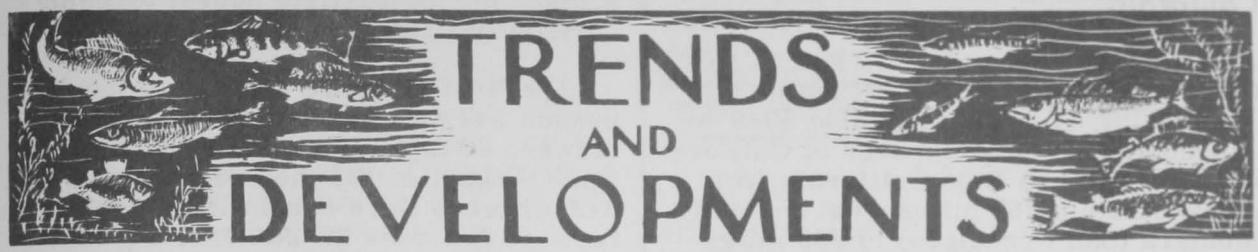

American Samoa

TUNA LANDINGS BY JAPANESE VESSELS, 1957-58:

In 1957 a total of 56 Japanese vessels landed 255 trips in American Samoa with 8,667 metric tons of tuna, of which 5,535 tons was albacore, 1,523 tons was yellowfin, and 500 tons was big-eyed tuna, according to the "Annual Report of Catch Statistics for 1957," published by the Japanese Ministry of Agriculture and Forestry.

According to a report, "The Present Condition of the Japanese Fishing Industry," published in July 1958 by the Japanese Fisheries Agency, the number of Japanese tuna vessels operating out of American Samoa in 1958 was 42, and the deliveries were being held within the range of approximately 10,000 metric tons a year.

According to preliminary figures supplied by the Japanese Fisheries Agency, landings by Japanese vessels at Samoa in 1958 totaled 10,567 metric tons made up of 8,169 tons of albacore, 1,963 tons of yellowfin, and 432 tons of big-eyed tuna.

The 1959 edition of "Present Conditions and Prospects in the Export of Agriculture, Forestry, and Fishery Products," published by the Japan Export Trade Promotion Agency (JETRO), reports sales in 1958 to the cannery in Samoa of 12,688 short tons of fish, including 8,964 tons of albacore, 2,150 tons of yellowfin, and 476 tons of big-eyed tuna. The report states that these figures represent landings from 268 trips, and it further states that hitherto the quota for deliveries to Samoa had been 10,000 tons annually but that this had been increased in 1958 to 12,000 tons. According to this report, the long-liners based at Samoa are of 50 to 150 tons gross.

Figures informally supplied by the Ministry of International Trade and Industry show that from October 1957 to June 1959 landings at Samoa totaled 15,859 short tons, valued at US$2,756,614, for a monthly average of 752 short tons.

As for how the limitation of 12,000 tons of tuna to American Samoa and other similar tuna export limitations are imposed and enforced, the situation seems to be as follows: The Ministry of International Trade and Industry has legal authority under the Foreign Exchange and Foreign Trade Control Act of December 1949 to regulate the export of certain commodities by the issuance of export licenses. In the case of tuna, which is one of the commodities covered, the Ministry must consult with the Ministry of Agriculture and Forestry concerning the regulation of exports. The Ministry of Agriculture and Forestry consults with the producers' organization, the Export Frozen Tuna Producers Association, and the exporters' organization (the Japan Frozen Foods Export Association), which exist under the authority of the Fishery Exports Promotion Act of 1954, as revised in 1957, and which are placed by that law under the supervision of the Ministry of Agriculture and Forestry. In the case of an export arrangement which involves the basing of tuna fishing boats in a foreign country, as in Samoa, the Ministry of Agriculture also consults with the Japan Federation of Tuna Fishery Associations.

TUNA LANDINGS, JANUARY-AUGUST 1959:

American Samoa Tuna Landings, January-August 1959

Species	1959			Jan.-Aug.	
	June	July	August	1959	1958
	(1,000 Lbs.)				
Albacore	1,533	2,208	1,921	13,207	13,734
Yellowfin	459	388	206	3,108	3,872
Big-eyed	119	68	12	681	845
Skipjack	-	-	4	4	-
Total	2,111	2,664	2,143	17,000	18,451

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

California

ALBACORE TUNA MIGRATION OFF PACIFIC COAST STUDIED: M/V "N. B. Scofield Cruise 59-S-4-Albacore: The offshore area of California and northern Baja California from approximately 265 miles west of Point Montara (San Francisco) to 530 miles west of Todos Santos Island (Ensenada, Baja California) was surveyed by the California Department of Fish and Game research vessel N. B. Scofield from June 1-25, 1959. This cruise was made in cooperation with that scheduled for the M/V Hugh M. Smith by the Hawaii Biological Laboratory, U. S. Fish and Wildlife Service, to explore this offshore area prior to the commercial albacore season in an attempt to determine the occurrence and migration route of albacore schools approaching the Pacific Coast; to tag and release albacore; and to gather biological and oceanographic data that might be related to the occurrence of albacore.

Approximately 1,600 nautical miles of the 2,000-mile survey track were scouted during daylight hours, by using surface trolling gear.

The first albacore schools of the 1959 season were located June 5 in an area between 90 and 120 miles W. by N. of Point Arguello. By the end of the survey, 312 albacore were caught in an area lying between latitudes 32° 20' N. to 37° 30' N. and longitudes 121° 22' W. to 128° 23' W.

Best fishing, as evidenced by an average catch of $3\frac{1}{2}$ to $5\frac{1}{2}$ fish per trolling hour, was found from latitude 33° to 34° N., between longitude 124° and 125° W. Ninety-eight percent of the albacore caught ranged from 11 to 14 pounds. The remaining two percent was evenly divided between the nine and 20-pound groups. Food organisms recovered from stomachs of untagged fish and from regurgitated matter consisted primarily of Pacific sauries, squid, larval northern anchovies, Pacific jack mackerel, pelagic barnacles, and euphasiids.

