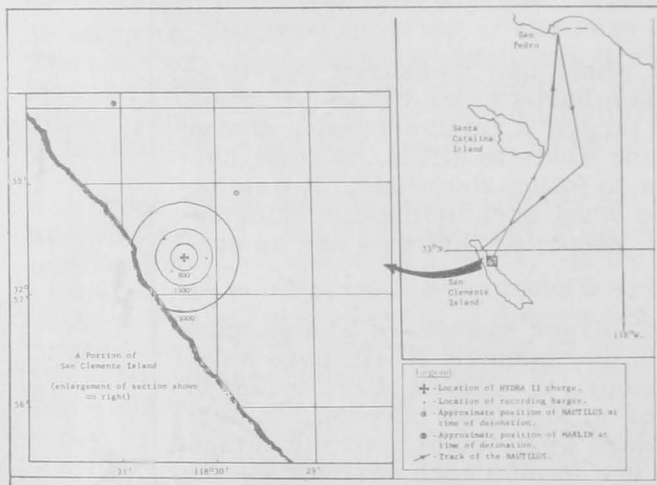


TRENDS AND DEVELOPMENTS

California

EFFECT ON MARINE LIFE OF HIGH-EXPLOSIVE CHARGE STUDIED:

M/V "Nautilus" Cruise 61-N-10-Seismic:
Observations on the effect on marine life of a large, high-explosive charge were made by the California Department of Fish and Game research vessel Nautilus (July 20-21, 1961) in the vicinity of Wilson Cove on the north-east side of San Clemente Island. This was the first of 18 explosions proposed by the U. S. Naval Radiological Defense Laboratory for the project designated HYDRA II. Other objectives of the cruise were to (1) obtain specimens for determining the normal background level of radioactivity in the HYDRA II project area, and (2) make observations of environmental conditions in the channel between San Pedro and San Clemente Island.



M/V Nautilus Cruise 61-N-10-Seismic (July 20 and 21, 1961).

On July 21 at approximately 12:33 p.m., the first of a series of high-explosive charges was detonated by the U. S. Navy, using 10,000 pounds of HBX-1; precast in a spherical shape about 5½ feet in diameter with a booster charge of 125 pounds of TNT. The depth of charge was between 12 and 15 feet; distance

from shore, 2,400 feet; depth of water, 300 feet; and location of charge, lat. 32°57'21" N., long. 118°30'20" W. Recording gear was on three barges moored 1,100 to 1,500 feet from the shotpoint and on two prominent points of land to the west.

Approximately 8 minutes after detonation of the explosion the Nautilus entered the area of the base surge which encompassed about 800 to 1,000 feet in diameter.

For the next 2 hours the area within a radius of one-half mile of the shotpoint was checked for dead fish. The patrol boat Marlin with several observers aboard worked with the Nautilus during this period.

The kill was estimated at approximately 2,700 fish with limits between 1,650 and 3,700. Fifteen species of rockfish (Sebastes sp.) and jack mackerel (Trachurus symmetricus) comprised the bulk of the kill.

With the exception of three vermilion rockfish, collected by the Marlin 1.5 to 1.75 miles north northwest of the shotpoint, all the fish were picked up within about one-half mile (3,000 feet) of it. The greatest concentrations were seen within 800 to 2,000 feet, indicating a lethal range between those two extremes.

A sample of fish from this first explosion was forwarded to the Department Radiation Officer for determining the normal background level of radioactivity in the HYDRA II project area.

Environmental conditions logged during the trip from San Pedro to San Clemente Island included: (a) Sea surface temperatures averaging 71.9° F. between San Pedro and Santa Catalina Island and 69.8° F. between Santa Catalina and San Clemente Island. Coolest temperature recorded was 64.6° F.

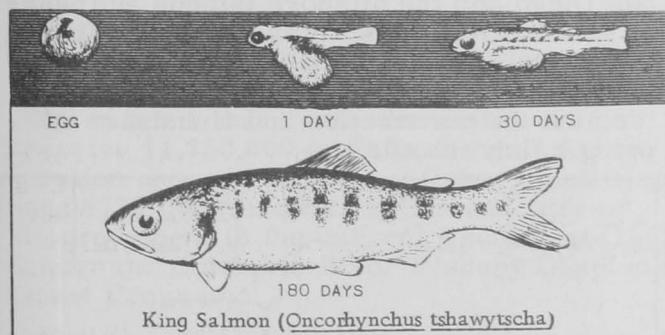
at Wilson Cove. (b) Muddy-colored water was a common sight during the trip to Wilson Cove. At times, visibility appeared to be no more than a foot below the surface. This condition was attributed to a profuse "bloom" of planktonic organisms. (c) Schools of Pacific bonito (*Sarda chiliensis*) were abundant in the San Pedro Channel. Most of these appeared to be actively feeding on aggregations of anchovy and saury. Two bonito, weighing about four pounds each, were caught on trolling lines off the east end of Santa Catalina Island.

Several large whales (presumably fin-backs) were seen in the Outer Santa Barbara Passage.

* * * * *

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 61-N-14-Salmon:
The midwater trawl operations of the California Department of Fish and Game research vessel Nautilus were continued (August 7-10, 22-25, 1961) in the Carquinez Strait, Baker Beach, and Point San Pedro areas to (1) capture marked salmon fingerlings on their seaward migration, and (2) determine areas in the ocean where salmon fingerlings may be captured.

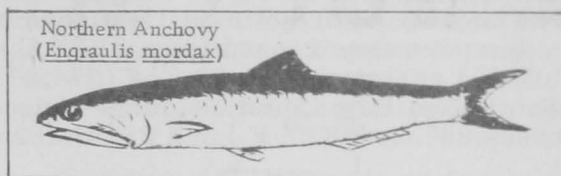


Trawling for marked salmon fingerlings in Carquinez Strait was conducted between 8:00 a.m. and 3:30 p.m., and each tow was for 20 minutes. Tows were alternated between upstream and downstream and between the north shore, center, and south shore of the channel. A flow meter was used to measure the amount of water strained by the net on each tow.

A total of 70 tows was completed in the Strait during this cruise. A total of 19 king salmon (*Oncorhynchus tshawytscha*) fingerlings was captured, none of which bore marks. No rainbow trout (*Salmo gairdneri*) were captured during the month of August.

Two tows were made at a depth of 40 to 60 feet to determine if salmon were migrating in deeper water; however, none were captured. With the exception of these 2 deep tows, all fishing was done at the surface.

Other species appearing in the catch, listed in order of abundance were: northern



anchovy (*Engraulis mordax*), Pacific herring (*Clupea pallasii*), shrimp (*Palaemon* sp.), striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), jack smelt (*Atherinopsis californiensis*), Sacramento smelt (*Spirinchus thaleichthys*), Northern midshipman (*Porichthys notatus*), starry flounder (*Platichthys stellatus*), Pacific lamprey (*Entosphenus tridentata*), and grey smoothhound (*Mustelus californicus*).

One day was spent trawling off Point San Pedro and Baker Beach. Two 20 minute tows off Point San Pedro, at a depth of 50 to 60 feet, yielded catches of large jellyfish. At Baker Beach, two 20-minute tows at a depth of 40 to 50 feet produced large numbers of herring and a few smelt. No salmon were captured at either location.

Note: Also see Commercial Fisheries Review, October 1961 p. 11.

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PELAGIC FISH POPULATION SURVEY CONTINUED:

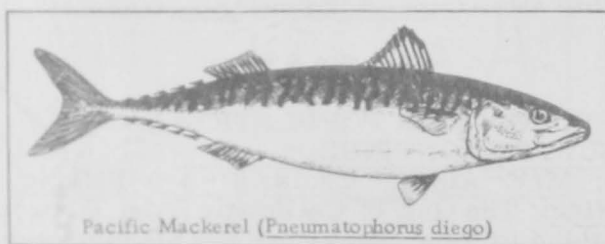
M/V "Alaska" Cruise 61-A-5-Pelagic Fish: The Gulf of California from Tiburon Island to Cape San Lucas and the outer coasts of southern Baja California between Marquis Point and Cedros Island were surveyed (July 21-August 20, 1961) by the California Department of Fish and Game research vessel Alaska. The objectives were (1) to obtain samples of sardines from the Gulf of California for blood genetic and morphometric studies in order to distinguish the relationships of the Gulf sardines to those on the outer Pacific Coast; (2) to determine the amount of recruitment from this year's sardine spawning and to measure the population density of older fish; (3) to sample Pacific mackerel, jack mackerel, and anchovies for age and distribution studies; and (4) to make

collections of other species requested by other investigations.

GULF OF CALIFORNIA: Of the 51 night light stations occupied in the Gulf, all but 3 were along the western (Baja California) side. The vessel scouted 328 miles between stations during which 8 unidentified schools were observed. Scouting visibility was reduced because of bright moonlight. Sea-surface temperatures ranged from 31.2°C . (87.8°F .) at Guaymas to 23.8°C . (74.8°F .) at San Rafael Bay. Most readings ranged between 26°C . (78.8°F .) and 28°C . (82.4°F .)

Sardines were taken at 4 locations: Mangles Point, Coronado Island, Ventana Bay, and Cape San Lucas. Surface temperatures in those areas ranged from 28.9°C . (84°F .) to 27.7°C . (81.9°F .) Live fish, 85 to 110 mm. standard length, from Mangles Point and Coronado Island were delivered alive to U. S. Bureau of Commercial Fisheries personnel for blood genetic tests which indicated that the Gulf sardine is a third distinct subpopulation. An additional 200 were frozen for morphometric studies.

Pacific mackerel were present at 9 stations. Several samples were preserved for study ashore. Juvenile flatiron herring (*Harengula thrissina*) were very abundant in the southern part of the Gulf. Large numbers of adults were present near shore, but few came to the light.



Pacific Mackerel (*Pneumatophorus diego*)

OUTER COAST OF BAJA CALIFORNIA: Here, 43 night light stations were occupied. Sardines were present at 4, Pacific mackerel at 6, northern anchovies at 4, and jack mackerel at 4.

All sardines taken were small (95-135 mm.) and appeared to be predominately from the 1961 year-class.

The vessel scouted 234 miles during which 233 anchovy and 2 Pacific mackerel schools were sighted. Anchovies were seen over the entire area. Many additional schools were seen during daytime anchorage.

Sea surface temperatures ranged from 27.05°C . (80.7°F .) at Marquis Point to 14.0°C . (57.2°F .) at Rampiente Point.

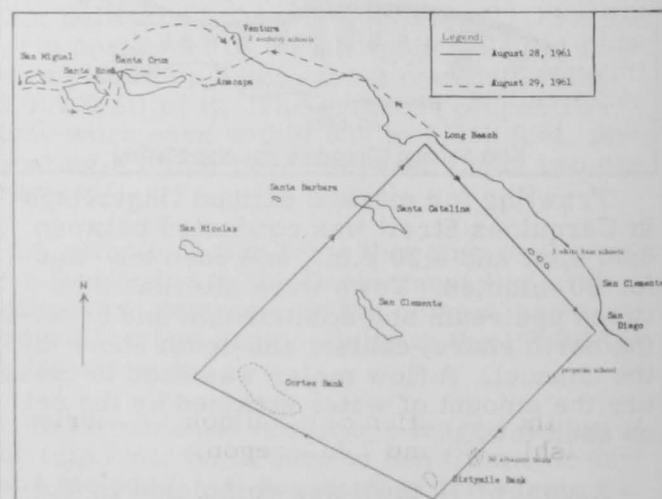
Airplane Spotting Flight 61-9-Pelagic Fish: The inshore area from the United States Mexican border to Point Conception, Calif., was surveyed from the air (August 15, 18-19, 1961) by the Department's Cessna "182" 9042T to determine the distribution and abundance of pelagic fish schools.

