental in nature and built by a Lewes, Del., firm as a result of their research in the field of electrical fishing equipment.

A No. 41 large mesh (4-1/2 inch internal measurement) polypropylene net was equipped for electric fishing with a system designed primarily to immobilize fish in the path of the advancing trawl. Comparative tows were made using this net with and without the electric field during alternate tows. Towing was conducted between positions determined by Loran bearings and

along depth contours in an area long enough to include two consecutive tows. By towing back and forth in the designated area, and alternating tows using electricity with tows not using electricity, the same area was fished by both methods during various phases of tide and other changes. The effect of variables were eliminated or minimized as much as possible. Electrical values were kept nearly alike although minor differences, due to changes in the configuration of the net and consequent small variations in the distance between electrodes, could not be controlled.

All fish caught were identified and counted. A volumetric measure was taken on all commercial species when the catch numbers were large enough to make this feasible.

Tests were conducted with the anodes in two positions: (1) grouped around the low voltage transformers and laced to the footrope and netting of the lower wings and bottom belly, and (2) laced to the headrope and netting of the upper wings and square. During both test series, the low voltage transformers were shackled to the footrope and the cathodes were laced to the netting in the afterpart of the lower belly.

Comparative catch results with anodes positioned on the footrope, and on the headrope, are shown in tables 1 and 2.

Table 1 - Comparative Catch Results With Anodes Positioned on Footrope

Grouped Species of Fish	Without Electric Field		With Electric Field		Comparison to Catch Made without Electric Field
	Total No. Fish Caught	Mean No. Fish Per Tow	Total No. Fish Caught	Mean No. Fish Per Tow	
Cod and haddock	982	42.7	1243	56.5	132.3
Flatfish (gray sole, dab, yellowtail, blackback or lemon sole)	730	31.7	1503	68.3	215.5
Trash fish (sea raven, sea pout, monkfish, sculpin)	141	6.1	253	11.5	188.5
Cartilaginous "fish" (dogfish, skate)	260	11.3	245	11.1	98.2
Squid	360	15.7	747	34.0	254.8
Fish normally escaping large-mesh nets (herring, shad, whiting, red hake)	297	12.9	1643	74.7	579.1

Note: Other commercial species were caught in too few numbers to use for comparison.

Table 2 - Comparative Catch Results With Anodes Positioned on Headrope

Grouped Species of Fish	Without Electric Field		With Electric Field		Comparison to Catch Made without Electric Field
	Total No. Fish Caught	Mean No. Fish Per Tow	Total No. Fish Caught	Mean No. Fish Per Tow	
Cod and haddock	272	14.3	509	29.9	209.1
Flatfish (gray sole, dab, yellowtail, blackback or lemon sole)	515	27.1	883	51.9	181.5
Trash fish (sea raven, sea pout, monkfish, sculpin)	107	5.6	198	11.7	208.9
Cartilaginous "fish" (dogfish, skate)	128	6.7	204	12.0	179.1
Squid	678	35.7	540	31.8	82.1
Fish normally escaping large-mesh nets (herring, shad, whiting, red hake)	217	11.4	772	45.4	398.2

Note: Other commercial species were caught in too few numbers to use for comparison.

The catch results from comparative tows made with the anodes in one position were considered separately from the catch results made with the anodes in the other position. That was to indicate the effect, if any, of the change in anode positions upon the quantity of fish caught. During the first series of tests, made with the anodes on the footrope, 45 successful tows were completed. Of that number, 22 were with the electric field and 23 were without the electric field. During the second series, made with the anodes on the headrope, 36 successful tows were completed. Of that number, 17 tows were with the electric field and 19 tows were without the field. Due to the unequal number of tows, the gross number of fish caught by each method was not a good basis for comparison. The average number of each species of fish caught per tow (mean) by each method was used for comparison purposes. The tables show the species grouped into arbitrarily-chosen categories instead of individually. Irregularities in the abundance and/or availability of fish may cause considerable variation in catch results; the number of tows made (a total of 81) was too few to expect definite values to be determined. In general, the results may be considered indicative of final values that could be determined through extended testing.

Evaluation of this method of fishing, and the gear and equipment used during the tests, may be made from several directions. As the electrical equipment and accessory gear were experimental in nature, a number of difficulties, breakdowns, and other problems were to be expected. Nevertheless, with the exception of several components, the equipment performed satisfactorily. A more detailed description of the gear and component performance together with a more complete analysis of catch data is to be published at a later date.

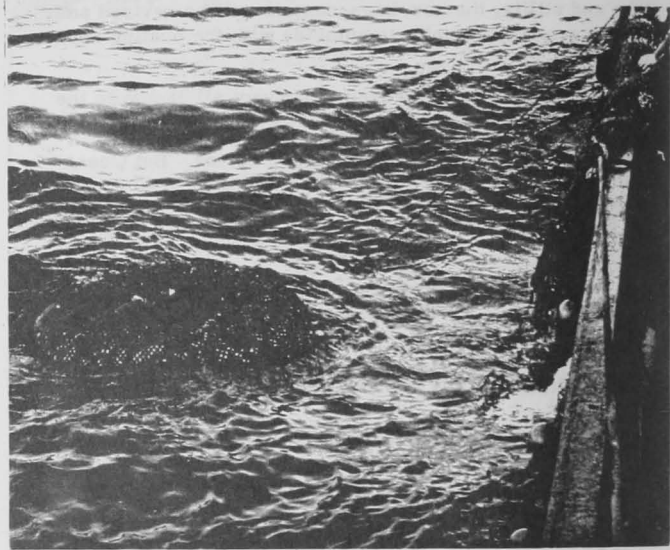
Phase III of cruise 62-9 by the Delaware was devoted to herring sampling on Georges Bank under the direction of the Bureau's Boothbay Harbor Biological Laboratory.

* * * * *

COMMERCIAL FISHING POTENTIAL
OF OCEAN PERCH OFF
NOVIA SCOTIA STUDIED:

M/V "Delaware" Cruise 62-11 (September 3-October 3, 1962): Bottom trawling operations to investigate the commercial potential

of ocean perch (Sebastes marinus) in waters deeper than those usually fished by commercial trawlers were conducted on the Continental Slope 100 miles north of Halifax, Nova Scotia, during this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. A total of 14 1-hour tows were completed in depths ranging from 175 to 525 fathoms on a 55-mile section of the slope.

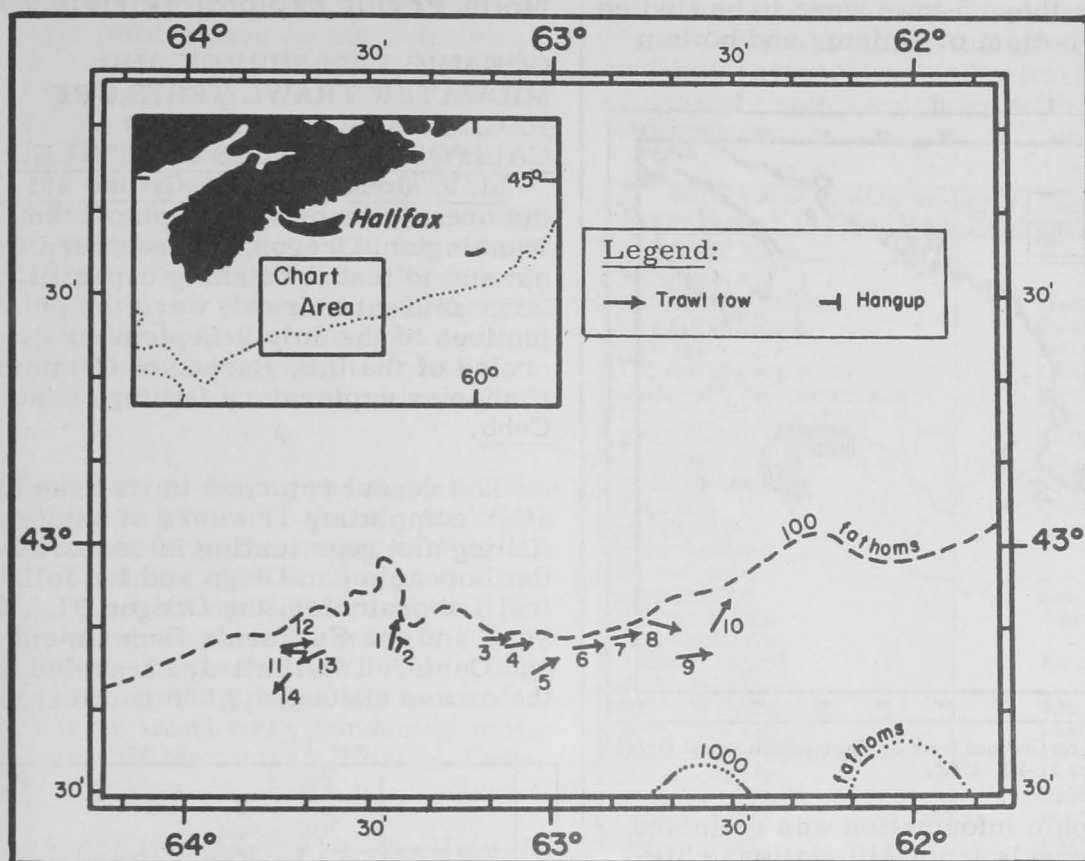


One of the larger catches of ocean perch buoys the cod end to the surface during haulback aboard the exploratory fishing vessel Delaware on cruise 62-11.

The four largest catches (2 estimated at 3,000 pounds and the other 2 at 2,000 pounds) were made at a mean depth of 300 fathoms. The larger catches were not comparable to the size of commercial catches, but they indicated a resource of large ocean perch (about 2-3 pounds each) at those depths and show some promise for projected explorations of the Continental Slope area.

Fishing gear used during the cruise consisted of a roller-rigged No. 41 manila net with 30 floats on the headrope, 5-fathom legs and 5-fathom ground cables. The ground cables were removed after the third tow to prevent gear damage from hang-ups on the extremely uneven bottom. There was only minor damage to fishing gear during the cruise and little time was lost making repairs. While average towing time from hook-up to knockout was approximately one hour, longer setting and hauling-back time in deep water required an over-all time of two hours on each tow.

Other commercial species caught in less than significant numbers included whiting



Cruise 62-11 of the exploratory fishing vessel Delaware investigated the commercial potential of ocean perch on the Continental Slope off Nova Scotia.

(silver hake), white hake, squirrel hake, cusk, Atlantic cod, American plaice (dab), Atlantic halibut, Greenland halibut, witch flounder (gray sole), and the red crab.

Preliminary identification of specimens preserved for continuing study included grenadiers (Macrouridae), snipe eels (Nemichthyidae), black dogfish (Centroscyllium fabricii), blue hake (Antimora rostrata), spiny eel (Notocanthus sp.), 2 specimens of blue whiting (Gadus poutasou), and Stomias sp.).



North Atlantic Fisheries Investigations

DISTRIBUTION AND ABUNDANCE STUDIES OF SEA SCALLOPS ON GEORGES BANK CONTINUED:

M/V "Delaware" Cruise 62-10 (September 11-20): To collect data on the distribution and abundance of sea scallops in the area from Northern Edge to the Southeast part of Georges Bank was the purpose of this cruise by the research vessel Delaware of the U. S.

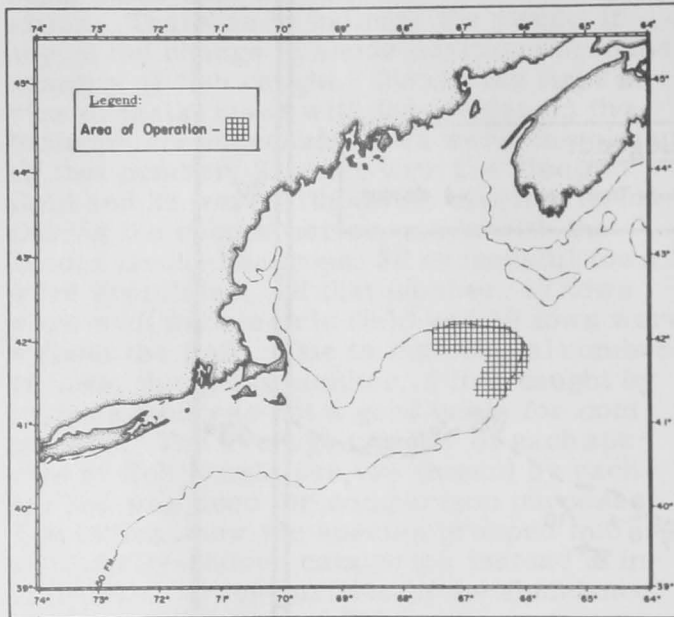
Bureau of Commercial Fisheries. The cruise was part of a continuing study to determine the population abundance and length composition of sea scallops on the offshore bank. Samples taken of Georges Bank sea scallops were to be used for comparison with similar samples collected previously.