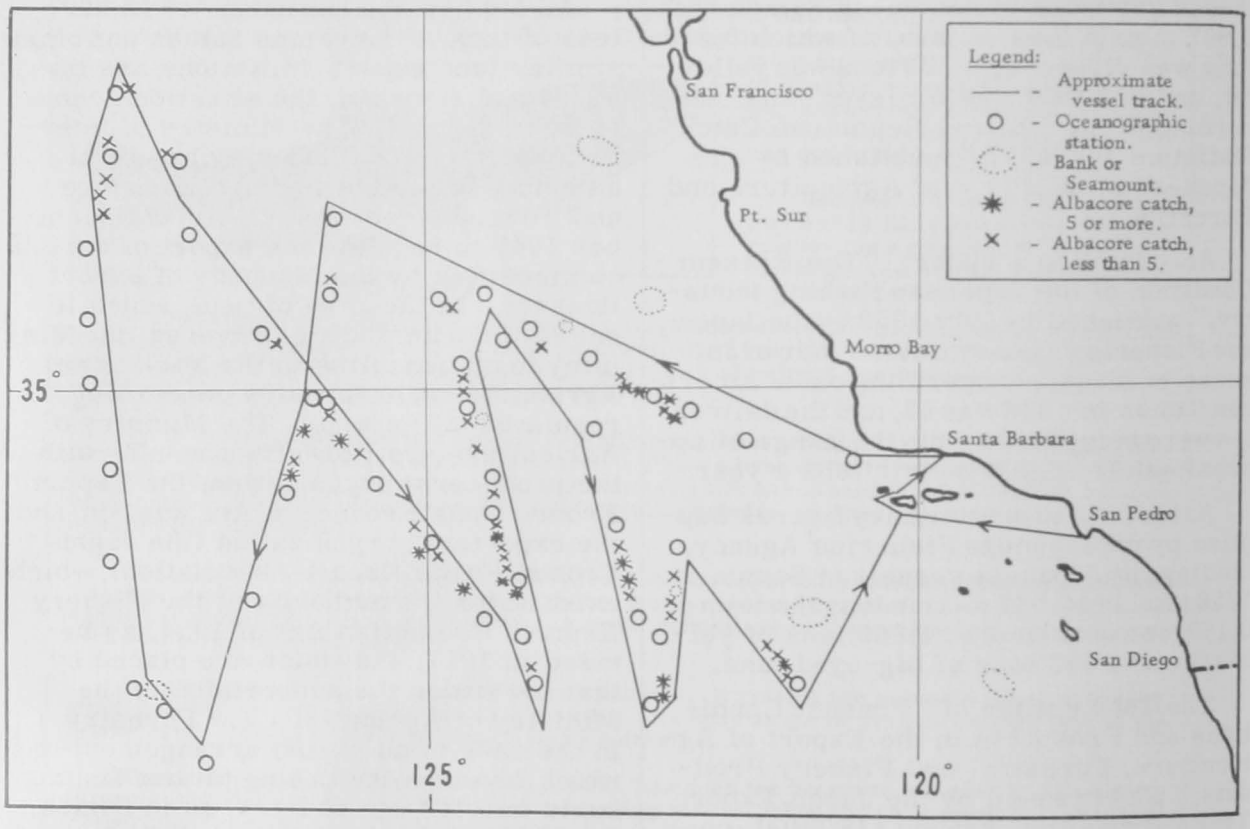

Fig. 1 - M/V N. B. Scofield Cruise 59-S-4-Albacore (June 1-25, 1959).

Gill net (consisting of 10 shackles $4\frac{1}{2}$ to $7\frac{1}{2}$ inch mesh) was set 390 miles W. by N. of Point Arguello. The gear fished

overnight and no catch resulted. Other sets were omitted because of weather conditions.

Albacore were tagged to determine movements and growth rates, and to compare recovery rates of "spaghetti" tags with those of more rapidly applied dart tags. The number of albacore tagged at any given location varied from 1 to 22.

Dart and "spaghetti" tags were used alternately. Trouble with breakage of the dart heads interrupted the sequence occasionally and only 95 fish with dart tags compared to 110 with "spaghetti" tags were released.

Sea surface temperatures ranged from a low of 12.2° C. (54° F.) near Point Conception and the northern Channel Islands to a high of 17.8° C. (64° F.) in the extreme southwesterly area of the survey. All albacore were caught in water ranging from 14.8° C. (58.6° F.) to 16.3° C. (61.3° F.)

Bathythermograph casts were made 2 to 3 times each day at distances apart averaging 45 miles (range: 20 miles to 90 miles).

Surface water samples for inorganic phosphate analysis and salinity determination were collected at each bathythermograph station. Surface water samples for Carbon 14 analysis were collected and field processed at 16 stations.

A 20-minute surface plankton tow with a one-meter net was made at five evening stations.

One night light station was occupied while drifting with the gill net. An estimated 10 to 30 Pacific sauries were the only organisms noted under the 1,500-watt light. Weather and sea conditions made it necessary for the vessel to maintain headway at night rather than drift which is essential for operating night light stations successfully.

Daytime observations were interesting because of the lack of marine life in areas where albacore were caught. The largest concentration of birds consisting of gulls, terns, storm petrels, and shearwaters was noted in areas of cold dirty water within 30 miles of Point Conception.

Note: Also see Commercial Fisheries Review, Sept. 1959 p. 21.

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PELAGIC FISH POPULATION SURVEY OFF COAST OF SOUTHERN CALIFORNIA CONTINUED:

Airplane Spotting Flight 59-13-Pelagic Fish: The inshore area from the Mexican border to Pigeon Point was surveyed from the air (June 29, July 1-2, 1959), by the California Department of Fish and Game Cessna 170 (1359D) to determine the distribution and abundance of pelagic fish schools.

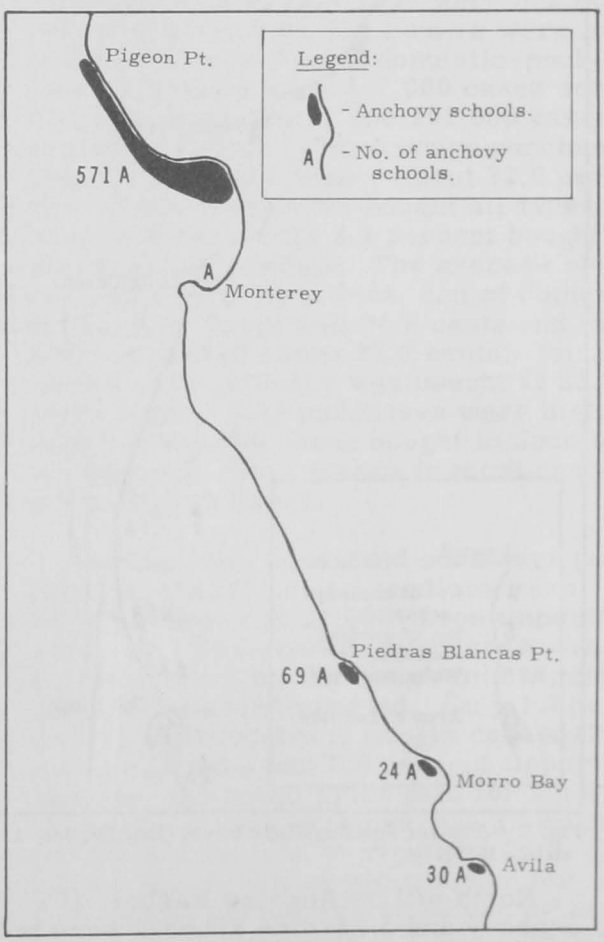

Fig. 1 - Airplane Spotting Flight 59-13 (June 29, July 1 and 2, 1959).

Possibly as a result of storm conditions during the week preceding the survey, very few fish schools were seen between Los Angeles Harbor and the Mexican border. Although weather conditions

were perfect and the water clear, only 9 anchovy schools and 1 of white sea bass were seen: 6 of the anchovy schools were close to shore near Scripps pier at La Jolla, 2 just off the mouth of the Tijuana River, and 1 three miles off San Onofre. A large white sea bass school was seen three miles off the town of Carlsbad.

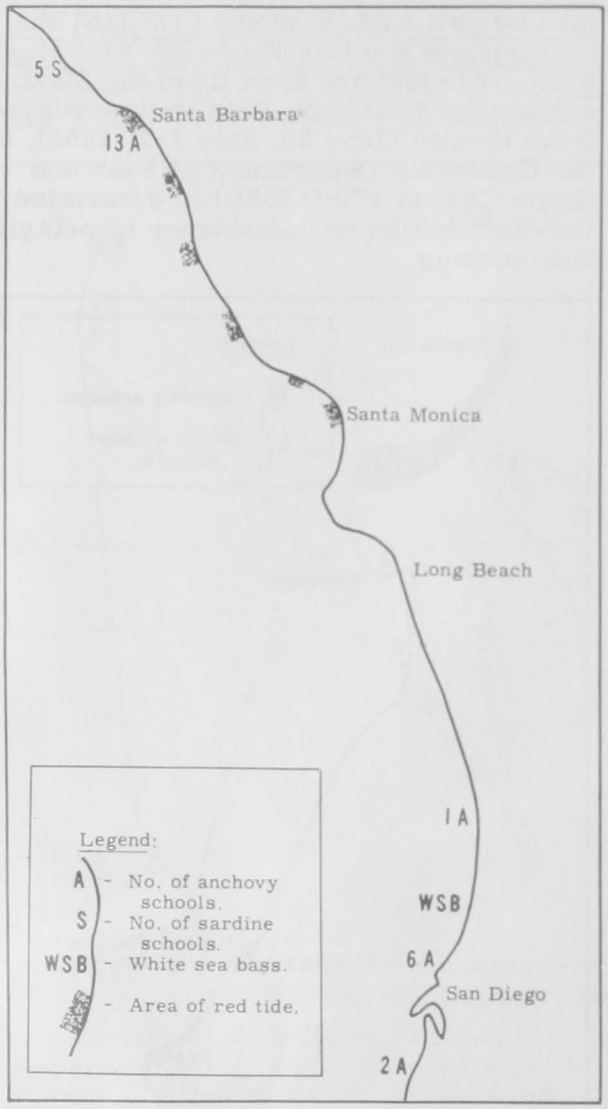

Fig. 2 - Airplane Spotting Flight 59-13 (June 29, July 1 and 2, 1959).