Adverse weather limited flying time to only 3 days of the 5 scheduled. Low clouds necessitated a flying altitude of 700 feet or less over most of the survey area. The low cloud ceiling acted as an effective light filter and reduced fish-spotting efficiency.

Only 18 schools, all anchovies, were observed--14 schools were located off Point La Jolla, 2 off Seal Beach, 1 near Huntington Beach, and 1 off Port Hueneme.

Red water was noted off Hueneme and North Island. About 150 sport-fishing boats were observed off Point La Jolla just inshore from the 14 anchovy schools.

Airplane Spotting Flight 61-10-Pelagic Fish: The inshore area from Long Beach to San Diego and the offshore islands and banks of southern California were surveyed from the air (August 28 and 29, 1961) by the Department's Twin Beechcraft N5614D to determine the distribution and abundance of pelagic fish schools.



Twin Beechcraft N5614D airplane spotting flight 61-10.

Low clouds during the morning and afternoon restricted fish-spotting time to less than 3 hours each day. Clouds and cloud

shadows, which reduced spotting efficiency, extended as far seaward as did the flights.

Three compact "balls" of bright flashing white sea bass were observed. Two of these schools were off San Clemente and one off Laguna.

A long, thin column of porpoises (specific identity unknown), estimated over a mile long and containing well over 100 animals, was observed 20 miles southwest of San Diego. The column consisted of no more than 2 animals abreast, some singles, with the individuals and pairs fairly regularly spaced.

About 30 albacore boats were fishing 20 miles southeast of Cortez Bank.

Only a thin band of water along the windward side of the islands was open for fish spotting. The lee sides were obscured by low clouds. Although most of the mainland coast was covered by clouds, 2 small schools of anchovies were observed off Ventura.

Note: Also see Commercial Fisheries Review, October 1961 p. 11.



Columbia River Fisheries

FEDERAL FUNDS TO NORTHWEST STATES FOR FISHERY FACILITIES:

The Department of Interior announced September 1 that Northwest States are to receive \$1,250,000 in Federal funds for operation and maintenance of fishery facilities and \$770,000 for construction and stream improvement in the current fiscal year (1962) under the Columbia River Fishery Development Program.

The cost for operation and maintenance is \$60,000 higher than the \$1,190,000 allocated last year to the three participating states. In the 1961/62 operation and maintenance program, Washington will receive \$693,000, Oregon \$517,000, and Idaho \$40,000.

Reportedly, the major portion of the total is for the operation of 8 salmon hatcheries in Washington and 7 in Oregon.

From the \$770,000 appropriation for construction, \$343,000 will be contracted to Oregon, \$261,000 to Idaho, and \$166,000 to Washington. Of that total, \$310,000 will be used for installation of fish screens to pre-

vent loss of young salmon and steelhead in irrigation diversions and \$460,000 for construction of fishways at natural falls and other improvements in natural habitat. The U. S. Bureau of Commercial Fisheries also plans to spend \$70,000 for that type of work.

In addition to these funds, \$500,000 is being assigned to the investigation of means of improving operational procedures in hatcheries and management of natural areas. Two-thirds will be spent by the states on the study of pond rearing, predation, introduction of new stocks of fish, and fish-marking methods.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-JULY 1961:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, about 2.1 million pounds (value \$1,011,000) of fresh and frozen fishery products were purchased in July 1961 by the Military Subsistence Supply Agency. This was higher than the quantity purchased in June by 33.8 percent and 11.6 percent above the amount purchased in July 1960. The value of the purchases in July this year was up about 44.0 percent as compared with June, but was 6.7 percent less than for July a year ago.

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Supply Agency, July 1961 with Comparisons

QUANTITY				VALUE			
July		Jan.-July		July		Jan.-July	
1961	1960	1961	1960	1961	1960	1961	1960
. (1,000 Lbs.) (\$1,000)			
2,131	1,909	13,003	13,649	1,011	1,084	6,322	7,070

During the first 7 months of 1961, purchases totaled 13.0 million pounds (valued at \$6.3 million)--a decrease of 4.7 percent in quantity and 10.6 percent in value as compared with the same period in 1960.

Prices paid for fresh and frozen fishery products by the Department of Defense in July 1961 averaged 47.4 cents a pound, 1.5 cents less than the 48.9 cents paid in June and 9.4 cents less than the 56.8 cents paid during July last year.

Canned Fishery Products: Tuna was the principal canned fishery product purchased

Product	QUANTITY				VALUE			
	July		Jan. - July		July		Jan. - July	
	1961	1960	1961	1960	1961	1960	1961	1960
 (1,000 Lbs.) (\$1,000)			
Tuna	1,474	481	4,136	1,930	648	204	1,823	860
Salmon	-	-	2	3	-	-	2	2
Sardine	23	-	113	84	10	-	54	35

for the use of the Armed Forces during July this year. In the first 7 months of 1961, purchases of canned tuna were up 114.3 percent and canned sardines were up 34.5 percent as compared with the same period in 1960.

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



Films

NEW MOVIE ON COMMERCIAL FISHERIES OF CHESAPEAKE BAY PLANNED:

A contract is being let for the production of a 16mm. sound-color motion picture on the commercial fisheries of Chesapeake Bay and its estuaries. The production of this educational market development motion picture is being financed by the States of Maryland and Virginia, and the U. S. Bureau of Commercial Fisheries. This Bureau-produced film, which will be in production about a year and a half, will include such information as the heritage of the Bay area, customs of the people relating to the fishing industry in the area, commercial and sport fishing, and information to stimulate the consumption of Chesapeake Bay fishery products.

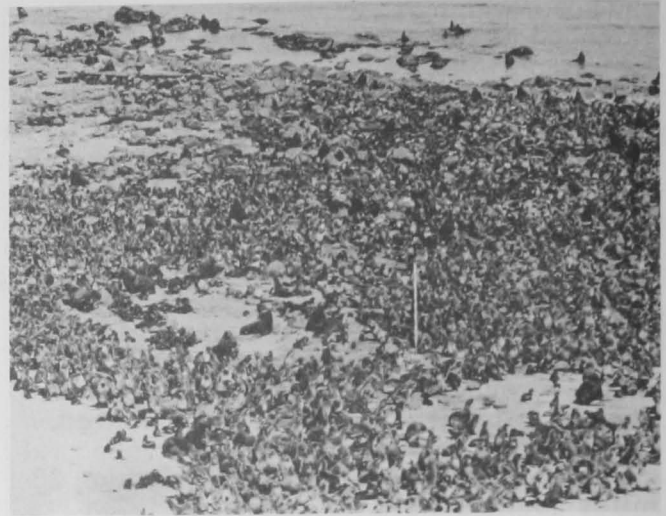


Fur Seals

PRIBILOF 1961 HARVEST:

The 1961 fur seal harvest on the Pribilof Islands in Alaska provided 97,091 seal skins. Of these, 82,095 were males. This is the largest annual harvest since 1956 when 126,826 animals were taken. For some years previous to 1956 the annual harvest had averaged about 65,000 3- and 4-year-old bachelor males.

Gross receipts to the United States Government from the sale of Pribilof Islands



Fur seal harems in dense formation.

products (including meal and oil from rendering the carcasses) in the fiscal year ending June 30, 1961, amounted to \$2,839,862. The State of Alaska and the United States Government share in the net receipts after fur seal processing costs and the costs of administration of the Pribilof Islands are deducted from the gross receipts. The Alaska Statehood Act provides for payment of 70 percent of the net proceeds to the State of Alaska.

In 1956 the practice of taking female seals, which had been stopped in 1911 was reinstated on the advice of wildlife biologists whose studies indicated that such action was necessary to provide the optimum size of herd and to reduce pup mortality which would, in effect, substitute additional harvest for mortality. For example, in 1957, a total of 74,514 dead pups were counted on St. Paul Island, while in 1958 the pup crop supporting a large part of this year's kill suffered a loss of only 37,740.

The effect of overabundance appears to have resulted in the smaller number of seals which returned to the rookeries in the late 1950's; the effect of the current management practice in herd reduction is beginning to be evident in this year's return of a male harvest above the 65,000 level. An additional harvest of as many as 30,000 female seals will be necessary this fall as part of the management program.

The Pribilof herd, which had dwindled to 125,000 in 1911 when the first fur seal treaty

made management of the Pribilof herd possible by the outlawing of high-seas harvesting, had reached about 1,500,000 animals when the incidence of pup-killing diseases became a problem.

During the 40 years of herd build-up only the surplus males were taken.

The segregation of the young males, the most desirable group for seal skins, is largely accomplished by the polygamous nature of the seal. While seals are born in about equal numbers of male and female, the older bulls maintain harems of from 25 to 100 cows and drive the younger males away from the herd. Thus the males of the younger age groups are automatically segregated. The practice of harvesting the majority of these bachelor males each year permitted adequate numbers of the young males to acquire breeding age--about 7 years--and establish their harems.

The life span of the fur seal is about 20 years and the female begins to bear young at 4 to 6 years of age. The seals spend several months of each year at sea. In late May the old males return to the Pribilof rookeries. The younger males follow soon after. The females arrive early in June and the pups are born soon after the females arrive on the Islands. Each has a single pup in any one year. The average size of a newborn pup is 12 pounds. The nursery season for the new pup is also the mating season for the mother.

The five Pribilof Islands are in the Bering Sea about 200 miles north of the Aleutian chain and about 300 miles west of the mainland. Of the two that are inhabited, the largest is St. Paul Island which is 14 miles in length. St. George Island, 40 miles away, is about 10 miles in length.

Records show that the Russians, who owned the Pribilofs until they came into possession of the United States in 1867 through the Alaska Purchase, had harvested about 2,000,000 seal pelts before 1834. Russia then placed restrictions upon the harvesting and from 1834 until 1867 only 600,000 pelts were taken. Under United States ownership there was a 20-year period in which harvests of 100,000 a year were permitted and in most instances accomplished. This was followed by another 20-year period ending in 1910 when only about 330,000 seal skins were taken. Since

1911, the year in which the original fur seal treaty was signed by Japan, Russia, Great Britain (for Canada), and the United States, sealing has been prohibited on the high seas, and scientific management of the herd has provided for the dramatic increase in herd size and production of skins.

Intensive research is presently under way on the Pribilof Islands and at sea to learn more of the life history and population dynamics of the fur seal. These studies are coordinated through the North Pacific Fur Seal Commission, established under the provisions of the 1957 Interim Convention on Conservation of North Pacific Fur Seals, and are designed to provide information as to the maximum sustainable yield of fur seals, giving due regard to their relation to the productivity of other living marine resources of the area.

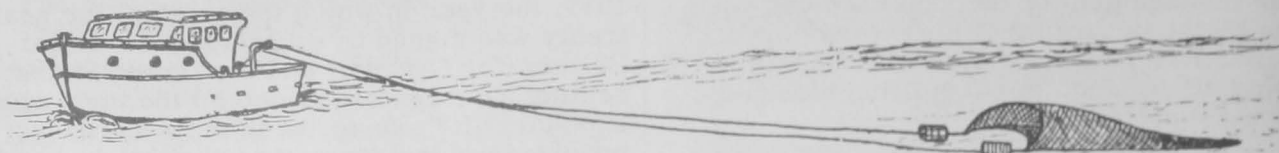


Great Lakes Fishery Investigations

LAKE ERIE FISH POPULATION SURVEY CONTINUED:

M/V "Madtom," August 1961: The field activities of the Lake Erie investigations of the U. S. Bureau of Commercial Fisheries during August 1961 consisted of trawl tows conducted periodically at two stations to check on the relationship between the availability of fish and water chemistry. Activities were devoted primarily to 3 day-night series of trawl hauls at Station 4 (off Marblehead) and Station 49 (off Bono) and to the annual week-long cruise to 7 index stations distributed about western Lake Erie. The 16-foot outboard Madtom carried out the trawling at several points near Sandusky and Port Clinton to assess the abundance and growth of young-of-year fish in shallow in-shore areas.