A total of 29 unit areas were sampled during the cruise. Each unit consisted of 6 stations. Live scallops and clapper shells from 199 tows at 174 stations were measured, and condition of spawning observed. A 10-foot standard dredge with a 2-inch ring bag was used, and each tow lasted 10 minutes. The distance of each tow was measured with a standard odometer, and a new experimental odometer was tested simultaneously.

Samples of scallops were brought back to the laboratory for length-weight ratios, aging, and spawning studies. These will be reared in specially-designed tanks to conduct biological research on growth rates.

Five additional 5-minute tows with a 30-inch Digby-type dredge having a 1/2-inch mesh liner were made at designated stations.

Samples from those 5 tows were to be studied to determine bottom organisms and bottom types.



Sea scallop survey on Georges Bank by the research vessel Dela-ware, September 11-20, 1962.

Hydrographic information was collected at hourly intervals from 210 stations while steaming to and from Georges Bank.

Note: See Commercial Fisheries Review, July 1962 p. 33.

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FLUKE TAGGING EXPERIMENT:

About 1,000 fluke were tagged in September 1962 at inshore locations between Point Judith, R. I., and Block Island. This tagging experiment was conducted by biologists of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass. Tagged fish returned from this experiment will complement the results of previous offshore tagging east of Hudson Canyon, which showed a summer inshore movement to Long Island and southern New England fishing grounds.

The recent fluke tagging experiment will add further information on the geographical limits of the fluke population which appears to inhabit the northern part of the Middle Atlantic Bight.

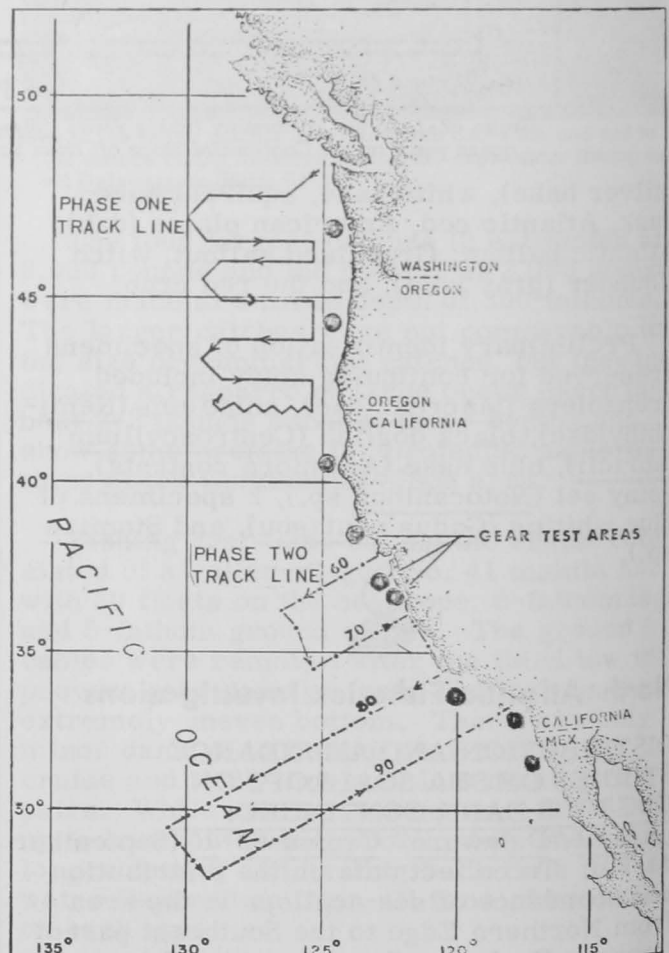


North Pacific Exploratory Fishery Program

OCEANIC FISH SURVEY AND MIDWATER TRAWL TESTS OFF PACIFIC NORTHWEST AND CALIFORNIA COASTS CONTINUED:

M/V "John N. Cobb" Cruise 55: To study the oceanic or offshore fish off the coasts of Washington, Oregon, and southern California and to test the fishing capabilities of a large midwater trawl, were the primary objectives of the July 9-September 21, 1962, cruise of the U.S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

The vessel returned to its base at Seattle after completing 11 weeks of exploratory fishing and gear testing in cooperation with the Bureau's San Diego and La Jolla Biological Laboratories, the Oregon Fish Commission, and the California Department of Fish and Game. Total mileage traveled during the cruise exceeded 8,000 nautical miles.



M/V John N. Cobb Cruise 55 station pattern (July-September 1962).

Primary objectives of the cruise were:
 (1) To obtain information on the relative abundance and distribution of albacore tuna by systematic sampling with trolling lines and correlation with attendant oceanographic conditions; (2) sampling of offshore waters to determine the relative abundance of all pelagic species at predetermined stations by conducting oblique tows from 220 fathoms to the surface, using a recently developed giant midwater trawl (Cobb pelagic trawl, Mark II); and (3) testing the utility of the Cobb pelagic trawl as a biological sampling tool and its efficiency for possible commercial application.

Regions surveyed during phase I (albacore trolling) extended from 48° N. Lat. to 42° N. Lat. and seaward from the coasts of Washington and Oregon to 130° W. Long. During phase II, waters between 38° N. Lat. and 27° N. Lat. extending seaward from the California and Mexican coasts to 130° 36' W. Long. were surveyed. During phase III, tests of the Cobb pelagic trawl were conducted in the coastal waters off Mexico, California, Oregon, and Washington.

Albacore Trolling (Phase I): Trolling was conducted during daylight hours along predetermined track lines with generally good results. A total of 235 albacore tuna was taken. All albacore in suitable condition (total of 150) were tagged and released. Tuna not in suitable tagging condition were frozen for future technological studies. Experimental freezing procedures were tested by a cooperating scientist from the Bureau's Technological Laboratory, Seattle, Wash.

Attendant oceanographic data were collected by a cooperating scientist from the Bureau's Biological Laboratory, San Diego, Calif.

Regions surveyed during phase I extended from 48° N. latitude to 42° N. latitude and seaward from the coasts of Washington and Oregon to 130° W. longitude.

Offshore Pelagic Trawling (Phase II): Forty-four stations were occupied off southern California and Mexico using the John N. Cobb's midwater trawl. Oblique tows from 220 fathoms to the surface were made at each station during daylight hours. At least one of each series of night tows was made on the surface. With the exception of one night surface tow in which 24 horse mackerel

were taken, catch rates in phase II were poor. Echo-soundings taken at all stations indicated no fish concentrations. Scatters noted were typical of those associated with the deep scattering layer.

List of Fishes Taken by the John N. Cobb Pelagic Trawl During Phases II and III of Cruise 55, August-September 1962	
Scientific Name	Common Name
<u>Vinciguerria</u> sp.	
<u>Tetranarce californica</u>	Electric ray
<u>Palometa simillima</u>	California pompano
<u>Brama raii</u>	Pomfret
<u>Tarletonbenia crenularis</u>	Lanternfish
<u>Trachypterus rex-salmonorum</u>	King of the salmon
<u>Argyropelecus lynchus</u>	Hatchetfish
<u>Seriola dorsalis</u>	Yellowtail
<u>Leuroglossus stilbius</u>	No common name
<u>Caulolepis longidens</u>	No common name
<u>Mola mola</u>	Ocean sunfish
<u>Diaphus theta</u>	Lanternfish
<u>Melamphaes</u> sp.	-
<u>Argentinidae</u> sp.	-
<u>Regalecidae</u> sp.	King of the herrings
<u>Electrona arctica</u>	Bigeye lanternfish
<u>Idiacanthidae</u> sp.	-
<u>Bathylagus milleri</u>	No common name
<u>Gonostomatidae</u> sp.	-
<u>Glyptocephalus zachirus</u>	Rex sole
<u>Citharichthys sordidus</u>	Mottled sandad
<u>Alepocephalus tenebrosus</u>	No common name
<u>Malacosteidae</u> sp.	-
<u>Merluccius productus</u>	Hake
<u>Sardinops sagax</u>	Pacific sardine
<u>Sarda chiliensis</u>	Bonito
<u>Pneumatophorus diego</u>	California mackerel
<u>Roncador stearnsi</u>	Spotfin croaker
<u>Sphyrna argentea</u>	Barracuda
<u>Aetobatus californicus</u>	Whip ray
<u>Sebastes paucispinis</u>	Bocaccio
<u>Symphurus atricaudus</u>	Tongue sole
<u>Porichthys notatus</u>	Midshipman
<u>Icichthys lockingtoni</u>	Brown rudderfish
<u>Oncorhynchus tshawytscha</u>	King salmon
<u>Sebastes flavidus</u>	Yellow-tailed rockfish
<u>Squalus acanthias</u>	Dogfish shark
<u>Sebastes brevispinis</u>	Silvergray rockfish
<u>Sebastes ruberrimus</u>	Turkey-red rockfish
<u>Trachurus symmetricus</u>	Horse mackerel
<u>Engraulis mordax mordax</u>	Anchovy
<u>Prionace glauca</u>	Blue shark
<u>Sebastes goodei</u>	Chili pepper
<u>Anoplopoma fimbria</u>	Sablefish
<u>Tactostoma macropus</u>	Arrowfish
<u>Symbolophorus californiae</u>	Lanternfish
<u>Lampanyctus leucopsarum</u>	Lanternfish
<u>Lampanyctus ritteri</u>	Lanternfish
<u>Hygophum</u> sp.	Lanternfish
<u>Diogenichthys atlanticus</u>	Lanternfish
<u>Notoscopelus resplendens</u>	Lanternfish
<u>Ceratoscopelus townsendi</u>	Lanternfish
<u>Scomber japonicus</u>	No common name
<u>Anoplogaster</u> sp.	-
<u>Tarandichthys</u> sp.	-
<u>Cyclothone microdon</u>	Veiled anglemouth

During the latter half of phase II, offshore stations were occupied simultaneously by the Bureau's research vessel Black Douglas and the John N. Cobb. Observations of attendant oceanographic conditions and comparison tows with plankton and stramin nets were made by the Black Douglas.

A correlation of relative effectiveness of the three sampling gears (midwater trawl, plankton net, and stramin net) will be attempted in the near future.

During phase II, waters between 38° N. latitude and 27° N. latitude extending seaward from the California and Mexico coasts to 136° 36' west longitude were surveyed.

Gear Tests (Phase III): During the early part of Phase III, 13 surface tows and 3 mid-depth tows using the John N. Cobb's midwater trawl were made in nearby waters off San Diego. During the latter part of Phase III, 11 drags (3 near surface and 8 at mid-depth) were made off the coasts of California, Oregon, and Washington. A total of 56 different species of fish were taken in the midwater trawl during the tests. The largest catches were made about 10 miles north of Heceta Bank, Ore., where a catch of 1,375 pounds of sablefish and 463 pounds of hake was made at 95 fathoms and a catch of 1,863 pounds of hake was made at 102 fathoms. A catch of 1,000 pounds of anchovy was taken at 42 fathoms about 30 miles south-southwest of San Francisco, Calif. The anchovy catch was estimated at 8,000 pounds when the net surfaced, but most of the catch escaped through the meshes of the cod end as the gear was hauled in.

Utility of the midwater trawl for gross biological sampling was demonstrated during the cruise by the wide variety of specimens taken. Commercial utility of the gear for capture of surface schools of fish was not proved, but commercial use of the gear for capture of midwater schools of fish shows considerable promise. A few drags made on good echo-sounding indications in midwater produced fair amounts of fish. Additional experiments using the gear on known fish concentrations will be required before the commercial potential can be determined.

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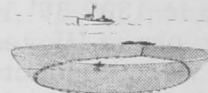
SHRIMP DISTRIBUTION OFF VANCOUVER ISLAND STUDIED:

M/V "John N. Cobb" Cruise 56 (October 15-November 16, 1962): To conduct shrimp explorations in the international waters off the west coast of Vancouver Island, British Columbia, was the purpose of this 5-week cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. The main objective was to locate po-

tential commercial shrimp fishing grounds in the area from Cape Beale to Cape Cook off Vancouver Island.