North of Los Angeles Harbor, 707 anchovy and 5 sardine schools were tallied. The majority of the anchovy schools (571) were observed at the north end of Monterey Bay in a gradually diminishing band reaching to Ano Nuevo Point. These schools varied widely in size but were visible as dark, tight balls when in deep water and loose stringy concentrations when close to shore. It was not possible to scout the southern two-thirds of Monterey Bay because of a thick, low, cloud cover. The five sardine schools were seen east of Point Conception 2 to 3 miles off El Capitan. The remainder of the anchovies were found in four small groups in the following locations: outside the kelp between Santa Barbara and Montecito (13 schools); San Luis Obispo Bay (30 schools); north end of Estero Bay (24 schools); and San Simeon Bay (69 schools).

Water conditions south of Point Vicente and north of Santa Barbara were good with clear clean water. From Point Vicente to Santa Barbara the inshore water was very dirty and heavy dinoflagellate blooms occurred between Ballona Creek and Santa Monica east of Malibu pier, at the northeast end of Zuma Beach, between Port Hueneme and Ventura, near Ricon Point and between Summerland and Santa Barbara.

Many concentrations of jellyfish (probably Vellela) were seen in Monterey Bay. They showed up as greenish-white streaks when viewed from 1,500 feet but took on a lavender cast when observed from a low level.

Note: Also see Commercial Fisheries Review, September 1959 p. 22.

Canned Fish

CONSUMER PURCHASES, OCTOBER 1958-MARCH 1959:

Approximately 108.8 cases of canned tuna were purchased per 1,000 families in the United States during October 1958-March 1959. Imported tuna represented about six percent of those purchases. By types of pack, purchases of domestic chunk tuna at 67 cases far exceeded purchases of solid-pack at 23.2 cases and grated at 12.5 cases per 1,000 households.

Total purchases of both domestic pack and imported canned tuna were highest in those families whose head of the household had a college education. However, families whose head had only high school training purchased more solid pack and grated tuna.

Families with teenagers purchased more solid-pack tuna and more grated tuna than those households with no children or with children of younger age groups. Those families with children aged 6-12 bought more chunk-style and the imported product than did families in the other categories.

Families in which the wives were not employed purchased about 11 percent more canned tuna than those in which the wives were working. Those households with nonworking wives bought 21 percent more chunk-style, 27 percent more imported, and about the same amount of grated tuna as the households in which the wives were employed.

During October 1958-March 1959, 33.5 cases of canned salmon were purchased per 1,000 families in the United States. Pink salmon made up about 53 percent of those purchases, while red salmon purchases amounted to 21 percent of the total.

Total purchases of canned salmon were highest in those families in which the head of the household had only a grade school education. However, families with a college-educated person as head of the household bought more chinook, red, and medium red salmon than did families whose heads had grade school and high school education only.

Purchases of red salmon by families without children were larger than those purchases by households with children. However, families with children of preschool age led other groups in purchases of chum salmon. Households with teenagers bought about 111 percent more pink salmon than families without children, and 14 percent more than those with children 6-12 years old.

Households in which the housewife was not employed purchased 34.8 cases of salmon which was about 16 percent greater than the purchases made by those families in which the housewife was employed.

A recent publication of the U. S. Bureau of Commercial Fisheries contains information on consumer purchases of canned fish by family characteristics for six months beginning with October 1958. The data (provided by the Market Research Corporation of America under a contract financed by the Bureau) represents estimates of national purchases by household consumers only. The report summarizes the data on purchases of canned tuna, canned salmon, and canned sardines. The purpose of this report is to provide additional information concerning buying practices of households as related to regions, city-size locations and other socio-economic factors.

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CONSUMER PURCHASES, JULY 1959:

Canned tuna purchases by household consumers in July 1959 were 998,000 cases of which 64,000 cases were imported. By type of pack, domestic-packed tuna purchases were 217,000 cases solid, 616,000 cases chunk, and 101,000 cases grated or flakes. The average purchase was 1.9 cans at a time. About 32.0 percent of the households bought all types of canned tuna; only 2.2 percent bought the imported product. The average retail price paid for a 7-oz. can of domestic solid or fancy was 34.9 cents and for a $6\frac{1}{2}$-oz. can of chunk 27.6 cents. Imported solid or fancy was bought at 28.6 cents a can. July purchases were higher than the 964,000 cases bought in June by 3.5 percent; retail prices in most cases were slightly lower.

During July, household consumer purchase of California sardines were 36,000 cases; and 31,000 cases imported sardines. The average purchases was 1.5 cans at a time for California sardines and 1.9 cans for imported. Only 1.7 percent of the households bought canned California sardines and 1.8 percent imported. The average retail price paid for a 1-lb. can of California sardines was 23.9 cents, and for a 4-oz. can of imported 26.6 cents. Retail prices were higher for both California and imported canned sardines. July purchases of California sardines were lower than the 41,000 cases bought in June by 12.2 percent.

Canned salmon purchases in July 1959 were 216,000 standard cases, of which 112,000 cases were pinks and 53,000 cases

reds. The average purchase was 1.2 cans at a time. About 14.8 percent of the households bought all types of canned salmon; 7.3 percent bought pinks. The average retail price paid for a 1-lb. can of pink was 57.2 cents and for red 88.0 cents. July purchases were down about 4.0 percent from the 225,000 cases bought in June.

Canned Foods

OUT-OF-STOCK CONDITION COSTLY TO STORES:

A typical supermarket loses about $3,000 a year in canned food sales when out of stock. This was the conclusion in reporting the highlights of the Out-of-Stock Study to the trade press in an August 21 release by the National Canners Association public relations counsel. The study was based on findings of a 12-week period (June through August 1957) in 12 supermarkets in the Philadelphia-New Jersey area.

The report makes the following summary of findings with reference to fishery products:

The most serious out-of-stock conditions were found in the canned fish and canned meat and poultry groups. On the average more than 5 percent or 5 of the 98 items in these groups were out-of-stock each day in each supermarket.

For canned foods as a whole, Friday was the day of the week with the lowest percentage (2.4 percent) of items out-of-stock, followed by Thursday with 3.0 percent. Monday, Tuesday, Wednesday, and Saturday all showed an average of 3.3 percent out-of-stock. (Information Letter, August 29, 1959, National Canners' Association).

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

Total shipments of metal cans for fishery products during January-July 1959 amounted to 66,657 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 62,978 tons in the same period a year ago. Canning of fishery products in July this year included tuna, Maine sardines, salmon, shrimp, and squid. Shipments of metal cans were up by 19.4 percent from June to July this year, but lower by 8.5 percent for this year as compared with July a year ago.

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

Central Pacific Fisheries Investigations[1/]

SKIPJACK TUNA BEHAVIOR STUDIED IN VICINITY OF HAWAIIAN ISLANDS:

M/V "Charles H. Gilbert" Cruise 45: The chief objective of the 60-day cruise around the main Hawaiian Islands and French Frigate Shoal by the U. S. Bureau of Commercial Fisheries Research vessel Charles H. Gilbert was to study the behavior of tuna, with the long-term goal of using the knowledge obtained to aid the Hawaiian commercial tuna fishermen. About all of the July-August 1959 research was devoted to skipjack or aku. The reactions of skipjack were noted when various kinds of bait were used, when baits were "pepped up" with enhancers such as glittering tinsel and water sprays, when the amount of bait was varied, and when colored dyes and various sounds were introduced into the water. Although the results of these experiments will only be known in detail after weeks of analysis, it is hoped that we will ultimately discover what it is that makes a good bait, and also how this bait should be used. The cruise was completed on September 3, 1959.