During the 3 day-night trawling series, two 10-minute tows were made at each of 3 depths, during the morning, afternoon, and evening (total of 54 tows at each station). Approximately 50 percent of the fish caught were young-of-the-year. Of special interest was the collection of 344 young yellow pike or walleyes at Station 4--far more than recorded for any previous similar series. Large numbers of 2-year-old yellow perch were taken intermittently, along with adult spot-tail and emerald shiners. Changes in



meteorological conditions seemed to have greater influence on fish movements and concentrations than differences in depth or time of day.

The summer index-station cruise served to preserve continuity and the opportunity for comparison with similar operations in 1959 and 1960. Two trawl tows were taken at each of the 7 stations and turbidity, pH, temperature, alkalinity, and oxygen content of the water were determined. Samples of plankton and bottom fauna were collected for later study.

Growth rates for most young-of-year fish were slightly below the averages for recent years. Yellow pike were about 4.6 inches long in early August and had increased to 6.4 inches by the end of the month. The average total length in inches of young-of-the-year of other species, in late August, were as follows: alewife, 3.7; gizzard shad, 3.9; trout-perch, 2.9; emerald shiner, 2.3; spot-tail shiner, 2.4; channel catfish, 1.7; sheepshead, 2.2; white bass, 3.8; and yellow perch, 2.9. Judging by catches in comparable trawl tows in recent years, most species were believed to have had a fairly successful hatch and survival in 1961.

Water temperatures in August averaged 75° F. in the western end of the lake and 76° F. in Sandusky Bay. The cause of the sizable mortality of yellow perch which occurred in the open lake during July and has since subsided, is still unknown. A deficiency of dissolved oxygen continued in some deep-water areas, but the condition was not extensive or critical during August.

Note: Also see Commercial Fisheries Review, October 1961, pp. 17-18.

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LAKE MICHIGAN FISH POPULATION SURVEY CONTINUED:

M/V "Cisco" Cruise 6: The chub (Leucichthys sp.) population survey in Lake Michigan was continued (August 29-September 9, 1961) by the U. S. Bureau of Commercial Fisheries research vessel Cisco.

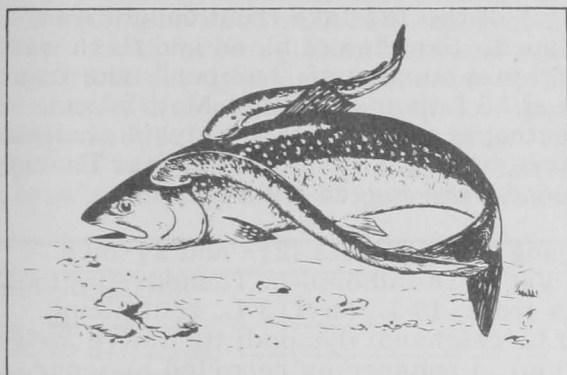
The first part of cruise 6 (August 29-September 9, 1961) was devoted to routine fishery and limnological sampling in northern Lake Michigan, and the latter portion was spent experimenting with a midwater trawl. Despite almost continuous choppy seas for the first 5 days, only a small amount of the scheduled work had to be cancelled.

Regular gangs of nylon gill nets (50 feet each of 1 $\frac{1}{4}$ - and 1 $\frac{1}{2}$ -inch mesh, and 300 feet each of 2-, 2 $\frac{3}{8}$ -, 2 $\frac{1}{2}$ -, 2 $\frac{3}{4}$ -, 3-, 3 $\frac{1}{2}$ -, and 4-inch mesh) were set at 25 and 50 fathoms off Frankfort, Mich., and Sturgeon Bay, Wis. The catch off Frankfort was moderate at 25 fathoms and light at 50 fathoms; off Sturgeon Bay both catches were very light.

Regular 30-minute bottom tows were made with a 50-foot balloon trawl at 15, 25, 35, and 50 fathoms off Manistique, Mich., and at 30 fathoms in Little Traverse Bay east of Charlevoix, Mich. Chub catches at the 4 depths off Manistique were 88, 103, 374, and 161 pounds, respectively. The catch in Little Traverse Bay was 111 pounds. Few chubs other than L. hoyi were taken. The only sizable catches of other species were 83 pounds of alewives and 47 pounds of smelt (at 15 fathoms off Manistique). A whitefish with a fresh lamprey wound was caught in the 35-fathom tow off Manistique. This depth seemed unusually great for whitefish, but the fish may have been driven into deep water by the lamprey attack. Several trawl tows of short duration in Little Traverse Bay brought up live L. hoyi, from which blood samples were taken for electrophoresis studies.

A modified 40-foot British Columbia midwater trawl was towed off Charlevoix at various depths, from near the surface to near bottom. Most of the work was done over a 50- to 60-fathom bottom, but some tows were made in areas 20 and 30 fathoms deep. Tows were made at night as well as during the day. A device for telemetering depth and temperature was attached to the footrope. The electric cable used with the device was separate from the towing warps, and was wound on a hand-operated reel. The equipment functioned well

(except for a tendency for the depth-recording unit to drift slightly), until a wire broke inside the electric cable. All catches were small, and consisted mostly of chubs (mature) at deeper levels, and alewives and smelt (adults and young of the year of both species) at medium and upper levels. The 0-group fish were especially well represented in shallow tows made above the thermocline at night. One such tow took 127 and 86 young-of-the-year smelt and alewives, respectively; two tows at the same depth and location in the daytime took no fish. Other catches of special interest included a rather pale 14.7-inch lake trout (1959 year-class, planted in northern Lake Michigan in May 1960) with 2 fresh lamprey scars, at 19



Sea lamprey feeding on a trout.

fathoms over a 56-fathom bottom; a logperch at 57 fathoms (the net struck the bottom on this tow); and a ninespine stickleback near bottom at 56 fathoms.

Limnological collections were made at 40-fathom stations off Manistique, Charlevoix, Frankfort and Sturgeon Bay, and at midlake between Manistique and Charlevoix, and at 144 fathoms between Frankfort and Sturgeon Bay. Surface water temperatures were mostly about 20° C. (68° F.) except near shore off Sturgeon Bay, where temperatures as low as 8.6° C. (47.5° F.) were recorded in an upwelling. The extent of the upwelling was not determined, but a surface temperature of 13.0° C. (55.0° F.) was noted near Summer Island, 62 miles north of Sturgeon Bay. The highest record was 22.4° C. (72.4° F.). Secchi disc readings were low (9-22 feet) although there was no great amount of net plankton.

Note: Also see Commercial Fisheries Review, October 1961 p.18.

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WESTERN LAKE SUPERIOR FISHERY SURVEY CONTINUED:

M/V "Siscowet" Cruise 5: The objectives of cruise 5 (August 7-14, 1961), to Whitefish Bay, Lake Superior, were to locate lake-dwelling sea lamprey ammocetes and to obtain information on the abundance and distribution of lake trout, whitefish, lake herring, and chubs, according to the U. S. Bureau of Commercial Fisheries Biological Laboratory at Ann Arbor, Mich.

An iron, pyramidal-shaped anchor dredge (2-feet wide, 9-feet long), on loan from the Fisheries Research Board of Canada, was towed by the Bureau's research vessel Siscowet near the mouths of Bear Creek and Tahquamenon and Betsy Rivers. A total of more than 20 tows (average duration, 18 minutes) in water 8 to 12 feet deep yielded no sea lamprey ammocetes, although 2 brook lamprey ammocetes were caught. Thousands of fingernail clams (a very important item in the diet of whitefish) were taken by the dredge.

In spite of high winds during the entire cruise, experimental fishing gear was operated at the following locations: 1 mile southeast of Whitefish Point; 2 miles east of the Betsy River; 7 miles east of the Betsy River; and 4 miles northeast of Tahquamenon Island.

Trawl catches were light. Only 3 lake trout (all fin-clipped) were captured, in addition to small numbers of smelt, sculpins, sticklebacks, and chubs.

Four standard gangs of gill nets (150 feet of 1-inch mesh and 300 feet each of 1½-, 2½-, 3-, 3½-, 4-, 4½-, and 5-inch mesh) were set at depths ranging from 15 to 41 fathoms.

Of the 22 lake trout taken in gill nets, 16 (73 percent) were fin-clipped. All marked lake trout caught during cruise 5 were from the plant made from shore at Whitefish Bay in June 1961.



In an effort to obtain more information on the water currents of eastern Lake Superior, glass drift-bottles were released at three localities: 5 miles east of Copper Harbor; just northwest of Crisp Point; and northwest of the Big Two Hearted River.

Surface water temperatures varied only between 63.7° F. and 65.5° F.; bottom temperatures remained at about 40° F.

M/V "Siscowet" Cruise 6: Studies during cruise 6 were conducted (August 21-30, 1961) at Keweenaw Bay, Traverse Bay, and Isle Royale, Mich., and Thunder Bay, Ontario. The work in Keweenaw Bay included attempts to locate lake-dwelling sea lamprey ammocetes and the collection of data on the abundance and distribution of various species of fish, on the comparative survival of lake trout planted from shore and by boat, and on the contribution of hatchery-reared lake trout to native stocks. The objectives at Isle Royale and Thunder Bay were to compare the relative abundance of lake trout with previous years' catches and to collect various forms of chubs for morphological studies.

An anchor dredge, borrowed from the Fisheries Research Board of Canada, was towed near the mouths of the Falls, Big Huron, and Ravine Rivers, in water 8 to 23 feet deep. No sea lamprey ammocetes were taken in a total of approximately 25 tows (average duration, 10 minutes). A few sculpins, brook sticklebacks, and mayfly larvae were caught.

Standard gangs of experimental gill nets (150 feet of 1-inch mesh and 300 feet each of 1½-, 2-, 2½-, 3-, 3½-, 4-, 4½-, and 5-inch mesh) were set in Keweenaw Bay north of the Huron Islands, northwest of Point Abbaye, and southeast of the entrance of the Portage Ship Canal. The average weight of the 52 lake trout taken in the gill nets was 0.9 pound; 18 (35 percent) were fin-clipped.

Nine 10-minute trawl tows were made in Keweenaw Bay, midway between Baraga and L'Anse and off Pequaming, at depths ranging from 18 to 42 fathoms. A total of 167 lake trout were captured, of which 165 were fin-clipped. Of these hatchery-reared fish, 127 had been stocked as yearlings in Keweenaw Bay in June 1961 and 38 in June 1960. Closely comparable numbers of recoveries in the latter group originated from boat

plantings (20) and shore plantings (18). (In 1960, about equal numbers of yearling lake trout were planted in Keweenaw Bay by boat and from shore; in 1961, all plantings were from shore.) The lake trout recaptured from the 1961 plant averaged 0.7 inch longer than at the time of release in June; the trout from the June 1960 plant had grown 2.9 inches. In addition to the lake trout taken by trawling in Keweenaw Bay, small numbers of smelt, pygmy whitefish, sculpins, ninespine sticklebacks, and chubs were caught.

Three 10-minute tows in Traverse Bay at 23, 32, and 41 fathoms yielded only 1 lake trout (from the 1961 plant), and a few smelt, pygmy whitefish, sculpins, and small herring.

Only 1 of the 125 lake trout caught was fin-clipped. Samples of blood and flesh were taken from a number of "humper" lake trout caught at 30 fathoms south of Mott Island, for electrophoretic and fat-analysis studies. Seventeen of the lake trout caught near Thompson Island were tagged and released.

A gang of 5 gill nets (2¼- and 2½-inch mesh) set at 18 fathoms in Thunder Bay took 15 lake trout, 19 *L. hoyi*, 3 *L. zenithicus*, and 18 *L. reighardi dymondi* (tentative identification), a subspecies reported to occur along the north shore of Lake Superior. Blood samples were collected from the *dymondi* for electrophoretic studies.