During the cruise, records were to be kept of the general topography of the ocean bottom, and oceanographic and meteorological conditions. The size and sex composition of the shrimp populations were to be determined, together with other pertinent information.

Methods of operation on this cruise included the application of transects using sonic equipment so as to determine the general bottom characteristics, and whether the area explored would be suitable for trawling. In areas where the bottom could be trawled, it was planned to make a series of tows with a Gulf of Mexico shrimp trawl in order to assess the distribution and abundance of shrimp.

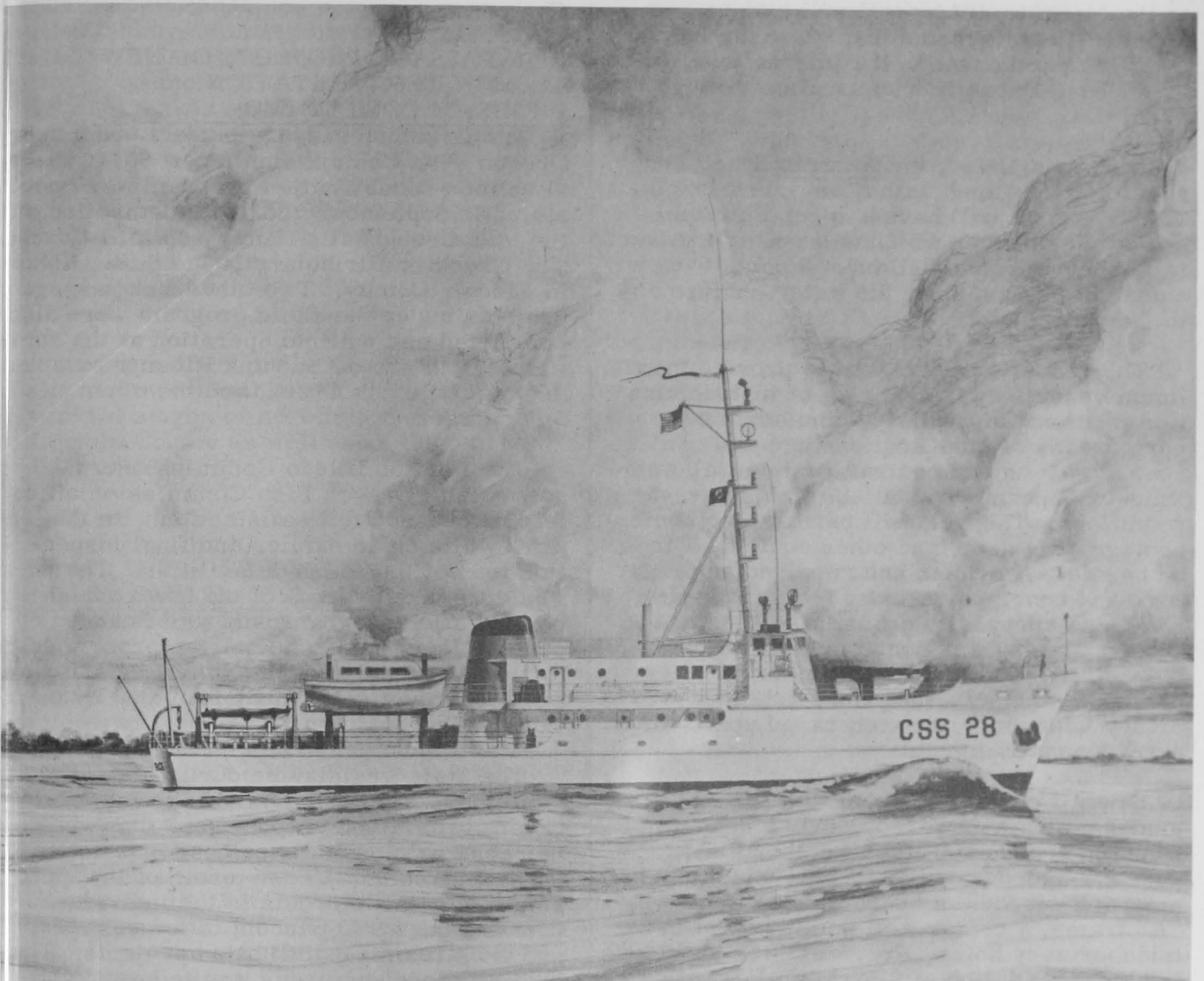


Oceanography

NEW COAST AND GEODETIC SURVEY RESEARCH VESSELS "PEIRCE" AND "WHITING":

The new U. S. Coast and Geodetic Survey research vessels Peirce and Whiting will be used for hydrographic and oceanographic work along the southeastern Atlantic Coast of the United States and in the Gulf of Mexico. The Peirce was launched October 15, 1962, at Point Pleasant, W. Va., on the Ohio River. The Whiting, an identical sistership, was expected to be launched in November 1962. The combined cost of the two vessels, which were built under one contract, amounted to \$3,733,040. The new vessels will replace older vessels of the Coast and Geodetic Survey.

The Pierce measures 163 feet in length and has a displacement weight of 760 tons. It is equipped with controllable pitch propellers and two 800 ship hp. Diesel engines producing a total of 1,600 hp. Cruising speed is 12.5 knots. It has the most modern electronic and navigational equipment. The Peirce has an oceanographic laboratory as well as depth recorders, hydrographic winches, and other survey tools. The ship's reinforced steel hull will permit her use in Alaska and in the ice-covered waters of the Arctic if necessary. It will have a complement of 6 officers and 30 crewmen.



Artist's drawing of the Peirce, one of the new Coast and Geodetic Survey vessels.

Following the launching in West Virginia, the Peirce cruised down the Ohio and Mississippi Rivers for trials and commissioning in the Gulf of Mexico. The Peirce and her sistership will be assigned to Atlantic Coast ports near their working grounds thus saving many valuable hours in transit.

The Peirce was named to commemorate Charles Sanders Peirce, the noted 19th century American scientist and logician, and an employee of the Coast and Geodetic Survey between 1860 and 1890. His research and development in pendulums, map projections, and gravity made a lasting contribution to the Bureau's scientific standing. The Peirce will replace the Coast and Geodetic Survey

vessel Gilbert, a 77-foot research vessel built in 1930 which is now in a poor state of repair.

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NEW OCEANOGRAPHIC RESEARCH VESSEL NEAR COMPLETION:

A new oceanographic research vessel, the Atlantis II, was launched at the Maryland Shipbuilding and Drydock Company in Baltimore, Md., on September 8, 1962. The vessel, which was designed and built for the Woods Hole Oceanographic Institute with funds from the National Science Foundation will be completed about the end of 1962 at a cost of around \$3.9 million. After delivery

to the Institute, the vessel will make a few short trial cruises and then go to the Indian Ocean to participate in the International Indian Ocean Expedition which runs through 1964.

When completed, the Atlantis II will be about 210 feet long, with a waterline length of 195 feet. It will have a special bow observation chamber which will accommodate two observers, and will have 6 ports to view ahead, down, and up to the water surface at the stern.

The vessel was designed to provide maximum versatility in changing of instrumentation from one discipline to another, and to permit ease of modifications necessary at sea. It will have a central, or internal, well which will permit operations in higher sea conditions. The well will permit electronic, photographic gear, and other equipment to be handled, serviced, and repaired on the wire and under cover away from ice, rain, wind, and spray. By changing or closing the bottom opening, the space in the center of the well can be used for a number of other purposes such as a fuel tank, fish tank, wet or dry laboratory, or even cargo space for extra heavy equipment.

Scientific handling gear of the vessel includes a steam-powered trawl or deep-sea winch, a towed instrument or thermistor winch, 2 hydrographic winches, 2 bathythermograph winches, a hydraulically-actuated "A" frame, a center well hoist, and an interlaboratory hoist. Provision was also made for the installation of 2 portable laboratories, 1 on the main deck and the other on the upper deck of the vessel.

The vessel is designed to do effective all-weather oceanographic research work ranging from fringe ice areas to the tropics, and will be able to handle more than one scientific discipline on a given cruise. All living quarters, public rooms, laboratories, and other work facilities will be air conditioned. It will carry a complement of 25 scientists and a crew of 28, including officers.

The new research vessel was not built to replace the present Atlantis (I), according to the June 1962 issue of Oceanus published by the Woods Hole Oceanographic Institute, which stated that the two ships will be operating at the same time.

Oregon

FISH PASSAGE PROJECTS OF NEW SALMON REHABILITATION PROGRAM COMPLETED:

The first fish passage project under the Oregon Fish Commission's new 60/40 coastal salmon rehabilitation program was completed in September 1962 with dedication of the Mill Creek Falls fishway on Mill Creek. The Creek is a tributary of the Siletz River in Lincoln County. Two other fish passage projects under the same program were also completed and put into operation at the same time. Both are on Yaquina River tributaries, one on Little Elk Creek, and the other on Sloop Creek.

The Port of Toledo Commissioners, together with Oregon Fish Commission officials, expressed full satisfaction with the work while on an earlier and final inspection tour of the passage facilities. The work was done under terms of the new cost-share conservation program, and was financed 60 percent from funds specially appropriated by the last session of the State Legislature and 40 percent from funds provided by the Port of Toledo.

The State Legislature during its 1960 session, made \$120,000 available to the Fish Commission to be used in work that would increase salmon and steelhead production in coastal streams. Under terms of the appropriation, local interests in the individual counties put up 40 percent of the cost of approved stream rehabilitation projects. The share by local interests was to be in cash, or in equipment rental, labor, or materials.

The Mill Creek project involved blasting a fish ladder out of bedrock where a nine-foot waterfall had blocked passage of anadromous fish during most water stages. A concrete retaining wall was also constructed to prevent flooding out of the fishway during high water. Some silver salmon and a limited number of chinooks had been able to negotiate the falls during especially favorable water flows, but production above the falls had been limited and sporadic. Ten miles of spawning and rearing area for both salmon and steelhead has been made permanently available by the ladder.

On Little Elk Creek, rock quarry operations some years ago created falls that were impassable to anadromous fish. The Fish

Commission's laddering project has made available above this stream block an area of gravel sufficient to accommodate over 300 spawning salmon. The new Sloop Creek facility also makes available to salmon and steelhead a sizable reach of prime spawning gravel. The work at both Mill Creek and Sloop Creek was done by a Toledo contractor, while the Little Elk Creek job was handled by a local crew with Fish Commission equipment and supervision. The cost of the three projects totaled \$8,250, with the Port of Toledo providing \$3,300.

Numerous other projects under the 60/40 coastal salmon rehabilitation program are in various stages of negotiation and planning in Lincoln County as well as in the other coastal counties.

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OBSTACLE TO OCEANBOUND MIGRANT SALMON REMOVED:

The stranding of downstream migrant salmon and steelhead in river bank potholes on the east bank of the Willamette River in Oregon City's Clackamette Park, has long been an annual occurrence until recently. In September 1962, an engineering crew of the Oregon Fish Commission worked with a bulldozer and dump trucks to remove the virtual death-trap for these migrant fish.

Young steelhead and salmon were stranded each year in the Clackamette River bank potholes, especially during the late winter and spring months when downstream migration is in full swing. The frequent wide fluctuations of water level along the Willamette River added even more to the problem. Depletion of oxygen in the potholes, or actual drying up of the pools was responsible for heavy mortalities of the oceanbound migrant fish.

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PUBLIC HEARING HELD ON DUNGENESS CRAB FISHING REGULATIONS:

A public hearing on regulations governing Oregon's multimillion dollar crab fishery was held before the Oregon Fish Commission in Portland on October 10, 1962. The hearing was the result of widespread interest in the State's crab fishing regulations for the coming season. Findings of the Fish Commission's crab biological investigations were presented at the hearing.

Crab fishing regulations have for some time been a matter of deep concern to the fisheries agencies in California and Washington, as well as in Oregon. The coastwide problems associated with the management of the highly-important commercial dungeness crab fishery have been a major part of activities of the Pacific Marine Fisheries Commission, a coordination agency supported by funds provided by the fisheries agencies of Oregon, Washington, and California.