1/ These investigations prior to the August 1959 Commercial Fisheries Review were listed under Pacific Oceanic Fisheries Investigations.

A new blister-type underwater observation chamber on the vessel was used. From this vantage point 7 feet beneath the surface, observers watched tuna activity during fishing. They recorded fish behavior on movie film and personal impressions on voice records. The blister was an outstanding success, for not only was it free from annoying bubbles, which limited the use of previous chambers, but its spaciousness enabled biologists to observe tuna behavior for several hours in reasonable comfort.

The new blister is superior to underwater television as a device for studying tuna behavior. Although the television camera occasionally "saw" farther through the water than the human eye or a movie camera, its adjustment and operation were too delicate for the rugged conditions normally prevailing during tuna fishing.

Because certain experiments could not be conducted on the high seas, 73 skipjack were placed in the vessel's livewells, and 37 of these were later transferred to a salt-water swimming pool at the Bureau's Kewalo laboratory. Because skipjack tuna are very excitable tranquilizing drugs were used experimentally to quiet the fish. The drugs also helped to quiet some specimens of the more docile little tuna (kawakawa), in the pond when the skipjack were introduced.

A seal and turtle census was conducted at French Frigate Shoal which is about 500 miles northwest of Honolulu.

* * * * *

NEW LIVE-BAIT RESOURCES FOR HAWAIIAN SKIPJACK TUNA FLEET STUDIED:

One of the factors limiting the total landings of skipjack in Hawaii is the availability of live bait. Nehu, a local species of anchovy, is the principal bait and is frequently in short supply. Also, nehu are difficult to keep alive in the bait wells, thus further limiting the available supply and limiting the distance and time of operation of the sampans.

The Honolulu Biological laboratory of the U. S. Bureau of Commercial Fisheries is presently engaged in studies directed towards both supplementing the live-bait supply available to the Hawaiian skipjack fleet and developing a more hardy bait. Three species are presently under investigation, tilapia (Tilapia mossambica), Marquesan sardine (Harengula vittata), and threadfin shad (Dorosoma petenensis).

The tilapia studies are approaching completion. The results of these studies indicate that these fish can be economically reared in ponds; that they may be readily acclimatized from fresh to sea water; that early spawning may be induced, thus making adequate supplies of the bait available to the fisherman at the onset of the skipjack season; that they are a hardy fish and can be carried in the bait wells for several days or weeks through oceanic areas with changes of temperature of at least 10° F., and that, when properly used, they are a good bait for large skipjack. The results of these tilapia investigations were one factor in the State Legislature appropriating $130,000 for the construction and $50,000 for maintenance of a tilapia rearing facility by the State Department of Fish and Game.

During a survey of the fishery potentials of the waters of French Oceania, the Marquesan sardine was used exclusively as bait during live-bait fishing for skipjack and yellowfin. Because of its proven qualities, a program of introduction of this fish into Hawaiian waters was started in 1956. All introductions were made in waters near the Island of Oahu. By 1959, as indicated by recoveries made by commercial fishermen during baiting operations, these fish had moved to waters near at least seven of the eight major islands. For use by the fishermen, jars with formalin and labels have been left at strategic points on the Islands.

A particularly interesting collection was made in Kaneohe Bay in early August. One of the sardines in this collection was the largest (about 6 inches) seen by the biologists--larger than any reported from the waters of either French

Oceania or Hawaii. In addition, further evidence of successful spawning was given by the presence of $2\frac{1}{2}$-inch sardines in this collection.

During 1959, a small shipment of threadfin shad was introduced into reservoirs. This potential live bait, native to Tennessee and now well established in the lower Colorado River watershed, spawns in fresh water but is readily acclimatized to sea water.

On August 27, 1959, a shipment of approximately 3,500 threadfin shad was received in Honolulu. These fish were collected in southern California and transported to Hawaii. Shipped in sea water, the fish were acclimatized to pure fresh water upon arrival and then planted in various reservoirs on the Islands of Oahu, Kauai, and Maui and in tanks at the laboratory. The latter fish are to be used as a stockpile in case of failure of some of the other plants. Although apparently not as hardy as either the tilapia or Marquesan sardines, only a few shad were lost during transport and handling of the August shipment.

Although nehu will undoubtedly be the primary live bait used by the Hawaiian skipjack fleet for some time to come, it is anticipated that one or more of these new potential baits will be used to supplement the inadequate supply of nehu--particularly during those periods when "season" fish are available to the fleet and, either because of exploitation or lack of availability due to natural causes, the nehu are in short supply.

Clams

SOFT-SHELL CLAMS FOUND IN MARYLAND CHESAPEAKE BAY WATERS:

There is a large crop of soft-shell clams in Anne Arundel and Queen Anne's County Chesapeake Bay waters, according to a shellfish biologist at the Maryland Chesapeake Biological Laboratory. Most of the quarter-million bushels of clams were found along the inshore, sandy edges of once-productive oyster bars, where oysters no longer are able to survive in commercial quantities.

The first phase of the biologist's findings was followed with a precedent-breaking step by the Maryland Tidewater Fisheries Commission, which maintains tight control over the State's oyster bars. The charted bars in the past have always been off-limits for any other use, regardless of whether or not oysters were present. The Commission broke the precedent after the fact-finding survey and opened parts of the grounds to fishing. The Commission received considerable encouragement for its action from the clam fishermen who themselves are largely former oystermen.

The biologist began the survey two years ago at the request of Anne Arundel watermen, hoping to work in the inshore side of the Three Sisters oyster bar. Using a mechanical clam digger, he quantitatively checked a 350-acre area and found a crop of 252 bushels to the acre. "Incidentally, we didn't see a single live oyster there," the biologist declared. Many years ago, the bar was one of the Chesapeake's best sources of oysters. In 1958, 300 more acres were surveyed on Three Sisters, plus 235 acres off Kent Island on Broad Creek Bar's inner edge.

Meanwhile, at the request of Somerset County watermen, Tangier and Pocomoke Sound bottoms were checked and plenty of clam shells were found, but no clam population worth harvesting. The hurricanes in 1954 and 1955 may have stirred up the bottom too much and killed off most of them.

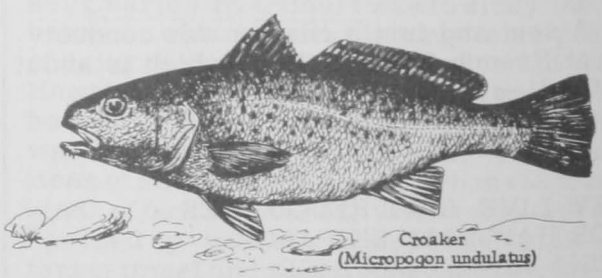
It was while checking the clam population in the Sounds that the biologist reported enormous concentrations of buried oyster shells in the area. The Tidewater Fisheries Commission Chairman later announced an ambitious program aimed at rehabilitating the oyster industry by using these and other oyster-shell deposits.

In June of this year the Chesapeake Biological Laboratory sent two biologists to the Three Sisters area again. They checked 225 more acres to discover a population of 295 bushels to the acre.

Croakers

BIOLOGIST REPORTS ON DISAPPEARANCE OF YOUNG IN CHESAPEAKE BAY:

The disappearance of young croakers in the Chesapeake Bay was discussed by a biologist of the Virginia Fisheries Laboratory, Gloucester Point, Va., at the annual meeting of the American Fisheries Society held at Clearwater, Fla., September 17-18. The study of the movement of young croakers within the Bay was begun by the Laboratory in 1950. In recent years the Virginia biologists have continued tracing the movements of these young fish and report that heavy kills occurred during the winter of 1957 and 1958 probably due to protracted cold weather.