Drift bottles were released northeast of Yellow Dog Point, north of Salmon Trout Point, and just south of Keweenaw Point and Manitou Island. It was hoped that returns of the bottles would add to the knowledge of Lake Superior currents.

Surface water temperatures during the cruise ranged from 60.8° F. in Thunder Bay to 69.4° F. in Keweenaw Bay.

Note: Also see Commercial Fisheries Review, October 1961 p. 19.



CORRECTION

The sketch of the sheephead (*Archosargus probatocephalus*) which appeared in the September 1961 Commercial Fisheries Review, p. 31, was inserted in error as part of the article "Lake Erie Fish Population Survey Continued." Since the article referred to fresh-water sheephead, drum, or gaspergou (*Aplodinotus grunniens* Rafinesque), a sketch of the latter species should have been inserted.

Gulf Exploratory Fishery Program

MIDWATER TRAWLING, ESCAPEMENT BEHAVIOR OF PELAGIC FISH, AND SHRIMP EXPLORATORY FISHING:

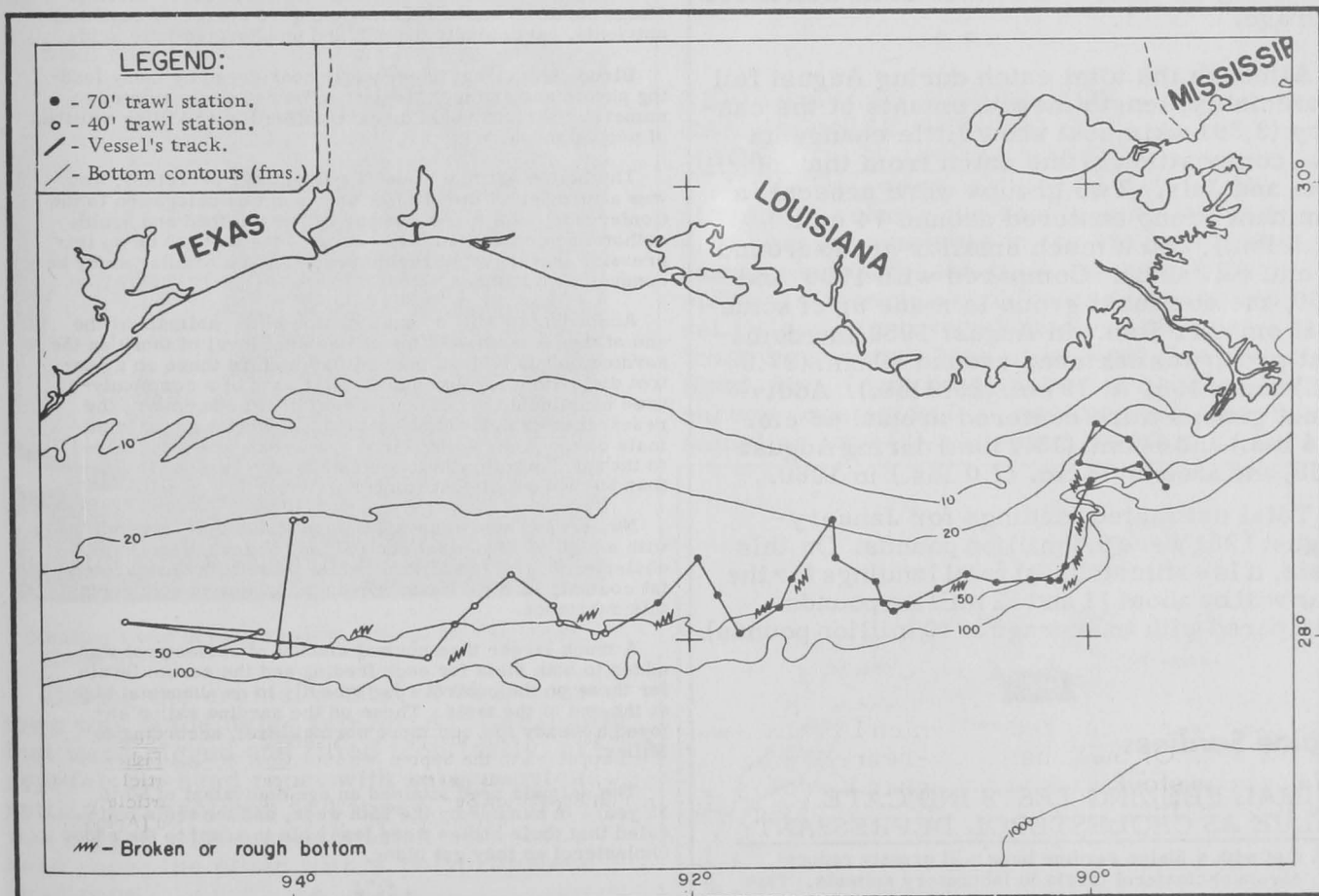
M/V "Oregon" Cruise 75: Obtaining performance data on experimental midwater trawls, taking motion pictures of the escapement behavior of various pelagic fish, and exploratory fishing for shrimp west of the Mississippi Delta were the specific objectives of the July 21-September 16, 1961, cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon.

During the first three phases of the cruise, performance data were obtained on several flotation devices, depressors, and doors that were used with two experimental trawls. An inverse relation between speed and vertical net opening was observed. This observation is consistent with prior test findings with midwater trawls of other designs. At towing speeds of 1.4-1.5 knots, the trawls displayed 30-43 percent greater

vertical spread than they did at the assumed optimum speed (based on balanced configuration of the trawl) of 3.1-3.6 knots. Greater vertical spread was accompanied by a sacrifice in horizontal spread.

A headrope-mounted echo-sounder transducer was used in conjunction with two remote-controlled motion picture cameras mounted on the headrope and in the funnel. A total of 1,400 feet of 16 mm. film was taken of net configuration and fish reactions.

The fourth phase consisted of eight days of exploratory shrimp trawling, conducted west of the Mississippi Delta at the request of a group of Louisiana shrimp producers. As requested, 41 trawling stations were completed in depths of 30 to 60 fathoms between Barataria Bay and Sabine Pass. No commercially-important concentrations were located although large (15-20 count) shrimp were taken in all depths fished. The best catches of shrimp made were confined to the 30-fathom range south of Barataria



M/V Oregon Cruise 75 (July 21-September 16, 1961).

Bay and Ship Shoal. Beyond that depth broken or rough bottom restricted trawling activities. Fish and shrimp specimens from each station were preserved for further study by the staff of the Galveston Fishery Biological Laboratory.



Hawaii

SKIPJACK TUNA LANDINGS, JANUARY-AUGUST 1961:

Landings of skipjack tuna (mostly 21-22 pound size) in Hawaii during August 1961 were about 1,420,000 pounds or 1,010,000 pounds under the landings for the preceding month. The August 1961 landings were about 0.3 million pounds below the 1948-58 average landings for the month. This decline in landings apparently coincided in time with a change in the water circulation pattern.

This decline is in marked contrast to the preceding months, which have been well above average.

Although the total catch during August fell appreciably, length measurements at the cannery (3,361 skipjack) show little change in size composition of the catch from that of June and July. Two groups were present, a dominant group centered around 74 cm. (21.5 lbs.), and a much smaller group around 65 cm. (4.1 lbs.). Compared with 1959 and 1960, the dominant group is made up of somewhat smaller fish. In August 1959 the dominant group was centered around 80 cm. (27.9 lbs.) and in 1960 at 79 cm. (26.9 lbs.). Additional groups were centered around 46 cm. (4.4 lbs.) and 64 cm. (13.2 lbs.) during August 1959, and around 53 cm. (7.0 lbs.) in 1960.

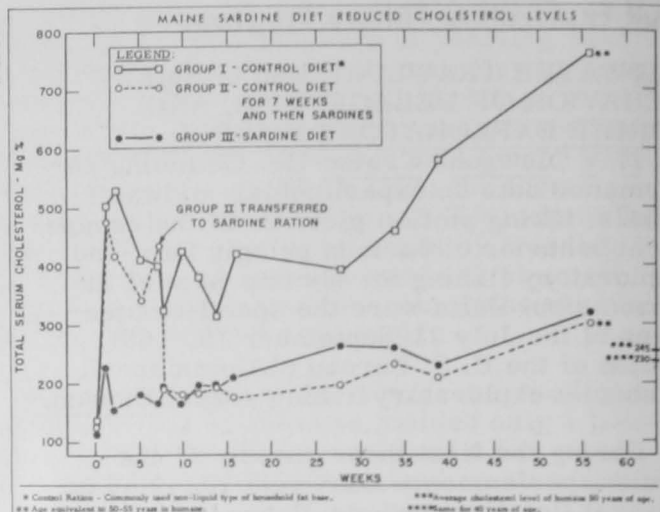
Total estimated landings for January-August 1961 were 9.5 million pounds. On this basis, it is estimated that total landings for the year will be about 11 and 12 million pounds (compared with an average of 10 million pounds).



Maine Sardines

ANIMAL FEEDING TESTS INDICATE VALUE AS CHOLESTEROL DEPRESSANT:

A diet with a Maine sardine base will greatly reduce high serum cholesterol levels in laboratory animals. This statement was made to more than 400 delegates who attended the FAO International Conference on Fish in Nutrition,



Five-fifty week tests by famous research organization shows that feeding of Maine sardines to laboratory animals drastically reduced high serum cholesterol levels.

September 18-27, 1961. These findings were reported by Dr. S. A. Miller of the Massachusetts Institute of Technology who said that they came as the result of a recently-completed 55-week series of feeding tests.

He further stated that a study of the nutritive values of Maine sardines showed that it is a good source of essential nutrients, particularly protein and unsaturated fatty acids.

Blood cholesterol is currently considered by many leading physicians and nutritionists to be definitely related to numerous serious heart diseases affecting or killing millions of people annually.

The Maine Sardine Council's Executive Secretary, who was a member of the official United States delegation to the Conference, said that a number of leading food and health authorities considered the results of the tests to be so impressive that they had recommended that a similar study be conducted on humans.

According to Miller, examination of the animals at the end of the tests showed the cholesterol level of those on the sardine diet to be less than half as high as those on a control diet with a highly saturated fat base of a commonly-used non-liquid type of household fat. Furthermore, the researcher said, the study showed that when a group of animals on the control diet for seven weeks was transferred to the sardine ration their cholesterol level dropped by more than 60 percent almost immediately.

Numerous experts have long contended that foodstuffs with a high saturated fat content tend to favor increased cholesterol levels in humans while those with unsaturated fat content, such as Maine sardines, appear to help control this substance.

A much larger than normal amount of cholesterol was added to both diets for each feeding and the serum levels for those on the control rose steadily to an abnormal high at the end of the tests. Those on the sardine ration enjoyed a steady low and more normal level, according to Miller.

The animals used attained an age equivalent of 50 to 55 years in humans by the 55th week, and the tests indicated that their bodies were less able to adapt to the added cholesterol as they got older.



North Atlantic Fisheries Exploration and Gear Research

OTTER TRAWLS WITH POLYPROPYLENE AND CONVENTIONAL HEAD ROPES TESTED:

M/V "Delaware" Cruise 61-14: Whether or not a standard No. 41 otter trawl equipped with a polypropylene head rope is more effective in fishing operations than the conventional manila-wire combination head rope was the objective of an August 24-September 3, 1961, cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. This cruise was the third in a series designed to test different fiber materials in ropes and netting in the otter trawls in use by the New England trawlers.



Mending a tear in polypropylene netting, M/V Delaware Cruise 61-14.

During the cruise, a total of 98 1-hour tows was made using two No. 41 otter trawls that were rigged and fitted identically, except for the head rope, with polypropylene netting top sections and ropes. One trawl was rigged with a combination wire-rope head rope; the other with a polypropylene head rope.