Oregon's State Fisheries Director said the purpose of the hearing was to allow the Fish Commission to evaluate all the information available as a basis for formulating the best possible regulations. The hearing was also considered timely in view of the Pacific Marine Fisheries Commission's annual meeting which was to be held in Seattle later in October.

In emphasizing the importance of Oregon's commercial crab fishery, the Director pointed out that Oregon crab landings during the past 8 years have averaged 9 million pounds a season with an ex-vessel value of nearly \$1.3 million a year. He added that the dollar value of Oregon's crab fishery is even greater when considering the investment in processing equipment and salaries to people in other segments of the crab industry.



Oysters

LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING AS OF SEPTEMBER 19, 1962:

Setting of Oysters: Setting of oysters continued at all stations as of September 19, 1962. It was the heaviest, however, at two stations in the Bridgeport area. This second wave of setting, which began about August 17 and was still going on as of September 19, although at a reduced rate, added a sufficient number of spat to those of the first wave to record 1962 as a year of good oyster setting in Long Island Sound, reports the U.S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn.

At least one station in each major area caught a set of commercial importance. In New Haven an especially heavy set occurred at one station and in Bridgeport at two stations. If all spat survived, the station at New Haven would show approximately 45 young oysters on the inside surface of each cultch shell, while at one of the two stations at Bridgeport, this number would be approximately 54 per shell. Unfortunately, the majority of the young oysters of the Bridgeport area died within the first few weeks after setting and, regardless of the heavy initial set, many shells examined in September were blank.

This mortality is due to several causes, some of which we know and understand, such as predation by small drills,

recently-set flat worms (*Stylochis*, the great killer of young oysters), and to some extent, by starfish. Other causes, however, are still obscure and undetermined but we, tentatively, assume that they are bacterial or virus diseases or parasites. A close observation is being kept on the condition of the spat and anything suspicious in their appearance or behavior is investigated by our microbiologist. As has been reported in some of our scientific publications, we have isolated a number of bacteria that kill larvae and young spat, and we think that similar organisms may be involved in killing larvae and spat under natural conditions.

Contrary to the heavy mortality in the Bridgeport area, the oyster set of the first and second waves in New Haven Harbor was doing remarkably well. Examination of the material collected showed very rapid growth of young oysters. As determined last year, on the basis of the new experiment conducted this summer together with F. Mansfield & Sons Oyster Co., in New Haven Harbor, there is strong evidence that Polystream-treated shells collected more oyster spat than untreated shells and that the latter were considerably more fouled with different organisms, especially *Crepidula*, than the treated ones. Although the odor of Polystream can still be detected on the treated shells, the growth of young oysters on them seems to be better than on the untreated shells.

Perhaps treating of shells with different chemicals will prevent such undetermined mortalities as are occurring now in the Bridgeport area. This will have to be ascertained by a series of well-planned, critical experiments. Nevertheless, as the intensity of this year's setting has demonstrated, there is nothing wrong with Connecticut oyster-producing waters and, therefore, the industry should not only survive but, by using modern methods (including artificial methods of propagation, new methods to control predators and competitors, and chemical treatment of cultch) should become even more productive than in the past.

Setting of Starfish: While setting of oysters was heavier during the second part of the summer, setting of starfish was lighter. After about August 13 there was virtually no setting in the Milford and, especially, New Haven areas, although in Bridgeport recently-set starfish could occasionally be found on the collectors. The same as last year, two stations in the Bridgeport area led in the number of starfish set for the season, while one station (located in deep water in Milford) was also an area of relatively heavy setting.

Since this year the majority of the starfish set early in the season, largely between July 1 and 15, these predators have already grown to a comparatively large size and are, therefore, capable of considerable destruction. Because, in addition to this increase in population, the numbers of adult starfish existing prior to the spawning season were very large, the oyster industry of Connecticut is still facing the difficult problem of controlling these extremely numerous enemies.

Progress in Development of Chemical Control of Shellfish Enemies: Last week we met with representatives of the Food and Drug Administration to discuss various aspects of our method for control of shellfish enemies and ascertain what steps are needed to clear this method for the industry's use. Representatives of Food and Drug are apparently satisfied with our methods for analysis of chlorinated benzenes and Sevin, the substances that constitute our formula. Moreover, on the basis of our analyses of the selected samples we were able to show the experts that no chemical residue is found in meats of clams and oysters collected (120 days after treatment) from lots which were treated with 3 to 5 yards of sand-Polystream-Sevin mixture. Many samples collected from the same lots after periods shorter than 120 days were also free of any traces of the chemicals.

Regardless of the extremely gratifying results obtained so far, it has been decided that we will analyze an additional series of samples before forming final conclusions. This series of analyses is now in progress and we hope that within several months we shall finally be able to offer the industry an extremely effective and commercially-feasible method for

control of drills and other enemies. (Bulletin No. 5, September 19, 1962.)

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MARYLAND OBSERVATIONS ON SPAWNING AND SETTING AS OF SEPTEMBER 18, 1962:

Late summer weather remained dry with salinities above normal. Temperatures were a little below the seasonal average and resulted in better mixing of the upper layers of water so that oxygen poor or "stagnant" water conditions generally were confined to greater depths than usual for the time of year. No marked cooling of the water had occurred and water temperatures for mid-September were near the normal of about 75° F. for September 17 at Solomons, according to the September 18 "Special Oyster Bulletin" of the Maryland State Chesapeake Biological Laboratory, Solomons.

The fungus *Dermocystidium* continued to infect oysters to a greater extent than usual in areas from Solomons down through the saltier waters of the bay area. Peak losses from the parasite occur during late summer and through September. The extent of the losses had not yet been measured but may be high among crowded and old oysters in high salinity areas. Recovery occurs when the water cools.

This year's set of spat do not become infected by the parasite even in areas where infestation by fungus is heavy. *Dermocystidium* losses do not occur until after the first year of the oyster's life and for this reason young spat can be safely moved without danger of losses from this cause.

No further increase in the extent of the light MSX infection of Maryland oysters had been recorded this season.

Oyster Setting: Oysters continued to set at a favorable rate and at most stations a substantial spat fall had been received on test shells.

Reports from various sources indicate that good sets were common on commercially-planted shell although official counts will not be made until setting has ended and spat are large enough to be easily recognized by the naked eye.

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POOR CROP OF JAMES RIVER SEED OYSTERS PREDICTED AFTER SETTING FAILURE:

Oyster spat have failed to set this year in the James River seed beds in Virginia. This indicates a failure in the oyster reproduction cycle in the James River because young oysters or spat set (attach themselves to dead shell) soon after hatching. The Virginia Institute of Marine Science examined many oyster seed beds in the James River. Only Wreck Shoal showed a few spat. Bags and strings of test shells on Wreck Shoal showed an average of less than one-half spat per shell for the usually important period from mid-August to mid-September. The setting season ends about the first of October. The usual count for a setting season is from 5 to 15 spat per shell.

In 1961, oyster setting in the James River was light so the failure this year is a crisis for James River public oyster beds. James River seed stock normally has at least three year-classes of oysters--current year spat, yearling, and 2-year-old oysters. But in the coming 1962/63 season only 2-year-olds and a few yearlings will be available as seed. In the following season the shortage will be even more apparent.

The most valuable seed oysters are spats and yearlings with a high count per bushel. The value of this year's seed stock will therefore be reduced and yields per bushel planted will be lower. The full advantage of younger year-classes could have been obtained in the low-salinity areas where most of this year's crop will be planted. In low-salinity areas the drills that prey on young oysters are absent. Only low-salinity areas are in production now because of the MSX disease or blight.

The hooked mussel, a fouling organism which seriously reduces the quality of seed oysters, is dying in some areas of the seed beds, although they may continue to be a problem.

The causes of spat failure in James River cannot be clearly defined. Two factors may be involved. First, oysters in the extensive planting areas of Hampton Roads, Va., which may contribute spawn to the James River seed area, are now decimated by the MSX epidemic. Second, the very wet years, 1960-61, may have contributed to the very poor oysters which were typical of James River in the spring of 1962. This may have had an effect on spawning. There is no reason to suspect that weather conditions in 1962 were unfavorable to reproduction and larval survival since moderate sets were obtained in other areas of Chesapeake Bay where spat falls are often failures. For example, a set occurred in September 1962 on Hampton Bar below the seed area.

The Virginia Institute of Marine Science, Gloucester Point, Va., attempts to record setting success each year in as many areas of Virginia as possible. But there are so many creeks and rivers in Virginia that all cannot be covered by the Institute. The Institute would appreciate reports from oystermen of good sets for 1962 in any small creeks, particularly in the James River and Hampton Roads area. (Virginia Institute of Marine Science, Gloucester Point, Va., September 24, 1962.)



Pollution

NEW LABORATORY TO STUDY SALT-WATER QUALITY STANDARDS:

A new laboratory (costing \$1.7 million) for salt-water pollution research is to be established in Kingston, R. I., announced the U. S. Public Health Service on October 1, 1962. Water quality standards for all marine water uses, including aquatic life, wildlife, industrial, agricultural, recreational, and

other uses, are to be developed by the U. S. Public Health Service at the new laboratory.

The Kingston Laboratory will conduct scientific studies on measures to be taken to protect the public from infectious biological and other toxic pollutants. It will also investigate the effects of pollution on aquatic life, establish criteria for radioactive wastes and other pollutants, and determine the effects of distribution of pollutants by water currents in bays and harbors.

The full laboratory staff will comprise about 100 persons, of whom about 75 will be scientists in the fields of marine and estuarine biology, microbiology, chemistry, physics, radiology, oceanography, and engineering.

Aside from its location on Narragansett Bay, Kingston was chosen as the site for the new laboratory largely because of scientific activities in the Marine Services School of the University of Rhode Island there, the Northeast Shellfish Sanitation Laboratory, and a new University Oceanographic Laboratory to be established in the area later.

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NEW LABORATORY TO STUDY FRESH-WATER QUALITY STANDARDS:

A fresh-water quality standards laboratory is to be established at Duluth, Minn., according to an announcement by the U. S. Public Health Service on October 8, 1962. The total cost of the project, including construction and equipment, will be \$2.3 million. Water quality standards for all fresh water uses, including domestic water supply, aquatic life, wildlife, industrial, agricultural, and other uses, are to be developed at the new laboratory, which will be operated by the U. S. Public Health Service.

The new laboratory will conduct scientific studies of measures to be taken to protect the public from infectious biological and other toxic pollutants. It will also investigate the effects of pollution on aquatic life, and establish criteria for radioactive wastes and other pollutants. In carrying out its research program, the laboratory aims to provide reliable methods for detecting and measuring the effects of pollutants on water quality, particularly those resulting from new technologies for which such methods do not now exist.

The new laboratory will employ about 130 persons, some 90 of whom will be scientists, chemists, microbiologists, physicists, biologists, engineers, and other laboratory personnel.

The location of the laboratory at Duluth, Minn., on Lake Superior, is in an area surrounded by clean fresh-water streams which are well suited to the development of the program's basic procedures. The location has the added advantage of being close to the University of Minnesota (Duluth Campus), which has been conducting extensive studies of the biology of streams and lakes. It is also near the Oliver Research Laboratory of the U. S. Steel Corporation, and Wisconsin State College in Superior, Wis.

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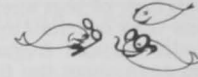
SCIENTIFIC VESSEL CONDUCTS WATER POLLUTION CONTROL RESEARCH IN LAKE MICHIGAN:

The most fully-equipped scientific vessel, the Maurice F. Fitzgerald, used exclusively for water pollution control research is now operating on Lake Michigan, according to an October 9, 1962, announcement by the U. S. Public Health Service. The vessel will operate around-the-clock to determine sources of water pollution, mainly in the lower area of Lake Michigan for a period of four months. It is under contract from an oceanographic firm in Annapolis, Md.

The scientific work the vessel will do is part of a series of comprehensive water pollution control programs that the Public Service's Division of Water Supply and Pollution Control is conducting in the Great Lakes and Illinois Waterways, and in the basins of the Columbia River, Chesapeake Bay-Susquehanna River, Delaware River, and upper Ohio and Columbia Rivers. Comprehensive planning to provide systematic, orderly water-quality management in all of the country's river basins is expected to be completed by 1970 which has been set as the completion date goal for the program. The antipollution study of all the Great Lakes will take about seven years.