Croaker (Micropogon undulatus)

Great numbers of young croakers appeared in the Bay and its rivers during the fall of 1957, which portended excellent fishing two years later. However, the situation changed during the winter months. "Although there were considerable numbers of young croakers present during the fall of 1957, they disappeared in mid-winter. Their disappearance coincided with a period when water temperatures were extremely low for a long period of time. Probably the extreme low temperatures destroyed the young croakers," the biologist stated.

Although croakers of large size have been caught this past summer and large numbers were caught in the commercial traps on Virginia's eastern shore during September, the chances of catching croakers of any size in 1960 will be extremely poor. "Not until there has been a successful development of young croakers through the winter will the depleted stocks be replenished," the biologist declared.

According to scientists croakers spawn in the fall and throughout early winter. The eggs hatch out in ocean waters just beyond the mouth of the Chesapeake Bay and the young migrate into the Bay and up the rivers. There they remain throughout the remainder of the winter, spring, and summer, and return to the ocean in the fall when they are about a year old. Adults migrate into the Bay in spring and return to the ocean in the fall.

Cooperative surveys from the research vessel Pathfinder with scientists from the Chesapeake Biological Laboratory of Maryland have indicated that the scarcity of young croakers occurred not only in Virginia but also in Maryland during the winter and spring of 1958. The absence of year-old croakers in pound nets in the fall of 1958 also confirmed that the spawning for the previous fall and winter was extremely poor.

A similar kill occurred during the winter of 1958 and 1959 and experience indicates that no recovery of the croaker fishery can be anticipated for at least two years.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-AUGUST 1959:

Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.1 million pounds (value $859,000) of fresh and frozen fishery products were purchased in August 1959 by the Military Subsistence Agency field headquarters. The quantity purchased in August was down 7.0 percent from the preceding month, but was 30.6 percent above the amount purchased in August 1958. The value of the purchases in August 1959 was lower by 28.6 percent as compared with July and down 7.1 percent from August 1958.

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

QUANTITY				VALUE			
August		Jan.-Aug.		August		Jan.-Aug.	
1959	1958	1959	1958	1959	1958	1959	1958
(1,000 Lbs.)				($1,000)			
2,112	1,617	15,730	16,196	859	925	8,049	9,334

For the first eight months of 1959 purchases totaled 15.7 million pounds, valued at $8.0 million--a decrease of 2.9 percent in quantity and 13.8 percent in value as compared with the same period of 1958.

Prices paid for fresh and frozen fishery products by the Department of Defense in August 1959 averaged 40.7 cents a pound, 12.2 cents less than the 52.9 cents paid in July and 16.5 cents less than the 57.2 cents paid during August 1958. This indicates that prices were lower and lower-priced products were purchased this August.

Canned Fishery Products: Sardines and tuna were the principal canned fishery products purchased for the use of the Armed Forces during August 1959. During January-August 1959 purchases of

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

Product	QUANTITY				VALUE			
	August		Jan.-Aug.		August		Jan.-Aug.	
	1959	1958	1959	1958	1959	1958	1959	1958
	(1,000 Lbs.)				($1,000)			
Tuna	150	908	2,132	3,470	59	1/	997	1/
Salmon	2	1	15	1,401	2	1/	11	1/
Sardines	194	41	970	93	27	1/	143	1/

1/ Unavailable.

the three principal canned fishery products were lower by 37.2 percent from the purchases made in January-August 1958. Purchases of canned tuna were down by 38.6 percent and about 99.0 percent for salmon, but canned sardine purchases increased almost 10 times over the purchases during the first eight months of 1958.

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher because it is not possible to obtain local purchases.

Fish Ladders

EFFECTIVENESS OF DIFFERENT TYPES OF SALMON FISHWAYS STUDIED:

Recent studies were conducted on the passage of blueback or sockeye salmon at the U. S. Bureau of Commercial Fisheries experimental research facility at Bonneville Dam. During the course of these studies 26 fish were individually timed in each of two types of endless fishways. The fishways were of the conventional ladder type, one fishway having 8-foot pools with 1-foot rise between pools; the other had 16-foot pools with 1-foot rise between pools. The mean time required for blueback salmon to ascend 104 pools of the 1-on-8 fishway was 2 hours and 57 minutes; for the 1-on-16 fishway 2 hours and 21 minutes. Tests were conducted previously on passage time for chinook salmon.

Results to date indicate the much cheaper to construct 1-on-8 fishway is about as effective as the 1-on-16 fishway for passing salmon over dams.

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BUREAU OF COMMERCIAL FISHERIES ACTIVITIES REVIEWED:

Research and management biologists of the U. S. Bureau of Commercial Fisheries and the States of Washington, Oregon, and Idaho, have done a great deal toward devising and testing methods for passing fish over dams. The scientists have found that the problem of getting adult salmon over dams can be met in a number of ways. Salmon migrating upstream are attracted to those areas from which water is flowing. For example, at Bonneville Dam there are ten draft tubes from each of which some 12,500 second feet of water is issuing. In addition, there is a spillway with 16 normally-functioning gates each 50 feet wide and, of course, there are the fishway entrances with their relatively small flow of water. The task was to place the fishway entrances in such locations and to provide sufficient flows so that, with a minimum number of unsuccessful attempts, the salmon would find an entrance and proceed on upstream. Biologists have been successful in accomplishing this task.

Fish ladder at Bonneville Dam, Columbia River.

There are, of course, other means of providing upstream fish passage at dams, such as fish locks, trams, or by trapping and hauling. Whenever possible, biologists prefer to have the fish ascend a fish ladder. However, in the case of some high dams, the only practical procedure is to trap and haul the fish over in tank trucks.

Many improvements have been made in fish ladder design, and experiments are being conducted at the research facility at Bonneville to determine the optimum pool length and width which will pass salmon most effectively. Recently it has been found that both the length and width of the steps in fish ladders may be reduced. This will result in a substantial saving of money in the design of future fishways.

The problem of providing safe passage over dams for young salmon en

route to sea is much more difficult. However, various schemes have been worked out and are being tested at the present time. In particular, fingerling "skimmer" facilities and a fingerling "ski jump" have been installed above Pelton Dam on the Deschutes River in Oregon. These methods are passing young fish and experiments are under way to measure their effectiveness. Another new approach is being investigated by scientists at the Bureau's Seattle laboratory. This entails guiding fingerlings into traps or bypasses by an array of energized electrodes placed in the forebay of dams. Guiding fish by electricity is being evaluated at Lake Tapps, Wash.

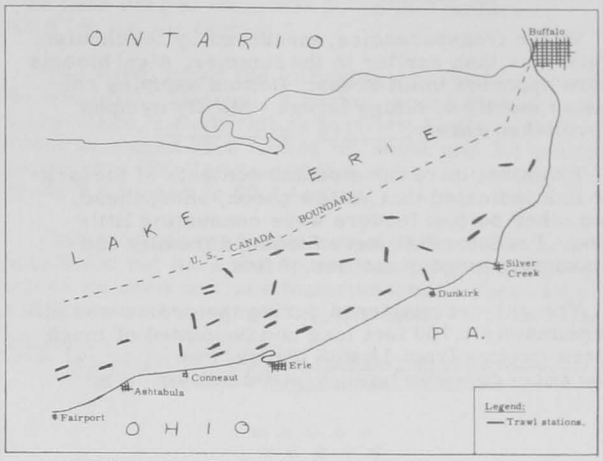
Great Lakes Fisheries Exploration and Gear Research

EXPLORATORY FISHING IN LAKE ERIE CONTINUED:

M/V "Active" Cruise 4: To study the commercial availability of smelt and other fish stocks in Lake Erie, the U. S. Bureau of Commercial Fisheries chartered exploratory fishing vessel Active conducted surface scouting and echo-sounding operations on Cruise 4 (August 3-17, 1959). The vessel operated between Conneaut, Ohio, and Buffalo, N. Y.