All tows were made in a 10-mile-square area on Georges Bank. Both trawls were used with the same rollers and doors and were fished from the starboard side, alternating trawls every 2 tows on a "round-the-clock" basis.

All fish of commercially-valuable species were counted and measured. Results showed no significant difference in catch rates between the two trawls.

Species	Combination Head rope (49 Tows)	Polypropylene Head rope (49 Tows)
	Pounds	Pounds
Haddock	6,644	6,766
Yellowtail	543	585
Lemon Sole	112	107
Whiting	162	163

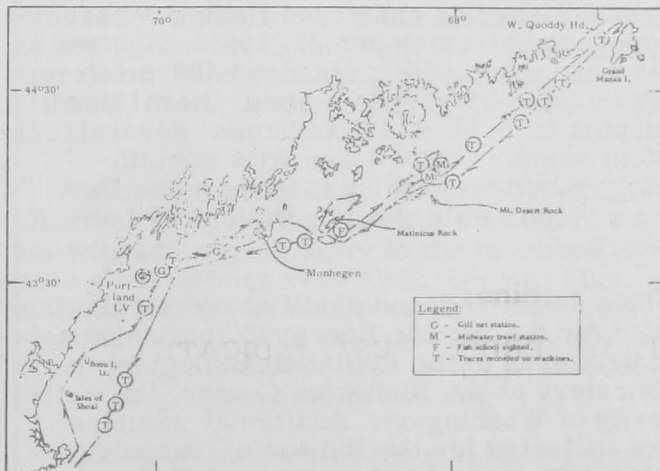
From the data collected during the cruise, recommendations cannot be made regarding the desirability of one head rope over another. Further testing of these nets is currently under way by commercial fishing vessels with Bureau cooperation.

Note: Also see Commercial Fisheries Review, July 1961 p. 23 and April 1961 p. 26.

* * * * *

EXPLORATORY FISHING FOR CANNING-SIZE HERRING OFF MAINE COAST UNSUCCESSFUL:

M/V "Delaware" Cruise 61-15: In an attempt to relieve the shortage of canning-size herring available to the Maine sardine canning industry, the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware surveyed the area offshore from Gloucester, Mass., to West Quoddy Head, Me., from September 7-13, 1961. The survey consisted of (1) scouting, (2) gill-net sampling, and (3) midwater trawling.



M/V Delaware Cruise 61-5 (Sept. 7-13, 1961).

The gill-net stations (see chart) resulted in only small catches of herring.

The midwater trawl was first set on apparently good depth-recorder indications but resulted in catching only approximately 25 pounds of very small or "brit" herring. These fish were of a size which allowed them to pass through the $1\frac{1}{4}$ -inch mesh of the cod end. After adding a $\frac{1}{2}$ -inch mesh liner in the cod end, the trawl was set the following day on comparable tracings. This tow resulted in 500 pounds of small (1 inch long) euphausiid shrimp, mixed with a number of small herring and whiting.

Scouting with sonic depth-recording equipment resulted in additional tracings. These indications were of comparable density to those previously sampled; the existing circumstances did not make midwater trawl sets desirable.

A school of small herring were visually sighted several miles east-southeast of Matinicus Rock (see chart). With the exception of the few herring taken by the gill nets, all herring observed were too small, by existing standards, for commercial use.



North Pacific Exploratory Fishery Program

SURVEY OF DEEP-WATER MARINE FAUNA OFF MOUTH OF COLUMBIA RIVER:

M/V "Commando" Cruise 2: The second of a series of cruises designed to survey the deep-water marine fauna in the area adjacent to the mouth of the Columbia River was completed by the U. S. Bureau of Commercial Fisheries chartered fishing vessel Commando on September 22, 1961. Eighteen tows were made with a standard 400-mesh eastern otter trawl with a small meshliner at depths from 50 to 475 fathoms. Several bottom samples were taken with a Smith-McIntyre bottom grab on loan from the Bureau's Woods Hole, Mass., Biological Laboratory.

Samples of fish and shellfish were collected for the Atomic Energy Commission and delivered to the Radiation Biological Laboratory at the Fisheries Center, University of Washington. Additional samples were collected for the Bureau's Technological and Biological Laboratories in Seattle.

In cooperation with the Oregon Fish Commission, 391 Dover sole caught in depths from 104 to 400 fathoms were tagged with Peterson discs and released.

Commercial species of fish encountered during the cruise included halibut (Hippoglossus stenolepis), sablefish (Anaplopoma fimbria), Dover sole (Microstomus pacificus), rex sole (Glyptocephalus zachirus), petrale sole (Eopsetta jordani), turbot (Atheresthes stomias), hake (Merluccius productus), and several species of rockfish (Sebastes). Dover sole and sablefish were found throughout the entire depth range surveyed. The catch per hour of sablefish ranged from 30 to 450 pounds with the greatest catches being made at 300 and 350 fathoms. The greatest catch of Dover sole was made at 50 fathoms where 1,300 pounds were taken in a one-hour tow. Ocean perch (Sebastes alutus) were encountered from 75 to 275 fathoms with a one-hour tow at 125 fathoms yielding 6,000 pounds. Large concentrations of hake were found down to 200 fathoms including a one-hour haul at 50 fathoms which yielded 6,000 pounds.

Invertebrates were conspicuous by their absence from the catches. No large concentrations of sea urchins were found and the numbers of other invertebrates were greatly reduced. Tanner crabs (Chionoecetes tanneri) were found from 250 to 475 fathoms with the greatest concentration occurring at 350 fathoms where 190 pounds were taken in a one-hour tow. Large males again occupied the inshore areas with egg-carrying females remaining deeper.

Unusual fish and invertebrate species encountered in this deep-water survey were similar to those found on the first survey.

Note: Also see Commercial Fisheries Review, October 1961 p. 24 and September 1961 p. 35.



Oregon

NEW FISHWAY COMPLETED AT LOOKINGGLASS FALLS:

A new fishway of unique design has been completed on Lookingglass Creek, a tributary of the Grande Ronde River in Union County, Ore., the Director of Engineering for the Oregon Fish Commission announced on September 22, 1961.

The Denil (De neel') type fishway, as it is called, is the second of its kind in the State and is located at Lookingglass Falls about 2 miles upstream from the mouth of Lookingglass Creek. The falls are of the cascade-type (rather than sheer drop) which salmon and steelhead are able to navigate during favorable high-water periods. Frequently, however, low water keeps the fish from reaching several miles of prime spawning grounds. With the new fishway, the falls will be passable at all stages of flow.

Baffles are so arranged on the fishway that water currents will flush leaves, twigs, and other debris through without allowing accumulation. This feature will greatly reduce the normal amount of maintenance necessary to keep the facility at peak operating capacity, thus eliminating the need for an attendant to be present at all times. The Denil fishway is therefore suited for isolated locales such as Lookingglass Falls where it is not practical to keep an attendant.

The 60-foot long, 6-foot deep, and 4- to 6-foot wide reinforced concrete fishway (constructed with funds provided by Columbia River Fishery Development Program of the U. S. Bureau of Commercial Fisheries) was completed more than a month ahead of schedule. This structure is steeper than most fishways, rising 1 foot for each 6 feet in length--necessary to insure turbulent water, a major factor in the self-cleaning feature. Fish are still able to negotiate the current with ease, even with flows up to 30-feet per second. However, these fishways are designed for falls of moderate height only because no resting areas in the fishway can be provided. The other Denil-type fishway in Oregon is operated by the U. S. Forest Service at the outlet of Suttle Lake and was constructed on the recommendation of the Oregon Fish Commission.



Oysters

LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING:

As of September 6: As was predicted in the observations as of August 17, 1961, the disappearance of "red water" organisms from Long Island Sound resulted in better survival of oyster larvae and heavier setting. Nevertheless, regardless of the improvement

in the water condition, the intensity of setting was very light at most of the stations as of September 6, 1961. To that date, New Haven Station #5 and two recently-established Bridgeport Stations #21 and #22 were the only ones where setting was approaching an intensity of commercial significance, provided that the young oysters survive, the U.S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn., reports. The Laboratory was especially concerned about the extremely poor setting at Bridgeport Station #10, which for years has been one of the best setting areas of the Sound.

The plankton samples collected August 31 again were relatively poor in oyster larvae. Nevertheless, since one-third of all recently-set oysters on the collectors taken out of the water on August 31 were less than a day old, setting was expected to continue.

Starfish setting still continued but remained light. Again, the Bridgeport stations were leading in the number of recently-set starfish. Unfortunately, the starfish that set earlier in the summer have survived in comparatively large numbers, have shown a rapid increase in size, and are presenting quite a problem to the oyster industry, especially in the Bridgeport area. (Bulletin No. 6, September 6, 1961, issued by the Milford Biological Laboratory.)

As of September 21: Clearing of the Long Island Sound water from "red water" organisms observed early in September resulted, as expected, in a better setting of oysters. However, setting of increased intensity continued only a few days and was especially pronounced at three Bridgeport stations. Since that time, it has become erratic and generally light, some of the stations showing no set whatsoever, the U. S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn., reported as of September 21, 1961.

Although setting was still in progress in all areas it is rather doubtful that the new set will add significantly to the numbers that have already been recorded. Only at four stations did the season's set approach commercial value. It is possible that one station, which was established late in the season, also collected a light commercial set.

Setting of starfish continued. However, it remained light and at some stations no re-

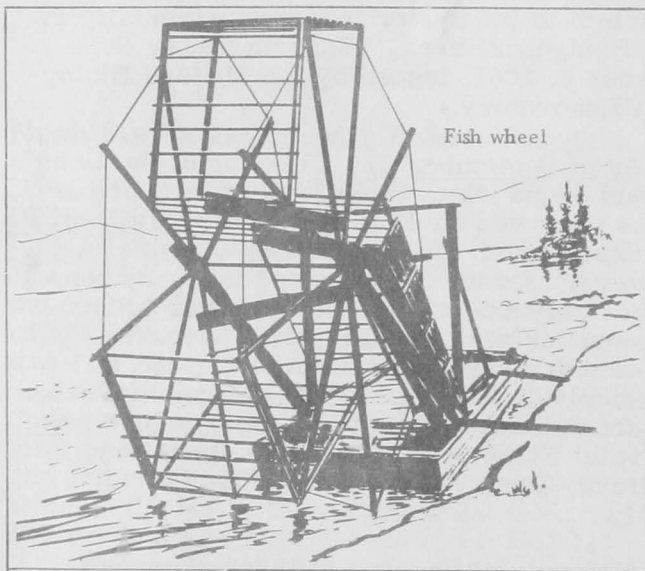
cently set starfish were recorded from August 31 to September 18. It virtually ceased during the same period at most Milford and New Haven stations, while in the Bridgeport area a few recently set individuals were found at all stations.



Salmon

PINKS TAGGED TO DETERMINE MIGRATION PATTERNS AND SIZE OF RUNS:

A pink salmon tagging program in five major streams tributary to Puget Sound was conducted by the Washington State Department of Fisheries as part of a joint investigation with the Fisheries Research Board of Canada and the International Pacific Salmon Fisheries Commission during the 1961 fishing season. Tagging operations by the Fisheries Research Board of Canada were conducted off Cape Flattery beginning early in July 1961 and the International Pacific Salmon Fisheries Commission tagged pink salmon in the Fraser River.



The Washington agency gathered pink salmon by beach seines in the lower reaches of the five streams (Skagit, Nooksack, Snohomish, Stillaguamish, and Dungeness Rivers) and by one fish wheel in the Skagit River. Salmon were tagged and released to continue their migration journeys. Later, spawning grounds were checked for tagged to untagged pink salmon ratios from which stream population determinations can be

made. This total, added to the 1961 pink salmon catch, will give a good indication of the run of this species in Puget Sound.