The Maurice F. Fitzgerald is 83 feet long, 16 feet wide, and can berth a crew of 6, and also accommodate a scientific team of 6 persons with all necessary instruments. The vessel will be cruising constantly, weather permitting, to locate and fix water pollution

control sampling stations. Many analyses will be made in the vessel's special laboratories, such as biological, bacteriological, and chemical determinations of lake waters, as well as biological analyses of the lake bottom. It will also participate in the project's study of Lake Michigan's water currents.



Refrigerated Sea Water

REFRIGERATED SEA WATER TANK INSTALLED IN OCEAN PERCH FISHING VESSEL:

An experimental refrigerated-sea-water tank designed to hold approximately 3,000 pounds of fish was recently installed aboard a commercial fishing vessel (Judith Lee Rose) engaged in the ocean perch fishery out of Gloucester, Mass. The tank is equipped with a compressor, circulating pump, and a thermocouple wire lining in the fish hold located at the stern section of the vessel. The tank was installed as an experiment under a research program on refrigerated sea water conducted by the U. S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester.

Data on operation of the tank and quality of the fish are to be collected by the Bureau's technologists during several of the vessel's trips, and then evaluated to determine whether fish stored in refrigerated sea water are of better quality than ice-stored fish. If the experiment on the ocean perch vessel proves successful, efforts are to be made for the permanent installation of such tanks in this, and other fishing vessels.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, SEPTEMBER 1962:



In a fishery plant in Bayou La Batre, Ala., cooked peeled and deveined shrimp are held in pans stacked in a rack.

United States Shrimp Supply Indicators, September 1962

Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs., Heads-Off)					
Total Landings, So. Atl. and Gulf States:					
November	-	9,996	14,454	12,412	12,416
October	-	12,696	21,690	19,601	16,462
September	12,700	9,691	18,832	18,331	15,847
January-August ..	56,241	52,474	78,962	71,599	63,728
January-December .	-	91,395	141,035	130,660	116,552
Quantity canned, Gulf States 1/:					
November	-	2,215	1,614	2,312	3,424
October	-	2,307	2,567	2,531	3,489
September	1,700	785	2,236	2,108	2,825
January-August ..	13,064	9,653	21,200	16,450	14,723
January-December .	-	15,763	28,594	24,679	26,404
Frozen inventories (as of end of each mo.) 2/:					
November 30	-	20,668	37,264	37,334	30,211
October 31	-	17,811	31,209	33,057	24,620
September 30	4/	13,361	24,492	26,119	18,079
August 31	12,754	12,728	20,171	23,780	15,274
July 31	13,677	14,849	17,397	22,352	12,351
June 30	13,904	19,416	15,338	19,283	10,664
January 31	21,328	37,842	34,332	30,858	17,963
Imports 3/:					
November	-	14,852	13,516	10,269	10,617
October	-	16,813	14,211	15,340	11,463
September	4/	8,629	8,190	7,541	7,620
August	7,381	6,743	6,406	5,107	6,628
January-July	72,266	63,803	58,684	57,687	38,618
January-December .	-	126,268	113,418	106,555	85,394

1/Founds of headless shrimp determined by multiplying the number of standard cases by 33.
 2/Raw headless only; excludes breaded, peeled and deveined, etc.
 3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
 4/Not available.
 Note: Data for 1962 and 1961 are preliminary. September 1962 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



**South Atlantic
 Exploratory Fishery Program**

**ROYAL-RED SHRIMP AND CALICO
 SCALLOP EXPLORATIONS OFF
 FLORIDA'S EAST COAST:**

M/V "Silver Bay" Cruise 41 (August 22-September 8, 1962): To obtain seasonal and geographical coverage of royal-red shrimp (Hymenopenaeus robustus) and the Canaveral or calico scallop (Pecten gibbus) were the objectives of this cruise by the exploratory fishing vessel Silver Bay of the U. S. Bureau of Commercial Fisheries. The vessel operated on the Continental Shelf along the east coast of Florida from Fort Pierce to Jacksonville during the 18-day cruise, and returned to its base at Brunswick, Ga., on September 8, 1962.

A total of 143 stations were completed which included the use of 70-foot flat trawls, 60- and 40-foot 2 seam trawls, 8-foot tumbler dredge, and a 25-foot scallop trawl. The

problem of badly twisted bridles experienced on previous cruises was reduced by attaching the trawls to the back side instead of the back edge of the boards. That procedure increased the spreading force of the boards and also maintained a greater lateral spread of the bridles.

On the royal-red shrimp grounds, 36 exploratory drags were made with catches ranging up to 400 pounds of 36-40 shrimp (heads-on) during a 3-hour drag. Depths ranged from 100 to 210 fathoms. Exceptionally strong tides of up to 5 knots, and low bottom temperature (47° F.) at times prevailed. These were possibly caused by a passing tropical disturbance which may have been responsible for the light catches.

During the scallop exploration, a total of 95 stations were completed with a 25-foot scallop trawl and an 8-foot tumbler dredge fitted with a 2½ inch nylon liner.

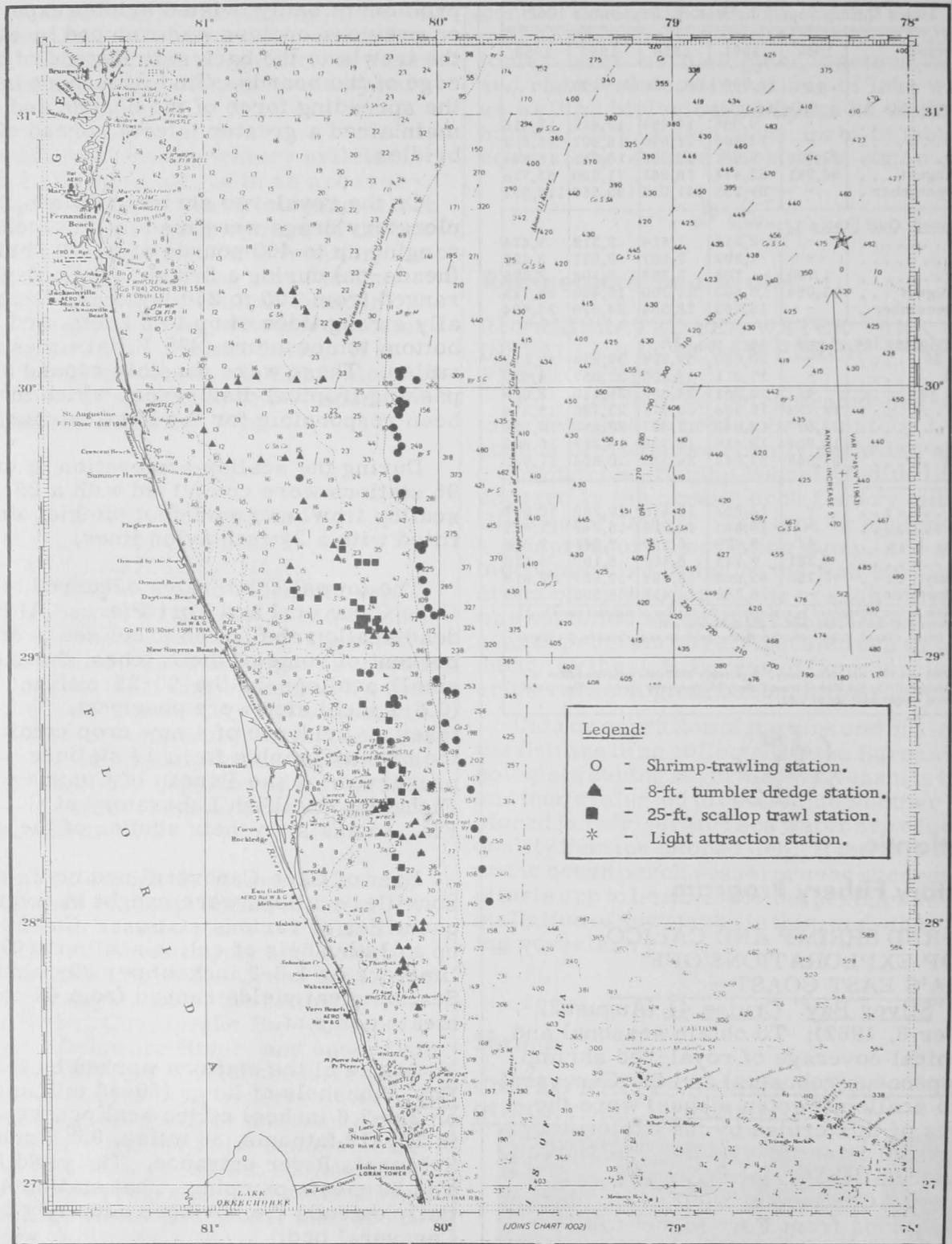
The lowest catch rates occurred between Cape Canaveral and Fort Pierce. Although dead scallop shells compromised over 90 percent of some of the catches, thousands of small scallops in the 20-25 millimeter (0.8-1 inch) size were observed. This was taken as evidence of a new crop coming into the area. Samples from 14 stations were preserved for the Bureau of Commercial Fisheries Shellfish Laboratory at Gulf Breeze, Fla., to assist in their studies of the species.

East of Cape Canaveral and north to Jacksonville, scallops were caught in commercial quantities at various stations. Catches ranged up to 14 bushels of calico scallops (45-50 millimeters or 1.8-2 inches) per 30-minute drag. Scallop meat yields ranged from 91 to 61 meats per pint.

At one of the stations worked by the Silver Bay, 8 bushels of large (60-65 millimeters or 2.4-2.6 inches) calico scallops were caught in 17½-19 fathoms, 36 miles, 95° (true), off St. John's River entrance. The yield there was 79 meats per pint. That station substantially extends the northern boundary of the Canaveral bed.

Fresh shell stock from the cruise was preserved and shipped to a Chicago firm who is working on the development of a shucking machine for calico scallops.

Scallop specimens were collected during operations at the trawling and dredging sta-



M/V Silver Bay Cruise 41 (Aug. 22 to Sept. 8, 1962).

tions and preserved by the Bureau of Commercial Fisheries Biological Laboratory at Brunswick for future study.

Note: See Commercial Fisheries Review, October 1962 p. 30.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JULY-SEPTEMBER 1962:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for July-September 1962:

Oyster Research: Most of the Laboratories' efforts during the third quarter of 1962 were directed toward helping the State's Division of Commercial Fisheries survey oyster bottoms for leases. In addition, some data were collected on the value of solite as a substitute cultch.

Shrimp Research: Regular station plankton tows made during the quarter showed that recruitment of postlarval white shrimp was largely over by late August. The postlarvae had begun entering coastal sounds and rivers in late May and reached peak abundance during the last week in June. The postlarvae were slightly more plentiful this year than in 1961, indicating that the commercial catch of white shrimp may be somewhat of an improvement over last year.

Brown shrimp were much more abundant during July-September this year as compared with 1961. Experimental plankton tows earlier this year had indicated that the postlarvae were over five times as numerous in sounds and rivers during 1962, and this has been reflected in the commercial catch this season, which has been greatly increased over last year's. Experimental trawling during the quarter revealed that brown shrimp were three times more plentiful at regular survey stations, located throughout the coastal waters of the State, than during July-September 1961.

Catch-per-unit-of-effort data from experimental trawl hauls also indicated that croakers increased in abundance in 1962. During the quarter alone, croakers were approximately 50 percent more plentiful than during the same period of last year. Catch data for spot, on the other hand,

showed little difference in the abundance of those fish during the two periods.

White shrimp were slightly less abundant in experimental trawl catches during July-September 1962 as compared with that quarter of 1961, but the differences in abundance is hardly significant and this condition may be reversed during the next quarter.

A detailed study of croakers is being carried on this year and was continued throughout the quarter. The aims of the study are to determine the abundance, growth rates, and distribution of croakers in South Carolina waters. It is hoped that the study may also yield information concerning the relative importance of the State as a nursery area for those fish. Although croakers never reach a large size, the young are found in tremendous quantities in coastal sounds and rivers, and it is thought that perhaps those fish migrate along the coast and enter the commercial catch of other states.

Pond Cultivation: Several pond-cultivation experiments were begun in July 1962, and were still under way at the end of the quarter. Two one-acre ponds are used to compare the advantages or disadvantages of natural flooding as a means of stocking to stocking by hand. Both of the ponds were drained in late June, cleaned out, and allowed to refill with water from the nearby creek. No effort was made to screen out fish, crabs, etc. in the pond which was to be stocked naturally by flooding, and the gates of the pond were allowed to remain open for approximately one month, during which time postlarval white shrimp were most abundant in nearby waters. This pond was then closed and treated with 1.5 parts per million of rotenone to remove predatory fishes.