During the cruise, 35 exploratory drags were made in the 5- to 25-fathom depth range using a 50-foot two-seam balloon trawl with a $1\frac{1}{2}$-inch mesh cod end. Catches of smelt in eastern Lake Erie ranged from trace amounts to 150 pounds per tow. The majority of smelt in this area were 30 to 35 to the pound. Some large smelt, 12 to 18 to the pound, were also taken. Small amounts of spot-tail shiners, emerald shiners, white bass, white suckers, sheepshead, and yellow perch were taken in the shallow-water drags. Several tows at "standard stations" in the area visited during Cruise 3 produced catches up to 500 pounds of smelt, 12 to 18 to the pound. One commercial fisherman took trawl catches up to 1,500 pounds of smelt per day from this area.

Numerous large surface schools of small emerald shiners were observed. No seine sets were attempted.



M/V Active Cruise 4, (August 3-17, 1959).

Surface temperatures recorded during the cruise showed little variation--from 74° F. to 75° F. Bottom temperatures ranged from 41° F. at 25 fathoms to 74° F. at 5 fathoms. Thermal stratification was well defined throughout the Eastern basin.

Great Lakes Fishery Investigations

WESTERN LAKE ERIE BIOLOGICAL RESEARCH CONTINUED:

M/V "George L." Cruise 6, August 1959: Young yellow pike (walleye) 7-9 inches long were taken by gill net or trawl at all 7 stations in the western basin of Lake Erie by the U. S. Bureau of Commercial Fisheries research vessel George L. during the regular summer cruise. Young yellow perch were taken in large numbers--often more than 500 per 10-minute haul--in all areas and were the most abundant fish in the trawl catches. Young white bass and spot-tail shiners were caught in larger numbers and were more widely distributed than young sheepshead, emerald shiners, trout-perch, alewife, and gizzard shad.

Few adult commercial fish were taken by trawl. Yellow perch catches were lower than previously in the year. Catches of sheepshead and channel catfish were light.

The catch of fish in overnight sets of "canned" gill nets little resembled trawl catches in the same area at the same time. Large numbers of yearling gizzard shad were taken at most stations by gill net--few were taken by trawl. Several dozen adult yellow pike were caught by gill net at one station 10 miles north of Monroe. Only one other large yellow pike was seen during the entire cruise. The catch of adult perch in gill nets was light.

Surface water temperatures ranged from 79° to 81° F. and only a few degrees separated surface and bottom temperatures. Oxygen content appeared normal at all depths.

Water transparencies, measured by Secchi disc, were less than earlier in the summer. Algal blooms were apparent in all areas. Bottom samples consisted mostly of midge larvae. Mayfly nymphs were taken rarely.

Examination of the stomach contents of the larger fish indicated that yellow perch, sheepshead, and other bottom feeders were consuming little food. Predator fish were feeding normally and consuming large quantities of fish.

The gill-net gang used during the cruise was approximately 1,700 feet long and consisted of mesh sizes ranging from $1\frac{1}{4}$ to 5 inches.

Note: Also see Commercial Fisheries Review, October 1959, p. 29.

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WESTERN LAKE SUPERIOR FISHERY SURVEY CONTINUED:

M/V "Siscowet" Cruise 4, July 27-August 4, 1959: Midsummer environmental conditions were studied at three index stations located (1) southeast of Stockton Island, (2) northeast of Bear Island, and (3) east of Pike's Bay. In addition to the fishery and environmental studies at the index stations, trawl and gill-net operations were conducted north of Little Girl's Point and extensive explorations were made by trawling from a small boat and with a 25-foot, $\frac{1}{2}$-inch-mesh seine along the shores of Stockton Island.

Standard gill-net gangs (1-inch to 5-inch mesh by $\frac{1}{2}$-inch intervals) were fished. Trawl tows were made at each station with a 30-foot, semi-balloon trawl. Water samples for chemical analyses, and plankton and bottom samples were collected. Water temperatures at each index station and Secchi-disc readings and observations of currents were recorded.

Gill nets set southeast of Stockton Island in 21 to 25 fathoms took 7 lake trout, 40 whitefish, 6 menominee whitefish, 66 lake herring, 19 L. hoyi, 8 L. zenithicus, and 2 L. kiyi. The herring and L. hoyi were extremely difficult to identify in this catch. The fact that the 2 species were observed spawning together in this location during the fall of 1958 suggests the possibility of hybridization. Further studies of this problem are scheduled.

Trawl tows southeast of Stockton Island took small numbers of lake trout, whitefish, lake herring, smelt, pygmy whitefish, ninespine stickleback, and slimy muddlers. At this station the surface temperature was 69.8° F.; bottom temperature was 40.6° F.

Gill nets set northeast of Bear Island in 45 fathoms took 157 L. hoyi, 10 L. kiyi, 4 L. zenithicus, and 3 lake herring. Small numbers of smelt and burbot also were captured.

Trawl tows northeast of Bear Island took 37 L. hoyi and 4 L. zenithicus. At this station the surface temperature was 63.5° F.; bottom temperature was 39.6° F.

Gill nets fished east of Pike's Bay in 19 fathoms took 8 lake trout, 8 lake herring, 57 smelt, 176 L. hoyi, 4 L. zenithicus, and 1 burbot.

Two trawl tows at this station took 18 lake trout, 73 L. hoyi, 138 smelt, 1 pygmy whitefish, 1 L. zenithicus, 41 slimy muddlers, and 6 ninespine sticklebacks. The lengths of the trout ranged from 5.1 to 12.1 inches; 10 of the trout were fin-clipped. At this station the surface temperature was 68.5° F; bottom temperature was 42.4° F.

A standard gang of gill nets set in 25 fathoms north of Little Girl's Point took mainly L. hoyi and L. zenithicus but included 2 lake trout and 8 lake herring. Four 10-minute trawl tows at 15, 18, 20, and 27 fathoms took predominately smelt and small, unidentified coregonids. Four small trout were taken at 18 and 20 fathoms. The surface temperature in this area was 70.8° F.

The outboard motor boat conducted trawling operations in shallow waters just off the shores of Stockton Island. Tows were made in midafternoon and again after dark to compare catches from day- and nighttime fishing.

The catch in tows made during the day was very light and consisted mainly of smelt, slimy muddlers, menominee whitefish, trout-perch, johnny darters, and ninespine sticklebacks. Largest numbers of fish were taken on the same grounds at about 11:00 p.m. The longnose dace and northern lake chub were captured in addition to the species taken during the day.

Night trawling by the Siscowet in this area was hampered by rough and dirty bottom. Two 10-minute hauls took 4 lake trout, 2 L. hoyi, 2 pygmy whitefish, 1 menominee whitefish, 170 slimy muddlers, and 50 ninespine sticklebacks.

A 25- by 6-foot, $\frac{1}{2}$-inch-mesh seine was hauled along the shoreline of Stockton Island. The catch from one haul made in the afternoon consisted of 1 slimy muddler. A haul in the same area after dark took over 200 fish, mainly ninespine stickleback, muddlers, and northern lake chubs.

The surface temperature during these operations was 70.0° F.

Cruise 5, August 10-22, 1959: Studies were conducted at Isle Royale, Mich., Thunder Bay, Ont., and the Apostle Islands, Wis., during this cruise. The stations worked are located as follows:

Isle Royale: north of Thompson's Island; Grace Harbor; southeast of Menagerie Island; south of Mott Island; Rock Harbor; northeast of Amygdaloid Island; south of Rainbow Cove.

Thunder Bay: between Pie and Welcome Islands; north of Welcome Island.