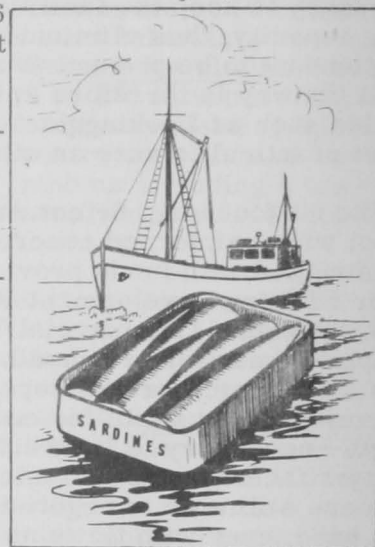
The three-way pink salmon tagging program designed to gain more knowledge on migration patterns and size of runs, etc. was begun in 1960.



Sardines

CALIFORNIA LANDINGS DOWN 41 PERCENT THROUGH SEPTEMBER 1961:

California sardine landings this year through September totaled only 7,882 tons, a decrease of 5,406 tons or 41 percent as compared with the 1960 landings for the same period, and were only 21 percent of the January-September 1958 catch of 37,297 tons. Comparison with 1959 is not possible, since the Southern California sardine fleet was tied up during September of that year in an ex-vessel price dispute.



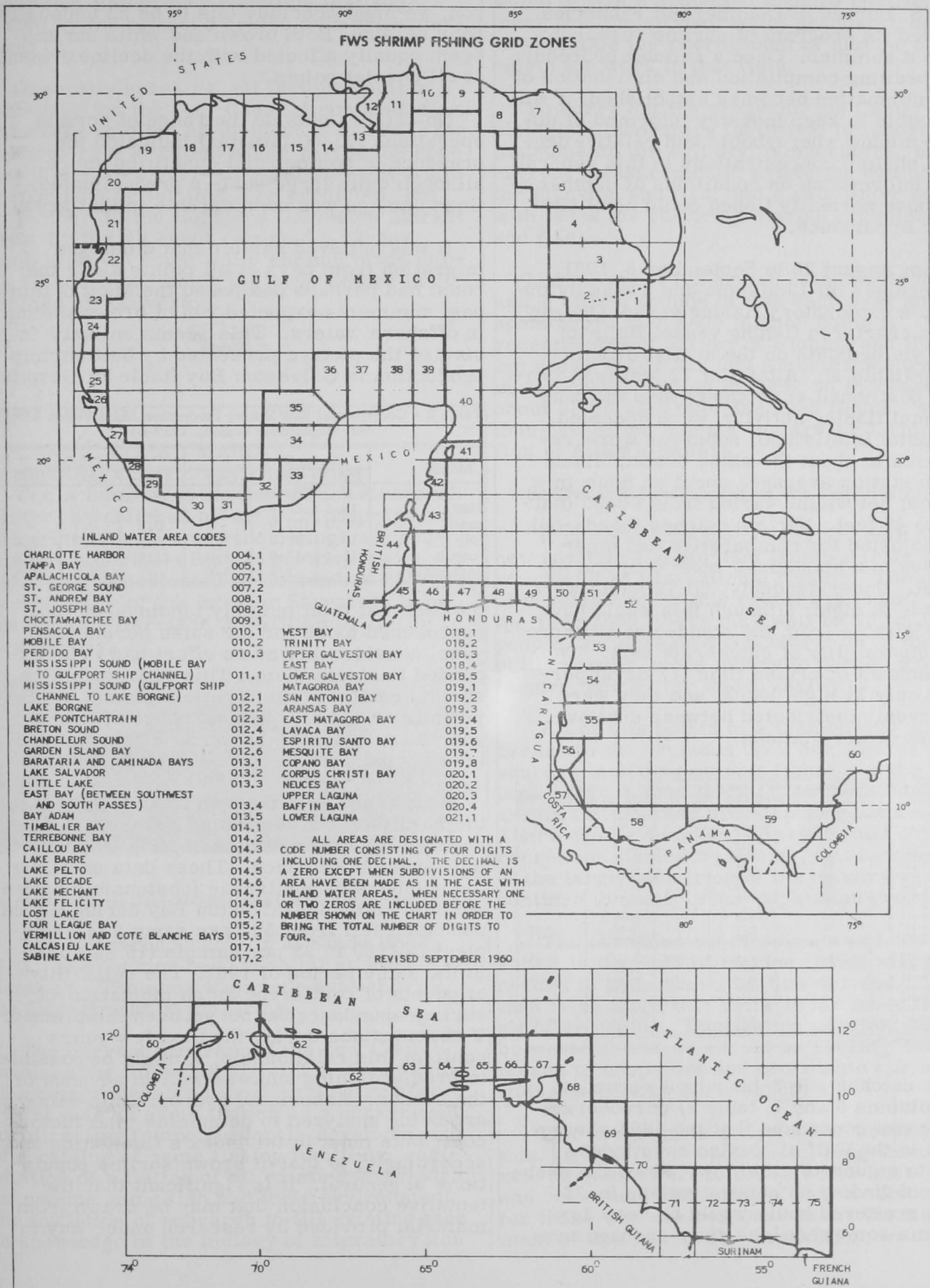
Sardines have disappeared from the Central California area this year, and only 1,400 tons have been trucked to Monterey canners from Southern California waters this season through September 30. A year ago those canners had received 2,915 tons to the same date, and 11,330 tons in the same period during 1958.



Shrimp

GULF OF MEXICO SURVEY INDICATES LOW LEVEL OF ABUNDANCE OVER WIDE AREA:

In order to make systematic observations of shrimp availability on the continental shelf in the Gulf of Mexico from the Mississippi River Delta to the Rio Grande River, the Galveston (Texas) Biological Laboratory of



the U. S. Bureau of Commercial Fisheries expanded its program of shrimp research this past summer. Once a suitable procedure for expediting compilation and distribution of such information becomes established, it will be possible to keep industry informed of up-to-the-minute whereabouts and relative density of shrimp concentrations in this general area. Information on conditions at depths beyond those normally fished could be of particular importance.

From August 28 to September 8, 1961, three cruises off Louisiana and Texas by the Bureau's exploratory fishing vessel Oregon and the chartered fishing vessel Belle of Texas yielded data on the availability of shrimp (table 1). A total of 72 stations, two-thirds positioned at depths beyond the zone of normal fishing activity, were occupied. All coastal (statistical) subareas were represented to about the same extent. Hauls at each station averaged about an hour in duration; net widths varied from 60/80 (balloon) to 40 feet. Shrimp catches (heads-on) were adjusted for comparative and other purposes to a standard 3-hour haul and 45-foot net. Understandably, all 72 hauls were not made at night, although this would have been desirable from the standpoint of improving comparability of catch-rate data. The short amount of cruise time (11 days) permitted only 31 night hauls, and they were about evenly distributed between shallow- and deep-water stations.

Table 1 - Cruise Data, M/V Oregon and M/V Belle of Texas, August 28-September 8, 1961

Statistical Area	Depth Range	Hauls	Average Duration of Haul		Catch Per 3-Hour Haul		Dominant Size (heads-off)	
			Fms.	No.	Brown	White	Brown	White
Louisiana:	0-25	2	45	0.26	-	26-30	-	
	25-60	5	60	0.07	-	21-25	-	
	0-25	1	60	0.01	-	41-50	-	
	25-60	10	80	0.05	-	10-15	-	
	0-25	1	60	0.36	-	41-50	-	
	25-60	8	54	0.06	-	10-15	-	
16	0-25	0	-	-	-	-	-	
	5-60	5	54	0.02	-	10-15	-	
	0-25	4	60	0.14	0.01	15-20	15-20	
17	25-60	6	60	0.07	-	10-15	-	
	Texas:	0-25	5	60	0.13	0.02	31-40	15-20
25-60		4	65	0.03	-	10-15	-	
19	0-25	5	60	0.11	0.04	21-25	21-25	
	25-60	2	60	0.03	-	10-15	-	
20	0-25	5	60	0.11	0.02	31-40	26-30	
	25-60	2	60	-	-	15-20	-	
21	0-25	5	60	0.12	-	15-20	15-20	
	25-60	5	60	0.01	-	15-20	-	

1/All hauls yielded less than one full box of shrimp.

The catches per 3-hour haul recorded (see columns 6 and 7, table 1) corroborate the present consensus that the 1961 shrimp stocks in the Gulf of Mexico have indeed ebbed to an unprofitable low. Since the probability of finding no concentrations in 72 widely scattered hauls would be very low even in a somewhat less-than-average sea-

son, we must conclude this to be an unusually poor season. Both brown and white shrimp seem equally affected with the decline evident at all coastal points.

No catches outside the range of normal operations (25-60 fathoms) indicated the presence of commercial quantities there, although quite large shrimp predominated. Gear damage was considerable in that area.

It was believed earlier that a delayed migration from bays at all points along the coast had perhaps postponed the start of this past summer's expected run of brown shrimp in offshore waters. This seems unlikely in view of the picture presented by bait shrimp production in Galveston Bay (table 2). Despite

Table 2 - Commercial Bait Shrimp Production in Galveston Bay, May-September Season, 1959-61

Month	Brown Shrimp			White Shrimp		
	1961	1960	1959	1961	1960	1959
 (Pounds Per Hour's Trawling)					
May	18.3	29.9	-	4.6	-	-
June	37.0	105.9	-	0.5	0.7	-
July	19.2	27.2	21.8	4.3	15.7	32.6
August	11.1	17.5	3.3	21.2	77.6	35.0
September . .	-	1.1	3.8	-	62.8	26.8

the fact that total monthly landings in 1961 approached those for the same period last year, considerably more effort had to be expended to obtain them. This reduced brown shrimp catch-to-effort ratio reflects, in the juvenile or nursery ground phase of this year's early season spawning class, a much lower population level than prevailed in 1960.

Also available as supporting evidence are the results of the Bureau's Galveston Laboratory 1961 semiweekly sampling program in Galveston Entrance. These data show that the numbers of postlarvae (obviously brown shrimp) entering Galveston Bay during March and April fell from 582 per sample (17 samples) in 1960 to 22 per sample (15 samples) in the same period of 1961. The reliability of counts of postlarvae as an indication of shrimp abundance has not yet been established. If observations during the next few years confirm this relationship, it might be possible to predict fishing success well in advance of the season. Associated hydrographic data are being analyzed to determine what factors contribute most to the index's fluctuation and, accordingly, to that of brown shrimp populations in general. It is significant that the tentative conclusion that may be drawn from material provided by research under way in

Galveston Bay proper parallels that suggested by the offshore cruise data presented here.

Generally speaking, all factors point to a poor year for the Gulf Coast shrimp industry. But every so often an incident is called to the Laboratory's attention which raises the hope that this year's over-all yield may yet attain proportions better than now predicted. On September 20 the Bureau's Galveston Market News-Statistics agent reported a 12-box catch of 21-25 count white shrimp made during 12 hours of fishing the night before in 10 fathoms off Galveston.



Sport Fishing

ATLANTIC COAST MARINE RESEARCH CENTER DEDICATED:

The Atlantic Marine Game Fish Research Center, established by the U. S. Department of the Interior to study the biological problems of America's fastest growing sport fishery, was dedicated on September 28, 1961, by Secretary of the Interior Stewart L. Udall and Senator Harrison A. Williams, Jr., of New Jersey.



The Atlantic Marine Game Fish Research Center, Sandy Hook, N. J.

The Research Center is at Sandy Hook, N. J., in a former base hospital at Fort Hancock. The area was made available by the Department of the Army.

The current program of the new Center involves the following activities: Completion of a comprehensive report on a national survey of marine game fishing as a background for directing future research; development of a catalog of game fishing facilities; compilation of a listing of all existing knowledge on marine game fish and their environment; the initiation of research to fill existing gaps in knowledge of the biology of migratory fish

which utilize a protected inshore environment; and the sponsoring of graduate training to stimulate the recruitment of marine biologists for work in that field.