The other pond in the experiment was screened after draining and allowed to refill, then was closed off. The pond was then stocked with approximately 8,000 juvenile shrimp which were collected by means of cast nets from nearby creeks. The pond was also treated with rotenone to remove fish. Crab pots were used in both ponds involved in the experiment to remove crabs and scrap fish. Chopped crabs have been placed in the ponds several times each week as shrimp forage. These experiments were to be ended sometime in October or November, at which time both ponds are to be drained and harvested.

Two one-quarter-acre ponds were stocked with fingerling mullet in July 1962. This experiment is being conducted to determine the productivity and growth rates of mullet in salt-water ponds. A small one-tenth-acre pond has been stocked with postlarval shrimp from plankton tows in an effort to determine the feasibility of this method of stocking shrimp ponds.

Note: See Commercial Fisheries Review, September 1962 p. 40.



Standards

VOLUNTARY STANDARDS AND INSPECTION PROGRAM FOR FISHERY PRODUCTS:

Two new fishery products standards, one for frozen fried scallops and the other for flounder and sole fillets, were developed by the U. S. Bureau of Commercial Fisheries during the past year. This brings the total of USDI (United States Department of the Interior) quality standards for fishery products now available for use by the fishing industry to 12. Technical assistance was also provided by the Bureau in the development of a Federal specification for frozen raw breaded shrimp and three fishery product specifications for use by State Purchasing Officials. Standards and specifications for fishery products are tools by which the industry and other interested parties can measure product quality. The consumer therefore benefits because such standards and specifications tend to raise the quality level of the product.

A significant change in the Bureau's Inspection and Certification Service regulations became effective June 1, 1962. Under the new regulations, all fees for continuous inspection services are based on a uniform rate per hour. The new regulations also provide for other incidental changes, including a clarification of fees for lot inspection services. The changes will achieve a higher degree of uniformity in the assessment of fees and methods of charging, eliminate variations between processing plants, and provide more flexibility to the Bureau in operating the program.

Over 160 million pounds of various fishery products were produced under continuous inspection and certified by the Bureau during 1961. An additional 25 million pounds

of fishery products were sampled, examined, and certified on a lot basis.

On a national basis, the Bureau of Commercial Fisheries now provides continuous or lot inspection services in 17 different states requiring a work force of 52 trained supervisors and inspectors.



Transportation

SELECTED OCEAN FREIGHT RATES FOR CERTAIN FISHERY PRODUCTS:

Table 1 - Ocean Freight Rates for Selected Fishery Products from Certain African Ports to the United States

Shipping Ports by Countries	Canned Spiny Lobsters	Canned Fish Other than Spiny Lobsters	Products		
			Frozen Spiny Lobster Tails	Frozen Fish in Bulk	Dried Salt Fish
..... (US\$/Freight Ton)					
South-West Africa:					
Walvis Bay					
Luderitz	36.00	24.25	76.00	-	-
So. Africa Republic:					
Cape Town					
Port Elizabeth					
East London					
Durban	32.00	24.25	70.00	79.00W	51.25
Mozambique:					
Lourenco Marques	32.00	24.25	70.00	79.00W	51.25
Beira	35.00	27.25	73.00	-	-
Kenya:					
Mombasa	35.50	27.75	73.50	-	-
Tanganyika:					
Tanga					
Dar-Es-Salaam	35.50	27.75	73.50	-	-
Zanzibar	35.50	27.75	73.50	-	-
Malagasy:					
Tamatave					
Diego-Suarez					
Nossi-Be					
Majunga					
Fort-Dauphin	37.50	34.00	-	-	-
Mauritius:					
Port Louis	37.50	34.00	-	-	-
Reunion:					
Pointe De Galets	37.50	34.00	-	-	-

Note: Rates are based on freight tons of weight or measurement (2,240 pounds or 40 cubic feet of space), whichever produces the greatest revenue, except that whenever "W" is shown after a rate, the rates apply per ton weight.

Table 2 - Ocean Freight Rates for Canned Sardines (Pilchards) and Canned Mackerel from Cape Town or Walvis Bay, South Africa 1/, to Selected Far Eastern and South American Ports

Ports of Destination by Countries	Ocean Freight Rate
	US\$/40 Cubic Feet ^{2/}
Philippine Islands:	
Manila	18.33
New Zealand:	
Auckland	
Wellington	35.00
Ecuador:	
Guayaquil	3/50.00

1/ The South African Fish Cannery Association quotes all prices c.i.f. Cape Town. If the actual freight rate from Walvis Bay varies from the Cape Town rate, the Walvis Bay cannery absorb the difference.
2/ Per ton of 40 cubic feet.
3/ Approximate rate.
(United States Consulate, Cape Town, report of September 21, 1962.)



Tuna

PRODUCTION AND MARKETING PROBLEMS DISCUSSED AT SECOND JAPAN-UNITED STATES CONFERENCE:

The second Japan-United States tuna conference took place October 9-13, 1962, in

Tokyo for the purpose of exchanging views and information on various problems concerning production and marketing of tuna and tuna products which have occurred since 1959 to date.

Conference established two committees in which experts of the two delegations took part.

In Committee 1, the current trend in tuna production and forecast for tuna resources, expanded utilization of tuna fisheries, and measures for improving exchange of information were discussed. With respect to tuna resources, biological and oceanographic information was given and information concerning research programs and administrative measures was freely exchanged. There was an exchange of information on various studies related to expanding uses of tuna.

In Committee 2, the current trends and outlook for tuna market and tuna trade problems were discussed. With respect to tuna market, the current trend was reviewed and consumption, by types of product, by region, and by consumer characteristics was discussed. Information on government programs to develop demand for tuna was exchanged and review of present tuna trade situation was made.

The two committees submitted their reports to the plenary session which approved them on final day of conference.

The two delegations agreed that the conference was a success and very helpful to governments and tuna industries of both countries by providing an opportunity for frank exchange of views and information.

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PROPOSED JAPANESE-UNITED STATES TUNA VENTURE IN CALIFORNIA:

Reportedly a California tuna vessel association has proposed a joint Japanese-American tuna venture in San Diego, Calif. But prospects for the venture do not appear to be hopeful, reports the Japanese periodical Shin Suisan Shimbun Sokuho of October 4, 1962. This opinion is based on the fact that there have been cases in the past where Japanese participation in this type of venture involving cold-storage plants have ended in failure.

The proposed tuna venture reportedly involves a capital investment of US\$2 million, to be raised equally between the Japanese and United States participants, and is said to include construction of a cold-storage plant in San Diego.

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BUREAU OF COMMERCIAL FISHERIES TUNA FORECASTING AND BEHAVIOR PROGRAMS:

Tuna Forecasting Program: A tuna-tagging and blood-sampling project was completed by the chartered tuna seiner West Point when she returned to San Diego on August 23, 1962. The vessel was chartered by the U. S. Bureau of Commercial Fisheries San Diego Biological Laboratory for a 30-day cruise under this program. The latter part of the trip was devoted to joint bluefin tagging operations with the California Department of Fish and Game. A total of 960 bluefin were tagged in the Guadalupe and San Clemente Island area.

In addition to the tagging project, blood samples were taken from 200 bluefin for type analysis in a cooperative program with the Bureau's Biological Laboratory at Honolulu, Hawaii.

In order to determine the feasibility of spotting albacore and bluefin tuna schools from naval aircraft, three flights were made in P2V-type aircraft. The flights were also part of a survey, under this program, to determine the possibilities of charting, from aircraft, specific oceanographic features such as water color. Additional flights were scheduled in September as a continuation of the tuna spotting and oceanographic investigations.

Tuna Behavior Program: Studies on tuna behavior off Socorro Island and Cape San Lucas were completed by the chartered vessel Red Rooster on August 13, 1962. The vessel was chartered by the Bureau's San Diego Biological Laboratory under the Tuna Behavior Program. The Red Rooster worked jointly with both the West Point and the spotting aircraft during the cruise.



U. S. Fishing Vessels

FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, JULY 1-SEPTEMBER 30, 1962:

From the beginning of the program in 1956 through September 30, 1962, a total of 1,193 loan applications for \$33,490,467 were received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. Of the total, 630 applications (\$14,872,849) have been approved, 413 (\$10,923,399) have been declined or found ineligible, 129 (\$5,738,022) have been withdrawn by applicants before being processed, and 21 (\$318,260) are pending. Of the applications approved, 253 (\$1,617,937) were approved for amounts less than applied for.

The following fishery loans were approved from July 1, 1962, through September 30, 1962:

North and Middle Atlantic Area: Lester R. Savage, Boothbay Harbor, Me., \$5,000; Wild Duck, Inc., Gloucester, Mass., \$47,400; Kaare Gjertsen, Point Pleasant, N. J., \$40,000; Donald A. McClelland, Point Pleasant, N. J., \$24,000.

South Atlantic and Gulf Area: Arthur I. Tormala, Fort Myers, Fla., \$24,000; Edward Crittenden, Orlando, Fla., \$11,732; John Smircich, Freeport, Tex., \$18,691.

California: Byron T. Anderson, Eureka, \$22,000; David L. Rankin, Trinidad, \$3,500.

Pacific Northwest Area: Boat Trinity & Owners, Seattle, Wash., \$23,000; Charles H. Sheridan, South Bellingham, Wash., \$3,215.

Alaska: Charles O. Tubbs, Juneau \$4,000.

Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the third quarter of 1962, commitments to insure mortgages in the amount of \$165,750 on 2 fishing vessels were approved for the Explorer Fishing Corp., New Bedford, Mass. Since the start of this program (June 5, 1960), 12 applications were received for \$1,402,346. Of the total, 11 applications covering 23 vessels have been approved for \$1,485,596. Approval of 3 applications for \$385,000 is pending.

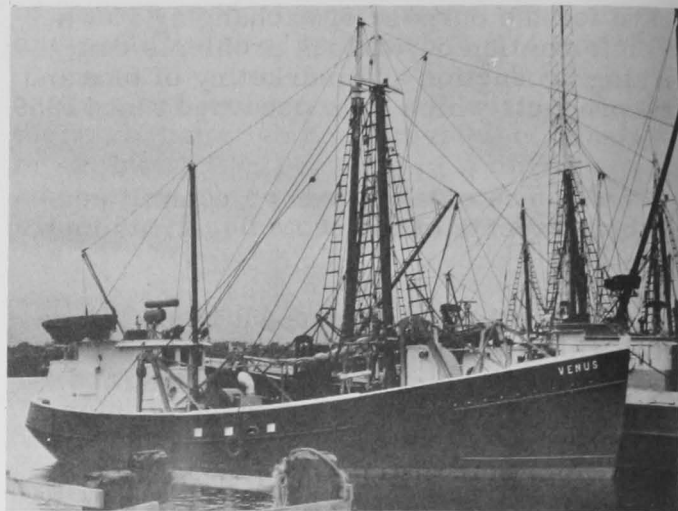
In the Construction Differential Subsidy Program, one application for \$4,000 was received during the third quarter of 1962. No construction differential subsidies were approved during the quarter. The first approval in this program was made in March 1961. The amount approved for subsidy represents one-third the cost of a new vessel. Since the beginning of the program on June 12, 1960, 11 applications were received for \$703,313, of which 5 applications were approved for \$507,646. Approval of 3 applications for \$90,667 under this program is pending. Three applications from ineligible fisheries were disapproved since the start of the program.

Note: See Commercial Fisheries Review, Aug. 1962 p. 40.

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FIRST FISHING VESSEL CONSTRUCTION WITH AID OF GOVERNMENT SUBSIDY:

The first fishing vessel in the nation to be completed with Federal subsidy fishing vessel construction funds under Public Law 86-516 was documented for fishing on October 10, 1962, at New Bedford, Mass. The 73-foot wooden otter trawler Venus was issued official number 289369 by the U. S. Bureau of Customs at New Bedford. The U. S. Bureau of Commercial Fisheries further aided in the construction of the vessel by a mortgage insurance guarantee.



Fishing vessel Venus built with aid of Federal Government fishing vessel construction subsidy funds.

The Venus was built in about six months at the Gamage Shipyard in South Bristol, Maine. The owner of the new trawler, Thomas B. Larsen, New Bedford, planned to commence fishing for groundfish in October.