Apostle Islands: south of Stockton Island.

The primary objectives of this cruise were to sample various populations of coregonids in the Isle Royale, Thunder Bay, and Apostle Island regions for purposes of identification and comparison, and to sample various populations of lake trout in the Isle Royale region to compare their relative

abundance with last year's catch and to tag and release live specimens to learn their movements within the lake.

With the exception of the station established in Rock Harbor, gill nets were fished at each location. Trawling was attempted only south of Mott Island and in Rock Harbor.

One 15-minute trawl tow south of Mott Island in 62 fathoms yielded 2 species of sculpins (deepwater sculpin and spoonhead muddler), 15 L. zenithicus, 1 L. hoyi, and 1 smelt.

A 14-minute tow in Rock Harbor took about 100 pygmy whitefish, 1 trout, 3 herring, 1 smelt, 1 burbot and 7 slimy muddlers.

Gill-net catches varied considerably with location and depth of set. The gangs were made up mostly with small mesh nets ($1\frac{1}{4}$, 2, $2\frac{1}{4}$, $2\frac{1}{2}$, 3, $3\frac{1}{2}$-inch mesh). One 6-inch mesh net was attached to the gang in search of large trout and whitefish.

Of the 362 trout captured by gill net in sets made in the Isle Royale area, 149 were tagged with "spaghetti" tags and were released. Approximately 100 chubs were preserved in formaldehyde for laboratory examination.

Five bull nets (gill nets 300 feet long and 20 feet deep) were fished in an oblique set in Grace Harbor (20 fathoms). This set took 162 herring which were distributed almost uniformly from the surface to the bottom. Several of the herring appeared to be nearly ripe. A few L. zenithicus were also taken in this set and several of them also appeared to be nearly ripe.

Three gangs of two nets each ($2\frac{1}{4}$, $2\frac{1}{2}$-inch mesh) were set in Thunder Bay in search of Leucichthys reighardi dymondi, a subspecies reported to exist along the north shore of Lake Superior, but about which very little is known. The catch from these three gangs consisted mainly of longnose suckers, lake herring, and chubs which were not immediately identified. Many of the herring had the extremely deep bodies and short snouts attributed to Leucichthys artedi albus. This nominal subspecies is common to Lake Erie and has been previously reported in bays of Lake Superior. Many specimens of both lake herring and chubs were preserved.

A gang of 6 small-mesh nets were set at 50 fathoms south of Stockton Island. About 225 chubs were taken, most of them L. hoyi and L. zenithicus. Several of these specimens were frozen and later compared with like species from Isle Royale and from eastern Lake Superior.

The surface temperature at Isle Royale varied from 60.8° F. in Grace Harbor to 56.2° F. north of Thompson's Island. In Thunder Bay the surface temperature ranged from 58.4° to 60.5° F. South of Stockton Island the surface temperature was 64.9° F.

Officials of the U. S. Park Service, Isle Royale, Mich., requested that the Bureau biologists set gill nets in Siskiwit Lake in search of lake trout reportedly to be scarred by the sea lamprey.

On August 12, 1959, two 300-foot gill nets ($1\frac{1}{2}$-, $4\frac{1}{2}$-inch mesh) were set WNW. of Ryan Island in water 72 to 112 feet deep. Water temperatures on this date ranged from 69° F. on the surface to 47.0° F. on the bottom.

The nets, lifted the following day, had captured 36 whitefish, 29 trout, 7 burbot, and 2 Siskiwit Lake cisco, Leuchichthys bartletti Koelz. The trout averaged 22.2 inches in length and 3.1 pounds in weight. The lengths of the whitefish ranged from 7.6 inches to 22.1 inches.

One trout showed evidence of three old scars which did not have the appearance of sea lamprey scars as seen on Lake Superior trout. These small, shallow scars suggest the possibility of native lampreys in Siskiwit Lake.

Note: Leuchichthys hoyi, L. kiyi, L. zenithicus--species of chubs. Also see Commercial Fisheries Review, October 1959, p. 28.

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SURVEY OF SOUTHEASTERN LAKE SUPERIOR CONTINUED:

M/V "Cisco" Cruise 4: Work during Cruise 4 of U. S. Bureau of Commercial Fisheries research vessel Cisco was carried out in the Shelter Bay-Marquette-Keweenaw Bay area of southeastern Lake Superior. Much of the fishing effort was identical to that of Cruise 2, both as to area and gear.

Regular gangs of gill nets (150 feet each of $1\frac{1}{4}$- and $1\frac{1}{2}$-inch mesh, 200 feet of 2-inch mesh, and 300 feet each of $2\frac{3}{8}$-, $2\frac{1}{2}$-, 3-, $3\frac{1}{2}$-, 4-, $4\frac{1}{2}$-, 5-, $5\frac{1}{2}$-, and 6-inch mesh) were set overnight at 14 fathoms in Shelter Bay; 20, 25, 35, 50, 75, and 100 fathoms off Marquette; and 25, 35, 50, and 80 fathoms in Keweenaw Bay. A total of 24 lake trout was caught (1 in Shelter Bay; 9 at 25 fathoms and 2 at 35 fathoms off Marquette; and 11 at 25 fathoms and 1 at 35 fathoms in Keweenaw Bay). Of these, 13 were marked with spaghetti tags and released. Chub catches off Marquette were light (none at 20 fathoms, 12 at 25 fathoms, 42 at 50 fathoms, and 48 at 100 fathoms) except at 75 fathoms where 126 were taken, the catch at 50 fathoms was appreciably smaller than during Cruise 2. Leucichthys reighardi was the most abundant chub and L. hoyi second most common in the 25-, 35-, and 50-fathom sets off Marquette, and L. kiyi was most abundant in the deeper nets. L. nigripinnis and L. zenithicus were not numerous in any sets. In the Keweenaw Bay area chub catches at 25 fathoms (124), 35 fathoms (227), and 50 fathoms (265) were heavier than during Cruise 2, mostly because of an increase in the number of L. hoyi, which dominated the catches at these depths. At 80 fathoms, however, the 22 chubs taken were fewer than in Cruise 2. Lake herring were scarce in most sets, but 53, averaging 1 pound each, were caught in Shelter Bay where only 4 were netted during Cruise 2. Other species in the gill nets were burbot (a few in several sets off Marquette, none in Keweenaw Bay), and smelt (common only at 25 fathoms in Keweenaw Bay).

Trawls were towed at 100 fathoms northwest of Grand Island, at 50 fathoms off Marquette, and at

several depths from 12 to 25 fathoms in Shelter Bay, 7 to 20 fathoms south of Traverse Island in Keweenaw Bay, and 20 to 45 fathoms off Pequaming in Keweenaw Bay. A single 20-minute tow off Grand Island brought up 141 deep-water sculpins, 1 slimy sculpin, 2 L. reighardi, and 2 L. kiyi. Fairly large numbers of slimy sculpins, and an occasional spoonhead sculpin, smelt, pygmy whitefish, and ninespine stickleback made up the catches in Shelter Bay. No 0-age class lake trout were netted, as has been the case all this year. The tows off Marquette yielded moderate numbers of slimy sculpins and deep-water sculpins, a few L. reighardi and L. hoyi, and a single burbot. The catches off Traverse Island consisted mostly of slimy sculpins and ninespine sticklebacks, except at 7 fathoms where 231 yearling smelt were taken in a 10-minute tow. Off Pequaming in Keweenaw Bay, 44 lake trout between 5 and 10 inches long were caught. Only one was naturally spawned, the others having been stocked in the Bay about 6 weeks previously. The lake trout were most abundant at 33-36 fathoms. Other species in these tows were slimy sculpins, ninespine sticklebacks, smelt, pygmy whitefish, L. hoyi, and L. reighardi. All except smelt were considerably less common than during Cruise 2.