To carry out the program, the Center has biological laboratory facilities; oceanographic instruments for salinity, temperature, and current measurements; collecting equipment for plankton and fish; and a salt-water system with tanks for culturing marine organisms and fish.

Marine sport fishermen catch more than half a billion pounds of fish each year and spend more than \$600 million doing it. The recent National Survey of Fishing and Hunting shows that 6,292,000 Americans engaged in salt-water fishing in 1960, an increase of about 38 percent over the 1955 figure. More than half of the marine anglers, or 3.4 million, fish in Atlantic waters.

Secretary Udall said at the dedication:

"It is clear that the oceans are both our new frontier and our last frontier from the standpoint of recreational fishing. The pace of development in this country is rapid. By the year 2000, there may well be 330 million people, an increased concentration in metropolitan areas, more money to spend, more leisure, and better travel facilities.

"All of this points to a tremendous increase in the demands upon our natural resources including marine fishes and the waters in which they live. Often these demands are of a conflicting or competing nature. There can be no doubt, however, that outdoor recreation, including fishing, has become one of the large industries of the country and will continue to outstrip our population growth.

"The advancement of science and conservation in the field of marine fishes will be needed to keep pace with this demand. The task is so large that there is far more than all of us can do. Duplication of effort would be wasteful and we should be seeking every means to cooperate and coordinate our activities, especially in research.

"Our program is conceived to accomplish this. It will focus upon basic, long-term research in an effort to provide new knowledge and better understanding of marine fishes for those who are responsible for the management of this resource. In addition, we believe

that the Federal role in this field carries additional responsibilities for defining the national dimensions of this resource and for developing methods to assess it periodically; to stimulate the recruitment and training of marine fishery biologists; and to assist in the problem of scientific communication which threatens to inundate us."



Tagging

AUTOMATIC TAG DETECTION DEVICE FOR ALASKAN HERRING:

Alaska herring tagged with metallic strips inserted in the body cavity by biologists of the U. S. Bureau of Commercial Fisheries have been recovered by the automatic tag detection device installed in a Little Port Walter (Alaska) herring reduction plant. As of the end of August this year, 12 tagged fish, which included several from 1960 tagging operations, had been recovered.

The tag detection device has been in almost continuous operation since the beginning of the 1961 Alaska herring fishing season. The device has functioned well at close to the maximum design load of the herring pumping apparatus.



Tennessee

COMMERCIAL FISH CATCH FOR CUMBERLAND RIVER RESERVOIRS IN 1960:

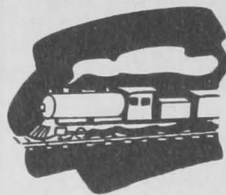
In addition to a sport fish catch of about 1.3 million pounds taken by anglers in 1960 from the U. S. Army Corps of Engineers' impoundments of the Cumberland River System, commercial fishermen harvested nearly 221,000 pounds of commercial fish from the five reservoirs. Altogether, the five reservoirs have a total 126,200 acres of water surface. The commercial fish catch amounted to only 1.7 pounds per acre. Cheatham Reservoir provided over half the total commercial catch or about 15 pounds per acre. Even this much greater catch can be expected to have little effect on the fish population, according to a report by the Tennessee Game and Fish Commission.



Transportation

EXPRESS RATES OF FISH AND SEAFOOD ABOUT UNCHANGED:

Higher express rates proposed in June 1961 by REA Express for fresh and frozen fishery products will not go into effect. Subsequent to the REA proposal for a rate increase, the National Fisheries Institute, several shippers of fishery products, and the U. S. Department of the Interior petitioned the Interstate Commerce Commission (ICC) to suspend and investigate the new rates on the grounds that they were unreasonable. The ICC instituted I & S (Investigation and Suspension) Docket 7622--"Increased Express Rates on Fish and Seafood - U.S.A." The investigation of the increased railway express rates has been cancelled and the protested tariffs will be replaced.



After several informal meetings concerning the proposed increases, REA officials and representatives of the protestants agreed on a compromise. The compromise included cancellation of the re-icing charges even though this subject would not have been under investigation. It was generally agreed that class-rated traffic (Tariff ICC 8500) and minimum charges would remain the same.

There were a few isolated hold-downs on commodity rated traffic. Tariffs ICC 8320, 8321, and 8331 will be increased to a percentage of the applicable regional first-class rate as follows: 1-499 pounds, 60 percent; 50-999 pounds, 56 percent; 1,000-1,999 pounds, 54 percent; 2,000 pounds and over, 51 percent. Where quantity rates are in gallons such as shucked clams, oysters, and scallops: 1-39 gallons, 60 percent; 40-79 gallons, 56 percent; 80-159 gallons, 54 percent; over 159 gallons, 51 percent.

The REA will entertain proposals for specific commodity rate reductions where warranted and consistent with the particular cost of operations allowing for contributions to the fixed costs and profit of the company.

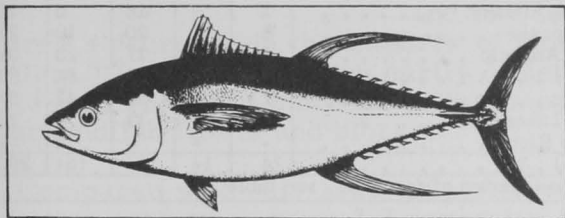
The REA will publish new tariffs consistent with the compromise.



Tuna

YELLOWFIN CATCH IN EASTERN PACIFIC AT RECORD HIGH:

A record total of about 99,000 tons of yellowfin tuna has been caught in the Eastern Pacific by United States and Latin American countries during 1961 through September, setting a new catch record for this species. However, most of the catch was by United States vessels. The 1961 catch exceeds that for the same period in 1960 (the former record year) by 19,500 tons, or 24 percent.



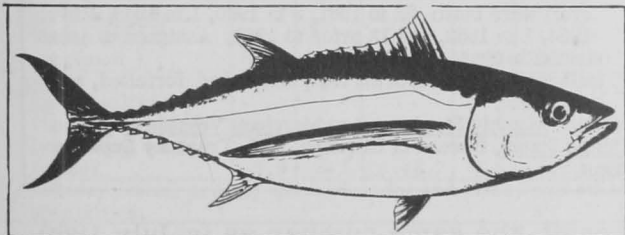
Yellowfin Tuna, average size, 30-40 lbs.

At this time it is estimated that the total calendar year 1961 yellowfin landings from the Eastern Pacific will approximate 115,000 tons, or about 10,000 tons more than that caught during 1960.

* * * * *

ALBACORE OCEANOGRAPHIC SURVEY OFF CALIFORNIA:

The U. S. Bureau of Commercial Fisheries research vessel Black Douglas and the California Department of Fish and Game research vessels Alaska and N. B. Scofield completed an albacore tuna oceanographic survey in July 1961.



Albacore Tuna, average size, 12-25 lbs.

One of the highlights of the Black Douglas cruise was the discovery of a 5° F. thermal boundary (in 2 miles, surface water temperatures changed from 57° to 62° F.) 150 miles southwest of Point Conception. A marked salinity gradient accompanied the temperature change and water color changed from green to blue. Albacore were taken in the

62° F. oceanic blue water within 2 to 3 miles of the boundary area.

* * * * *

UNITED STATES AND TERRITORIES 1961 CANNED PACK AT RECORD HIGH:

As of September 23, 1961, for the United States west coast and as of August 31 for Hawaii, American Samoa, and Puerto Rico, this year's total tuna pack for those areas totaled about 11.1 million cases--an increase of 700,000 cases or 7 percent as compared with the previous record pack in 1960 for the same period. The pack in the areas mentioned represents about 72 percent of the 15.3 million cases packed in the United States, American Samoa, and Puerto Rico in 1960.

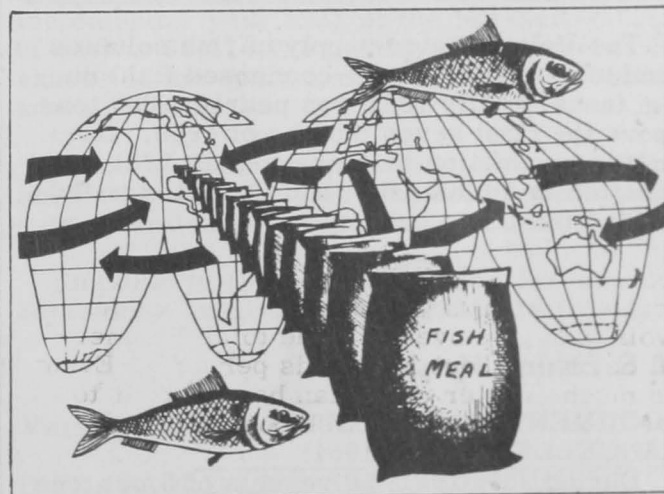


While the California tuna pack in 1961 is estimated at about the same as during 1960 (8.3 million cases), the pack in Puerto Rico, American Samoa, and Hawaii is about twice as large and accounts for nearly all of the increase. Most of the increase is in the pack of light meat tuna.



U. S. Fish Meal and Solubles Supply, July 1961

The total United States supply of fish meal for the first 7 months of 1961 amounted to 288,600 tons--68,600 tons above the same period of 1960. The domestic production



accounted for 56 percent and imports 44 percent of the total supply.

Fish meal produced by United States firms during January-July 1961 totaled 162,400 tons. Fish meal processed from menhaden accounted for 86 percent of that total. Fish meal imports from foreign countries during January-July 1961 amounted to 126,200 tons--up 46,700 tons from the same period of 1960. Imports from Peru made up 65 percent and those from Canada, Chile, and the Republic of South Africa accounted for 33 percent of the total.

Item	January-July		Total 1960
	1961	1960	
. . . . (Short Tons)			
Fish Meal and Scrap:			
Domestic production:			
Menhaden	139,357	106,508	218,423
Tuna and mackerel	11,378	17,303	26,325
Herring, Alaska	2,388	3,140	6,071
Other	9,277	13,466	38,897
Total domestic production	1/162,400	1/140,417	289,716
Imports:			
Canada	26,265	24,421	30,982
Peru	81,787	40,739	68,156
Chile	8,080	9,113	21,183
Angola	1,433	-	888
Republic of South Africa	7,716	4,930	7,073
Other countries	892	303	3,279
Total imports	126,173	79,506	131,561
Available fish meal supply	288,573	219,923	421,277
Fish Solubles:			
Domestic production 2/:	60,298	55,822	98,299
Imports:			
Canada	699	691	869
Denmark	28	1,858	1,858
Other countries	1,200	65	447
Total imports	1,927	2,614	3,174
Available fish solubles supply	62,225	58,436	102,103

1/Preliminary. Based on reports from firms which accounted for 96 percent of the 1960 total production.
2/50 percent solids. Includes production of homogenized-condensed fish.

The United States supply of fish solubles (including homogenized-condensed fish) during January-July 1961 was nearly 3,800 tons above the first seven months of 1960. Domestic production in January-July 1961 amounted to 60,300 tons, and imports totaled 1,900 tons.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, JULY 1961:

During July 1961, 50 vessels of 5 net tons and over were issued first documents as fish-

Table 1 - U. S. Fishing Vessels^{1/}--Documentations Issued and Cancelled, by Areas, July 1961 With Comparisons

Area (Home Port)	July		Jan.-July		Total 1960
	1961	1960	1961	1960	
. (Number)					
Issued first documents 2/:					
New England	4	7	21	20	35
Middle Atlantic	1	2	5	13	18
Chesapeake	5	5	40	43	78
South Atlantic	5	7	26	36	47
Gulf	12	7	73	53	90
Pacific	22	20	123	109	146
Great Lakes	1	2	9	9	18
Puerto Rico	-	-	2	-	-
Total	50	50	299	283	432
Removed from documentation 3/:					
New England	3	-	11	15	22
Middle Atlantic	1	-	16	6	18
Chesapeake	3	1	20	10	21
South Atlantic	3	-	17	20	38
Gulf	4	9	60	64	90
Pacific	7	4	59	42	87
Great Lakes	3	-	11	6	13
Puerto Rico	-	-	-	1	1
Total	24	14	194	164	290

1/For explanation of footnotes, see table 2.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, July 1961

Gross Tonnage	Issued 2/	Cancelled 3/
. (Number)		
5-9	5	6
10-19	20	10
20-29	8	2
30-39	5	-
40-49	4	2
50-59	4	-
60-69	2	1
70-79	1	1
80-89	1	1
130-139	-	1
Total	50	24

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.