As of October, four other fishing vessels were under construction with the aid of subsidy funds--two 134-foot steel trawlers were being built for Boston owners, one 95-foot wooden trawler for a New Bedford owner, and one 100-foot wooden trawler for a Rockland, Maine, owner. In addition, 2 applications for subsidy aid were being processed at that time.

Fishing vessel construction has been at a low ebb for several years in New England. The Bureau's Fishing Vessel Construction Subsidy Program should help to revive vessel construction. Already several shipyards from Maine to New Jersey have shown an interest in the program.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JULY 1962:

Imports of fresh, frozen and processed edible fish and shellfish into the United States in July 1962 were up 23.6 percent in quantity and 10.1 percent in value as compared with the previous month. Imports were much greater in July for fish blocks and slabs (increase mostly from Canada, Iceland, and Norway) and frozen tuna (increase mostly from Peru, British West Pacific Islands, Japan, and Ecuador). Imports were also up for groundfish fillets (increase mostly from Canada and Iceland), sea catfish fillets, fresh and frozen salmon (mostly from Canada), canned salmon (increase from Japan), canned tuna in brine other than albacore (mostly from Japan), fresh swordfish (from Canada), canned crab meat (mostly from Japan), canned oysters (mostly from Ja-

pan), and frozen frog legs (mostly from Japan). But imports dropped sharply for canned sardines not in oil (decline mostly from South Africa), and imports were also down for canned sardines in oil, canned albacore tuna in brine (mostly from Japan), flounder fillets (mostly from Canada), frozen swordfish fillets (mostly from Japan), fresh lobsters (from Canada), frozen shrimp, and sea scallops (mostly from Canada).

Compared with the same month in 1961, the imports in July 1962 were up 22.2 percent in quantity and 31.1 percent in value. There was a large increase this July in imports of frozen tuna (increase mostly from Peru, British West Pacific Islands, and Japan) and fish blocks and slabs (increase mostly from Canada, Iceland, and Norway). Other products imported in greater quantity this July were groundfish fillets other than haddock, fresh and frozen salmon, canned tuna in brine other than albacore, fresh swordfish, canned crab meat, canned oysters, frozen spiny lobster tails (increase mostly from Australia and South Africa), frozen shrimp, sea scallops, and frozen frog legs. The increases were partly offset by a sharp drop in imports of canned sardines not in oil (decline mostly from South Africa), as well as a decline in imports of haddock fillets, flounder fillets, sea catfish fillets, frozen swordfish fillets, canned salmon (decline mostly from Japan), canned sardines in oil, and fresh lobsters from Canada.

In the first seven months of 1962, imports were up 15.8 percent in quantity and 24.5 percent in value as compared to the same period in 1961. The greater increase in value was because of the higher prices which prevailed this year for most imported fishery products. Most fishery products were imported in greater quantity this year and imports were up substantially for fish blocks or slabs (increase mostly from Norway), canned salmon (mostly from Canada and Japan), frozen tuna (increase mostly from Japan and Peru), canned tuna (mostly from Japan), canned sardines in oil, frozen shrimp, and sea scallops. Imports were down for the following products: cod fillets, haddock fillets, fresh and frozen salmon (mostly from Canada), canned bonito and yellowtail, canned sardines not in oil, canned oysters (mostly from Japan), and frozen frog legs.

United States exports of processed fish and shellfish in July 1962 were up 40.0 percent in quantity and 25.0 percent in value as compared with July 1961. Exports were up for canned salmon, canned squid (increase mostly to Greece), canned sardines not in oil, and canned mackerel (increase mostly to El Salvador). The table below does not include data on fresh and frozen exports, but exports of frozen shrimp in July 1962 showed a sharp drop due to a decline in the amount exported to Japan. Exports of frozen salmon were down also.

Item	Quantity				Value			
	July		Jan. - July		July		Jan. - July	
	1962	1961	1962	1961	1962	1961	1962	1961
	.. (Millions of Lbs.) (Millions of \$) ..			
Imports:								
Fish & Shellfish:								
Fresh, frozen & processed ^{1/}	104.0	85.1	663.9	573.5	35.0	26.7	226.3	181.8
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	2.1	1.5	19.5	14.4	1.0	0.8	7.9	7.4

^{1/} Includes pastes, sauces, clam chowder and juice, and other specialties.

Compared with the previous month, the exports in July 1962 were down 34.4 percent in quantity, but the value of the exports in July 1962 was equal to the value in the previous month. There was a sharp drop in exports of lower-priced products such as canned squid (principally to Greece and the Philippines) and canned sardines not in oil. But exports were up for canned shrimp (principally to Canada and the United Kingdom), and canned mackerel. Although not covered in the table below, exports were up for frozen salmon (principally to France and Canada), but down for frozen shrimp (decline mostly in exports to Japan).

Processed fish and shellfish exports for the first seven months of 1962 were up 35.4 percent in quantity, but the value was up only 6.8 percent as compared with the same period of 1961. Exports of canned squid (principally to Greece and the Philippines) showed the greatest increase in 1962. Exports were also up for canned mackerel, canned salmon, and canned sardines not in oil. But exports were down for canned shrimp (decline mostly in exports to Canada). Although not covered in the table, exports were up for frozen salmon, and were down for frozen shrimp (decline mostly in exports to Japan) and shucked oysters (principally to Canada).

Source: United States Foreign Trade (Trade by Commodity), Summary Report FT 930-E, July 1962, U. S. Department of Commerce.

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EDIBLE FISHERY PRODUCTS, AUGUST 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in August 1962 were down 1.3 percent in quantity and 7.1 percent in value as compared with the previous month. There were sizable declines in August imports of blocks and slabs (declines mainly from Iceland and Norway), groundfish fillets other than haddock (decline mostly from Canada), flounder fillets (mostly from Canada), canned salmon (mostly from Canada and Japan), canned tuna in brine (decline mostly from Japan and Ecuador), northern lobsters from Canada, frozen spiny lobsters, frozen shrimp, and sea scallops (mostly from Canada). The declines were almost offset by a sharp increase in imports of frozen tuna (increase mainly from Japan and Ecuador), fresh and frozen salmon (mostly from Canada), and canned sardines not in oil (increase mostly from South Africa Republic), as well as more modest increases in imports of halibut and salmon fillets (mostly from Canada), swordfish fillets (mostly from Japan), yellow pike fillets (mostly from Canada), fresh swordfish (mostly from Canada), and canned crab meat (mostly from Japan).

Compared with the same month in 1961, the imports in August 1962 were up 16.6 percent in quantity and 13.2 percent in value. There was a large increase this August in imports of frozen tuna (increase mostly from Peru, Ecuador, and Japan). Imports also increased this August for fish blocks and slabs (increase mostly from Norway, Greenland, and Iceland), cod fillets, halibut and salmon fillets, sea catfish fillets, fresh and frozen salmon, canned sardines not in oil (increase mostly from South Africa Republic), canned oysters (mostly from Japan), northern lobsters, frozen spiny lobsters, frozen shrimp, and frozen frog legs (mostly from Japan). But imports were down for groundfish fillets other than cod fillets, flounder fillets, canned salmon, canned tuna in brine, canned sardines in oil, fresh swordfish, canned crab meat, and sea scallops.

In the first eight months of 1962, imports were up 15.9 percent in quantity and 22.8 percent in value as compared with the same period in 1961. The greater increase in value was because of the higher prices which prevailed this year for most imported fishery products. Most fishery products were imported in greater quantity this year and imports were up substantially for fish blocks or slabs (increase mostly from Nor-

Item	Quantity				Value			
	Aug.		Jan. - Aug.		Aug.		Jan. - Aug.	
	1962	1961	1962	1961	1962	1961	1962	1961
	. (Millions of Lbs.) .				. (Millions of \$) .			
Imports:								
Fish & Shellfish:								
Fresh, frozen & processed ^{1/}	102.7	88.1	766.6	661.6	32.5	28.7	258.8	210.5
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	1.7	1.7	21.2	16.1	0.9	0.9	8.8	8.3

^{1/} Includes pastes, sauces, clam chowder and juice, and other specialties.

way), canned salmon (mostly from Canada and Japan), frozen tuna (increase mostly from Japan and Peru), canned tuna other than albacore (mostly from Japan), canned sardines in oil, frozen shrimp, frozen spiny lobsters, and sea scallops. Imports were down for the following products: cod fillets, had-dock fillets, fresh and frozen salmon (mostly from Canada), canned bonito and yellowtail, canned albacore tuna in brine, canned sardines not in oil, canned oysters (mostly from Japan), and fresh swordfish (mostly from Canada).

The quantity and the value of United States exports of processed fish and shellfish in August 1962 were the same as in August 1961. Exports were up in August 1962 for canned salmon, canned sardines not in oil, and canned squid. But the increase was offset by a decline in exports of canned mackerel and canned shrimp (mostly to Canada and the United Kingdom).

Compared with the previous month, the exports in August 1962 were down 19.0 percent in quantity and 10.0 percent in value. Exports were down for canned mackerel, canned salmon, canned shrimp, and canned squid (decline mostly in shipments to Greece and the Philippines). The decline was partly offset by increased exports of canned sardines not in oil.

Processed fish and shellfish exports for the first eight months of 1962 were up 31.7 percent in quantity, but the value was up only 6.0 percent as compared with the same period of 1961. Exports of canned squid (principally to Greece and the Philippines) showed the greatest increase in 1962. Exports were also up for canned mackerel, canned salmon, and canned sardines not in oil. But exports were down for canned shrimp (decline mostly in exports to Canada and the United Kingdom). Although not covered in the table, exports were up for frozen salmon, and were down for frozen shrimp (decline mostly in exports to Japan) and shucked oysters (principally to Canada).

Source: United States Foreign Trade (Trade by Commodity), Summary Report FT 930-E, August 1962, U. S. Department of Commerce.

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AIRBORNE IMPORTS OF FISHERY PRODUCTS:

January-May 1962: Shrimp was the leading U. S. airborne fishery import during the first part of 1962. Shrimp accounted for 74.1 percent of the quantity and 79.8 percent of the value of airborne imports of fishery products in May 1962. All of the U. S. airborne shrimp imports during the first five months of 1962 originated in Central and South American countries. The leading suppliers of airborne shrimp imports during January-May 1962 were Venezuela with 38.0 percent of the total, Nicaragua with 27.6 percent of the total, and Panama with 17.7 percent of the total.

Other than shrimp, fish fillets from Mexico and live northern lobsters from Canada were the most important airborne imports in May 1962. The airborne imports in May 1962 also included fresh salmon from Canada, spiny lobster tails from Guatemala, fresh and frozen spiny lobsters other than tails from Guatemala and Jamaica, turtles from Colombia, and sturgeon roe from Rumania. The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of these airborne imports is fresh and frozen products.

Product and Origin ^{1/}	May		Jan.-May	
	Qty. ^{2/} Pounds	Value ^{3/} US\$	Qty. ^{2/} Pounds	Value ^{3/} US\$
Fish:				
Canada	7,144	4,660	8,144	5,028
Mexico	121,963	27,297	275,025	53,373
France	-	-	155	463
Rumania	1,151	10,290	1,251	11,287
Panama	-	-	7,807	1,312
Total Fish	130,258	42,247	292,382	71,463
Shrimp:				
Guatemala	32,081	18,227	98,149	52,312
El Salvador	82,362	61,655	208,106	146,376
Nicaragua	111,808	39,887	715,351	241,498
Costa Rica	41,332	18,190	93,743	39,435
Panama	73,785	35,853	457,853	230,393
Venezuela	120,165	54,515	986,012	470,410
Ecuador	-	-	12,210	3,440
Mexico	12,743	4,069	18,815	7,919
Netherlands Antilles	-	-	3,075	2,722
Total Shrimp	474,276	232,396	2,593,314	1,194,505
Shellfish Other Than Shrimp:				
British Honduras	3,880	1,160	65,764	39,710
Honduras	-	-	60,203	47,706
Costa Rica	-	-	1,400	1,247
Panama	-	-	1,040	1,011
Jamaica	1,826	780	30,014	21,324
Netherlands Antilles	-	-	14,159	9,264
Venezuela	-	-	22,263	13,624
Mexico	-	-	27,793	16,050
Guatemala	5,000	2,000	7,370	3,880
Leeward and Windward Islands	2,451	1,016	17,274	6,217
Nicaragua	-	-	390	281
Japan	-	-	26	330
France	174	518	324	937
Colombia	1,187	2,990	1,327	3,226
Ecuador	-	-	940	704
Canada	20,723	7,820	20,723	7,820
Total Shellfish (exc. shrimp)	35,241	16,284	271,010	173,331
Grand Total	639,775	290,927	3,156,706	1,439,299

1/When the country of origin is not known, the country of shipment is shown.
2/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.
3/F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.
Note: These data are included in the over-all import figures for total imports; i.e., these imports are not to be added to other import data published.
Source: United States Airborne General Imports of Merchandise, FT 380, May 1962, U. S. Department of Commerce.