2/Includes redocumented vessels previously removed from records. Vessels issued first documents as fishing craft were built: 31 in 1961, 3 in 1960, 1 in 1959, 1 in 1954, 1 in 1952, and 13 prior to 1951. Assigned to areas on the basis of their home ports.

3/Includes vessels reported lost, abandoned, forfeited, sold alien, etc.

Source:--Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U.S. Treasury Department.

ing craft, the same number as in July 1960. But the number issued first documents the first 7 months this year was 16 more than in the same period last year.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JULY 1961:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States

during July 1961 decreased by 1.9 percent in quantity and 3.6 percent in value as compared with June 1961. The decrease was due



primarily to lower imports of tuna other than albacore (down 2.6 million pounds) and lobster and spiny lobster (down 1.6 million pounds), and to a lesser

degree a decrease in the imports of frozen shrimp. The decrease was partly offset by a 3.3-million-pound increase in the imports of groundfish fillets and blocks.

Compared with July 1960, the imports in July this year were down 7.3 percent in quantity, but up 5.5 percent in value. Lower imports of frozen tuna other than albacore (down 7.0 million pounds), canned tuna other than albacore (down 1.2 million pounds), and frozen shrimp (down 0.7 million pounds) contributed to the decline. Compensating, in part, for the decrease were increases in the imports of canned albacore tuna (up about 1.5 million pounds), canned sardines not in oil (up 2.0 million pounds), and lobster and spiny lobster (up 1.5 million pounds).

Item	QUANTITY			VALUE		
	July		Year	July		Year
	1961	1960	1960	1961	1960	1960
	(Millions of Lbs.)			(Millions of \$)		
Imports:						
Fish & Shellfish:						
Fresh, frozen, & processed ^{1/}	85.1	92.2	1,011.2	26.7	25.3	304.8
Exports:						
Fish & shellfish:						
Processed only ^{1/} (excluding fresh & frozen)	1.5	2.1	48.7	0.8	1.0	19.2
^{1/} Includes pastes, sauces, clam chowder and juice, and other specialties.						

United States exports of processed fish and shellfish in July 1961 were higher by 25.9 percent in quantity, but unchanged in value as compared with June 1961. Compared with the same month in 1960, the exports this July were down 25.8 percent in quantity and 20.0 percent in value. The lower exports in July this year as compared with the same month in 1960 were due to decreased exports of canned shrimp, salmon, and California sardines.

* * * * *

UNITED STATES EXPORTS AND RE-EXPORTS OF FROZEN SHRIMP TO JAPAN, JANUARY-JUNE 1961:

Of the almost 3.6 million pounds of domestic and foreign fresh and frozen shrimp exported and re-exported from the United States during the first six months of this year, a little over 2.0 million pounds were shipped to Japan. A substantial proportion of the shipments to Japan was made from California. Most of the re-exports consist of shrimp imported into the United States from Mexico.

Type of Product	Jan.	Feb.	Mar.	Apr.	May	June	Total
	(1,000 Lbs.)						
Domestic . . .	31	80	23	64	137	111	446
Foreign	286	198	185	148	326	425	1,568
Total	317	278	208	212	463	536	2,014
^{1/} Although data appear under the "fresh and frozen shrimp" category, it is believed that all of the exports were frozen shrimp.							

Exports and re-exports of shrimp to Japan from California were negligible prior to 1961. But due to a short supply of shrimp in Japan during the first part of this year and a strong market, that country has purchased substantial quantities of shrimp from the United States. Most of the Japanese purchases consist of frozen raw headless brown shrimp, 21-25 shrimp to the pound. But some shipments included 26-30 count, 16-20 count, and under 15 count.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1961 at the 12½-percent rate of duty is 57,114,714 pounds. Any imports in excess of the quota are dutiable at 25 percent ad valorem.

Imports from January 1-September 2, 1961, amounted to 35,537,369 pounds, according to data compiled by the Bureau of Customs.

Imports in 1960 for the period January 1-September 3 amounted to 32,925,519 pounds.



Vessels

INFLATABLE LIFE RAFTS TESTED:

The value of inflatable life rafts as survival insurance for the crews of fishing

vessels was demonstrated in a recent test on board the Boston trawler Terra Nova.

With 60 or more spectators aboard, including vessel owners, marine insurance officials, newspapermen, and others interested in marine safety, the Terra Nova sailed out beyond Boston Lightship where a Coast Guard-approved inflatable life raft was thrown overboard from the deck of the trawler.

The raft inflated automatically inside of 30 seconds whereupon it was subjected to a series of operational tests including boarding from the water by fully-clothed men, towing (fully loaded) at a 5-knot rate, and jump boarding by crew members who jumped from the vessel's bridge onto the canopy of the raft, with no damage resulting.

The head of the U. S. Bureau of Commercial Fisheries Fishing Vessel Safety Program reported that the demonstration was a complete success from a performance standpoint and proved that rafts of this type can be quickly launched by untrained crews under adverse conditions, are easy to board, and offer protection from extreme weather conditions--an important consideration where survival is concerned.

"The introduction of these Coast Guard-approved inflatable life rafts to the fishing industry," he stated, "is an important contribution to marine safety and we urge all fishing vessel operators to consider inflatable life rafts as a means of providing survival insurance for their crews."



Whiting

SHELF LIFE OF FROZEN PRODUCTS AFFECTED BY METHOD AND TIME OF CHILLED STORAGE:

Results of tests made by the Gloucester Technological Laboratory of the U. S. Bureau of Commercial Fisheries on whiting show that both the method and the length of chilled storage seriously influence the shelf life of the frozen products.

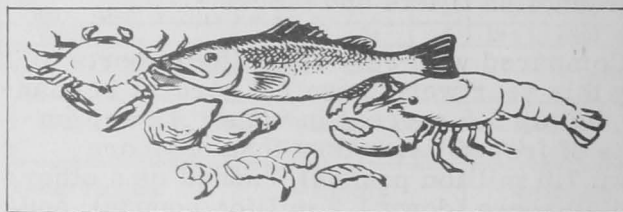
Whiting held for 2 days in ice or in refrigerated sea water had a frozen storage life of 12 months. Those held for 7 days in refrigerated sea water were of acceptable

quality until only the sixth month of frozen storage; whereas the samples held in ice for 7 days had a frozen shelf life of only 2 months. The point of no return (zero months frozen storage) was found after storage for 14 days in refrigerated sea water 9 days in ice.



Wholesale Prices, September 1961

There was a slight drop in prices of fishery products during September this year, according to the wholesale price index for edible fishery products (fresh, frozen, and canned). The September index at 136.9 percent of the 1947-49 average showed a reversal of the steady increase in prices reported from April through August this year.



But while the over-all decrease was less than 1 percent, there were significant decreases from August to September in some fresh drawn and dressed fish products. These included fresh large haddock (ex-vessel price at Boston down 31 percent), king salmon (wholesale price at New York City down 5 percent), and fresh Lake Superior whitefish (wholesale price at Chicago down 17 percent). As the season for fresh salmon came to an end, the price of frozen king salmon in September was down slightly from that for fresh salmon in August. The decreases were almost offset by higher prices for fresh halibut (as fishing in the North Pacific drew to a close) and yellow pike at New York City.

Among the processed fresh products, prices for shucked oysters at Norfolk dropped slightly as the new season opened in September, with indications that supplies would be light this season. However, shucked oysters at \$7.50 a gallon were nearly double the 1947-49 base period price.

Fresh and frozen shrimp prices from August to September continued to rise as the available supplies shrank to only about half what was available a year earlier. Wholesale prices for fresh shrimp at New York City rose 2 percent and for frozen shrimp at Chicago rose 9 percent. Gulf landings of shrimp showed no improvement in September and production was almost one-third less than in 1960. A substantial export of frozen shrimp to Japan on contracts made earlier this year when supplies appeared plentiful made the shortage of stocks in cold-storage more acute.

In the canned fish subgroup, a definite firming up of canned tuna prices was noted in September with an average increase of 50 cents per case (up 5 percent) for light meat chunks at Los Angeles as compared with the previous month. A sharp decline in availability of frozen tuna imports has strengthened the domestic raw tuna prices and an increase in the demand for raw tuna among canners has sparked a rise in imported frozen tuna prices. The current California sardine season was off to a poor start in September, with a catch of only 8,100 tons--down 5,000 tons or 39 percent from September 1960 (also a light production month). With canned new crop California sardines in limited supply, the canners were quoting on pound ovals only in cases of 24s at a firm price of \$4.75 (up 6 percent from August 1961). While the average price for canned Maine sardines did not change in September, the available supply at the end of the month was down by 1.2 million cases, or 72 percent, as compared with the same period a year ago.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, September 1961 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1947-49=100)			
			Sept. 1961	Aug. 1961	Sept. 1961	Aug. 1961	July 1961	Sept. 1960
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					136.9	137.1	129.2	128.1
Fresh & Frozen Fishery Products:					151.4	153.5	140.8	143.7
Drawn, Dressed, or Whole Finfish:					150.0	162.4	146.5	169.8
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.09	.13	95.2	128.2	77.5	120.4
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.39	.38	120.7	117.6	108.3	95.4
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.84	.88	188.2	196.6	194.3	210.6
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.53	.64	130.2	158.7	131.4	183.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.60	.55	140.7	129.0	136.0	179.4
Processed, Fresh (Fish & Shellfish):					155.7	158.2	146.0	137.0
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.31	.31	105.5	103.8	98.7	108.9
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.89	.87	140.6	136.7	114.5	114.1
Oysters, shucked, standards	Norfolk	gal.	7.50	8.00	185.6	198.0	198.0	173.2
Processed, Frozen (Fish & Shellfish):					130.9	124.0	115.3	110.1
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	100.8	100.8	100.8	100.8
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.33	103.6	102.0	103.6	87.9
Ocean perch, lge., skins on, 1-lb. pkg.	Boston	lb.	.30	.29	120.8	114.8	112.8	108.7
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.89	.82	136.6	125.8	109.6	106.5
Canned Fishery Products:					116.4	114.1	112.4	106.5
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.00	28.00	146.1	146.1	146.1	133.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.50	11.00	82.9	79.3	79.3	80.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	4.75	4.50	110.9	105.0	105.0	89.8
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	10.31	10.31	109.7	109.7	96.1	93.1

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.

Compared with a year ago, the over-all index this September was up 6.9 percent. A number of products in the index were priced substantially higher this September than in the same month in 1960. Among these were western halibut at New York City (up 26.5 percent), fresh shrimp at New York City (up 23.2 percent), and frozen shrimp at Chicago (up 28.3 percent). Also, all of the canned fish included in the index were priced substantially higher. Except for halibut, most of the fresh fish products in the index were priced substantially lower with fresh haddock at Boston down 20.9 percent and fresh salmon also down substantially.



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Cans--Shipments for Fishery Products, January-August 1961

Total shipments of metal cans during January-August 1961 amounted to 89,428 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 87,179 tons in the same period of 1960.

Canning of fishery products in January-August this year was confined largely to tuna, shrimp, jack mackerel, Pacific salmon, and Maine sardines.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