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January-June 1962: Airborne fishery imports into the United States and Puerto Rico in June 1962 increased 35.9 percent in quantity and 42.4 percent in value over the previous month. The increase was due mainly to larger shipments of shrimp and live northern lobsters. In June, airborne shrimp imports of 615,485 pounds entered through the U. S. Customs Districts of Florida, New Orleans (La.), Laredo (Tex.), and Los Angeles (Calif.). Airborne imports of live northern

lobsters from Canada amounted to 147,758 pounds and entered through the U. S. Customs Districts of Massachusetts and New York City. Other airborne imports to the United States mainland in June included fish fillets from Mexico, fresh salmon from Canada, spiny lobster tails from British Honduras and El Salvador, and fresh crab meat from Mexico. Puerto Rico's airborne fishery imports in June consisted of 5,509 pounds of live spiny lobsters from Caribbean countries.

Shrimp accounted for 79.7 percent of the quantity and 81.8 percent of the value of air-

U. S. Airborne Imports of Fishery Products, January-June 1962				
Product and Origin ^{2/}	June		Jan.-June	
	Qty. ^{3/} Pounds	Value ^{4/} US\$	Qty. ^{3/} Pounds	Value ^{4/} US\$
Fish:				
Canada	13,173	11,920	21,317	16,948
Mexico	75,225	10,765	350,250	64,138
France	-	-	155	463
Rumania	-	-	1,251	11,287
Panama	-	-	7,807	1,312
Norway	223	449	223	449
Total Fish	88,621	23,134	381,003	94,597
Shrimp:				
Guatemala	25,154	11,250	123,303	63,562
El Salvador	54,300	31,032	262,406	177,408
Nicaragua	76,127	26,754	791,478	268,252
Costa Rica	54,944	25,455	148,687	64,890
Panama	220,803	114,085	678,656	344,478
Venezuela	178,224	111,940	1,164,236	582,350
Ecuador	-	-	12,210	3,440
Mexico	5,933	1,133	24,748	9,052
Neth. Ant.	-	-	3,075	2,722
Total Shrimp	615,485	321,649	3,208,799	1,516,154
Shellfish Other Than Shrimp:				
British Honduras	9,576	3,154	75,340	42,864
Honduras	-	-	60,203	47,706
Costa Rica	-	-	1,400	1,247
Panama	-	-	1,040	1,011
Jamaica	-	-	30,014	21,324
Neth. Ant.	1,099	486	15,258	9,750
Venezuela	-	-	22,263	13,624
Mexico	1,806	985	29,599	17,035
Guatemala	-	-	7,370	3,880
Leeward and Windward Islands	2,072	861	19,346	7,078
Nicaragua	-	-	390	281
Japan	-	-	26	330
France	-	-	324	937
Colombia	95	400	1,422	3,626
Ecuador	-	-	940	704
Canada	147,758	62,320	168,481	70,140
El Salvador	495	242	495	242
Trinidad	2,338	971	2,338	971
Total Shellfish (exc. shrimp)	165,239	69,419	436,249	242,750
Grand Total	869,345	414,202	4,026,051	1,853,501

^{1/}Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.

^{2/}When the country of origin is not known, the country of shipment is shown.

^{3/}Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.

^{4/}F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.

Note: These data are included in the over-all import figures for total imports; i.e., these imports are not to be added to other import data published.

Source: United States Airborne General Imports of Merchandise, FT 380, June 1962, U. S. Department of Commerce.

borne imports of fishery products in the first half of 1962. All of the U. S. airborne shrimp imports during the first six months of 1962 originated in Central and South American countries. The leading suppliers of airborne shrimp imports in January-June 1962 were Venezuela with 36.3 percent of the total, Nicaragua with 24.7 percent, and Panama with 21.1 percent.

The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of these airborne imports is fresh and frozen products.



Virginia

STUDY EFFECTS OF MAN-MADE WASTES ON MARINE ANIMALS:

The effects of man-made contaminants on marine animals will be studied by the Virginia Institute of Marine Science, Gloucester Point, Va., under a \$33,300 research grant awarded recently by the Division of Water Supply and Pollution Control of the U. S. Public Health Service. The Institute Director stated that the two-year investigation will be under the direction of the head of the Ecology-Pollution Research Department.

The project will determine the effects of continuous exposure of marine animals to low concentrations of poisonous materials, such as insecticides, herbicides, and domestic and industrial wastes. These are materials known to be discharged into the marine system at present, and will be increased as our population and economy grows in future years, thus posing a threat to marine life.

Safe levels of contaminants may change as the salinity and temperature of the waters change. Animals that are not directly killed by toxic substances may be weakened, exposing them to the onslaughts of predators and diseases, or hindering their reproduction. It is also possible that one link in the food chain may be destroyed resulting in the starvation of all animals dependent upon that link for food.

"We cannot expect to have positively pure waters in areas heavily populated by man," reported the Director. "We can, however, intelligently use our natural resources, and this requires research and planning. The

results of this project will aid those responsible for planning in making decisions on the amounts of contaminating materials that can be discharged into our waters without harming marine life. Our problem today is to determine these damaging effects before contamination levels become great enough to cause harm!"

State and Federal agencies are rapidly accumulating data for predicting industrial and population levels in the years 1975 and 2000. This information will assist in actions to protect our nation's water resources.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, SEPTEMBER 1962:

From August to September 1962 there was a slight drop in the wholesale price index for edible fishery products (fresh, frozen, and canned). The September index at 119.8 percent of the 1957-59 average was down 1.5 percent from the previous month, but rose 8.6 percent from September 1961. This September's declines in the subgroup indexes for drawn, dressed, or whole finfish, and canned fishery products were offset by increases in the other subgroups.

There were significant decreases from August to September in several fresh drawn and dressed fish products which caused a 5-percent decrease in that subgroup. These included fresh large haddock (ex-vessel price at Boston down 28.9 percent) and fresh or frozen halibut (wholesale price at New York down 8.9 percent). The September average wholesale price at New York City for fresh or frozen dressed king salmon was almost unchanged from the previous month, but was 25 percent higher than a year earlier. The fractional drop in the index for dressed king salmon resulted from slightly lower prices for the frozen product as the season for fresh salmon came to an end. Prices were higher at Chicago for fresh Lake Superior whitefish (up 25.6 percent), and at New York City for Great Lakes yellow pike (up 12 percent). Compared with the same month in 1961, the subgroup index this September was 18.7 percent higher. Prices were higher for all products in the subgroup, except yellow pike at New York City (down 6.7 percent).



Fig. 1 - Barrels and boxes of fish at wholesalers' stands in the "new shed" of the salt-water section of Fulton Fish Market, New York City.

The index for the processed fresh fish and shellfish subgroup this September rose 4.7 percent from August and was up 10.5 percent from September 1961. As in August, fresh shrimp prices at New York City (up 9.7 percent) were responsible for the increase. The demand for shrimp continued good and market conditions were strong in September. Although there were some indications of a price drop for shrimp towards the end of the month, the drop in imports from Mexico because of the tie-up of that country's west coast fleet reversed the trend and prices firmed up again. Prices for fresh haddock fillets at Boston were lower (down 4 percent) than in August despite some decline in the September landings of small haddock. The new season for fresh shucked oysters started in September. Prices at Norfolk of \$7.50 a gallon were the same as in September 1961, and remained unchanged since April 1962. When compared with September 1961, the subgroup index this September was up 10.5 percent because of higher prices for fresh haddock fillets (up 14.5 percent) and fresh shrimp at New York City (up 20.2 percent).



Fig. 2 - Deveining shrimp in a fishery plant located in Tampa, Fla.

The processed frozen fish and shellfish subgroup index this September increased 4.2 percent from the previous month and jumped 19.5 percent from September 1961. From August to September, prices were higher for frozen shrimp at Chicago (up 6.5 percent) and for ocean perch fillets at Boston (increased 4.9 percent). The frozen shrimp market continued strong during September at even higher prices than in August. Erratic frozen shrimp prices at Chicago for a brief period in September did not change the firm over-all market tone that prevailed throughout the month. As compared with September 1961, prices for all fillets in the subgroup averaged 4 percent higher. Frozen shrimp prices at Chicago were up 29.9 percent from September a year earlier.

In the canned fish subgroup, a weakening trend was indicated for all major products because of heavier seasonal packs. From August through September the subgroup index dropped 6.1 percent and declined 4 percent from September 1961. Prices this September were lower for canned pink salmon (down 10.6 percent), canned tuna (down 3.3 percent), and canned Maine sardines (down 2.1 percent). The canned tuna pack at the end of September was considerably ahead of the same period a year ago, and well ahead of the record 1959 pack for the same period. But canned tuna prices this September were still 2.3 percent higher than a year earlier; in August they were higher than the previous year by 10.4 percent. The new pack of canned Maine sardines at 1.8 million standard cases as of September 22, was nearly 4 times greater than in the same period of 1961. Prices for canned Maine sardines this September were 11.6 percent lower than at the same time last year. Through September very few California sardines had been packed because there were practically no significant landings.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, September 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			Sept. 1962	Aug. 1962	Sept. 1962	Aug. 1962	July 1962	Sept. 3/1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					119.8	121.6	119.0	110.3
Fresh & Frozen Fishery Products:					125.6	124.3	118.5	107.9
Drawn, Dressed, or Whole Finfish:					125.0	131.6	123.3	105.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.10	.14	78.1	109.8	98.6	73.4
Halibut, West, 20/80 lbs., drsd., fresh or froz.	New York	lb.	.43	.47	126.6	138.9	133.0	115.4
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	1.05	1.05	146.3	146.7	136.2	117.0
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.66	.53	98.5	78.4	89.5	78.4
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.56	.50	91.7	81.9	77.8	98.3
Processed, Fresh (Fish & Shellfish):					123.1	117.6	113.4	111.4
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.36	.37	86.2	89.8	94.7	75.3
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.07	.98	125.4	114.3	105.5	104.3
Oysters, shucked, standards	Norfolk	gal.	7.50	7.50	126.5	126.5	126.5	126.5
Processed, Frozen (Fish & Shellfish):					122.8	117.8	113.3	102.8
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	98.9	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.35	.35	101.1	101.1	98.2	96.7
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.32	.30	110.4	105.2	103.4	105.1
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.15	1.08	136.4	128.1	122.2	105.0
Canned Fishery Products:					110.2	117.4	120.1	114.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	25.50	28.50	111.1	124.2	124.2	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.75	12.15	104.4	107.9	107.9	102.1
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	118.5	107.2
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.11	9.31	116.9	119.4	145.1	132.2

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

2/Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/Recomputed to be comparable to 1957-59=100 base indexes.



ARCTIC RESEARCH REVEALS LITTLE MARINE LIFE

The Fisheries Research Board of Canada in the spring of 1961 sponsored research of the frozen wastes of Canada's far north where the seas lie forever bound by polar ice. A scientist from the Board's Pacific Oceanographic Group at Nanaimo, B. C., was the only fisheries representative on a scientific team which carried out specialized studies on the Prince Gustaf Adolph Sea, in an area roughly 600 miles from the North Pole. The precise interest of the fisheries scientist were to determine the physical and chemical properties of sub-ice seas and to gain information on the living creatures found in them.

Forms of marine life are limited on the polar region. No fish was taken although many different methods were used in an effort to do so. Plankton hauls to depths of 400 feet were not too productive. However, they yielded quantities of shrimp-like organisms in similar magnitude to winter sampling in certain areas of the North Pacific Ocean where water temperature conditions are vastly different.

Many important contributions to the fields of oceanography and biology of arctic seas were made through the party's observations on the Prince Gustaf Adolph Sea. These observations required sustained effort under the most trying and hazardous of conditions. (Trade News, September 1962, of Canada's Department of Fisheries.)