Half-meter nets with large plankton mesh were towed for fish fry in most of the areas visited. Very few fish fry were netted except in Keweenaw Bay and in shallow water (12-16 fathoms) near Marquette. In the latter area smelt fry were at midlevels and an unidentified species, possibly L. reighardi, near the surface.

Limnological stations in Shelter Bay, Keweenaw Bay, and off Big Bay Point were visited. Surface water temperature had risen, by the end of the cruise, to about 18° C. (64.4° F.) for several miles out from shore, and to about 15° C. (59.0° F.) 20 miles off Marquette. Extremes were 11.5° and 20.7° C. (52.7° and 69.2° F.). Thermal stratification was noted in all areas, but there were few occasions when there was a sharp thermocline.

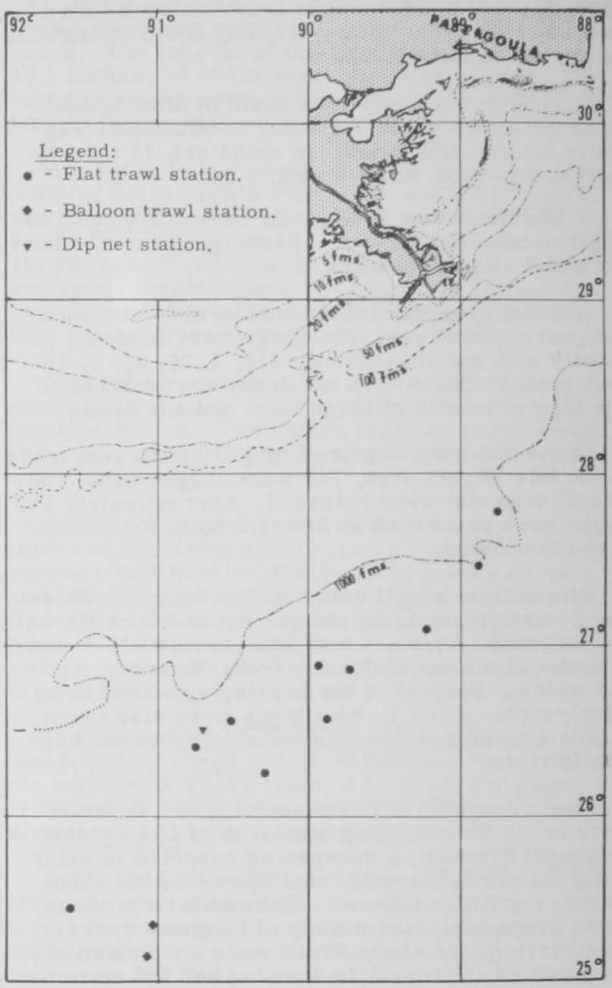
Note: Also see Commercial Fisheries Review, September 1959 p. 32, and October 1959 p. 27.

Gulf Exploratory Fishery Program

EXPERIMENTAL DEEP-WATER TRAWLING IN THE CENTRAL AND NORTH-CENTRAL GULF OF MEXICO:

M/V "Oregon" Cruise 60: To obtain more data on deep-water fishing techniques with commercial trawls, the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon made a 9-day cruise to the Central and North-Central Gulf of Mexico. During the cruise that ended on July 31, 1959, 12 bottom tows were attempted in depths ranging from 850 to 1,850 fathoms using 40-foot flat and 30-foot balloon trawls. The principal purpose was to determine the wire size-length ratio for given vessel or current speeds.

Six drags were "successful" in that the trawl reached bottom and returned to the surface without damage or fouling. Three drags were water hauls, two



M/V Oregon Cruise 60 (July 22 to 31, 1959).

resulted in tear ups, and one net was lost. From the appearance of the net and trawl doors, there is some question as to whether the gear was functioning properly on the "successful" hauls. The largest fish catch, which amounted to 25 pounds of mostly large brotulids and macrourids, was made in 850 to 1,100 fathoms. Several species of penaeid shrimp were caught at all depths fished, but in very small numbers. Largest of these have been tentatively identified as Aristaeomorpha and Plesiopenaeus. Several large nonpenaeids were taken in small numbers, including Notostomus and Acanthephyra.

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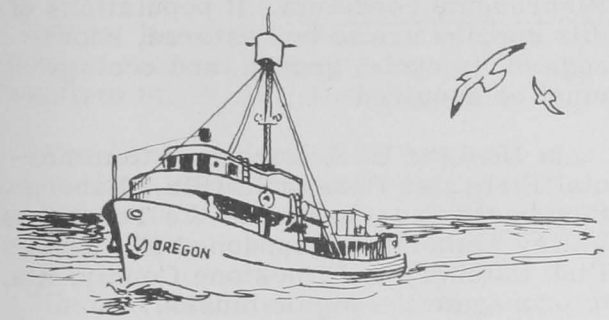
LAMPARA SEINE TESTED ON FISH SCHOOLS ALONG MISSISSIPPI COAST:

M/V "Oregon" Cruise 61: In an attempt to obtain commercial quantities of fish from schools along the coast of Mississippi, the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon tested a lampara seine during a 14-day cruise that ended on September 2, 1959.



A standard 33 by 7-foot menhaden purse boat with 48 hp. engine and equipped with a 2-roller hydraulic gurdy, was used to set and retrieve the seine. Five daylight sets were made using the one boat method. Four daylight and six night sets were made using a 20-foot seine skiff with the purse seine boat, each boat carrying one wing. Night sets were made on fish attracted to lights from a $2\frac{1}{2}$ kw. generator in a light skiff.

Visual spotting from the vessel was used for location of school fish. Steady moderate to fresh winds prevailed throughout the cruise, and no concentrated schools were located. Small catches were made of menhaden (Brevoortia), razorbellies (Harengula), Spanish mackerel (Scomberomorus), ladyfish (Elops), anchovies (Anchoa), and croakers (Micropogon).

Night sets were made on fish attracted by one 1,500-watt light; two lights, 1,500 watts and 750 watts; and two 750-watt lights. Variations noted were: fish attracted with lower intensity lights would be frightened when the 1,500-watt light was turned on; and small fish were attracted more readily with larger fish staying in the "shadows."

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UNDERWATER MOTION PICTURES TO EVALUATE SHRIMP TRAWLS IN ACTION:

M/V "George M. Bowers" Cruises 20, 21, and 22: A series of cruises have been made by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel George M. Bowers to study shrimp trawls in action with underwater motion picture cameras. The studies are planned to give a complete and detailed underwater picture of shrimp trawls while fishing under a wide range of conditions.

A major objective will be to evaluate the effectiveness of different types of shrimp trawls and their many modifications used by the shrimp industry. A further objective will be to prepare a series of detailed motion picture films on the various trawls for loan to fishermen, net makers, and other interested groups.

Bureau's exploratory fishing vessel George M. Bowers.

The studies are under way along Florida's west coast, between Panama City and Dry Tortugas, and in the Bahamas. Those areas were chosen because of the clear water and suitable bottom conditions. Future studies of trawls on actual shrimp fishing grounds will be made if water conditions are found to be suitable for underwater photography.

Cruises 20, 21, and 22 have provided 8,200 feet of underwater film. Present

plans call for about two years of work to complete the studies.

Massachusetts

AMENDS LAW REGULATING STORAGE AND TRANSPORTATION OF FROZEN FOOD:

The State of Massachusetts on July 17, 1959, amended a law that regulates the storage and transportation of all types of frozen foods, including fishery products.

The law as approved, reads:

"Chapter 94 of the General Laws is hereby amended by inserting after section 73 under the caption FROZEN FOOD the following section:--Section 73A. No person engaged in the business of storing frozen food or transporting such food shall store or transport such food within the commonwealth unless it is stored or transported under refrigeration which shall insure good keeping qualities and under temperatures and holding conditions approved by the director of the division of food and drugs of the department of public health. Said director may, after public hearing, make regulations for the storing and transportation of frozen food, including temperature control, sanitation and other matters, in accordance with recognized standards necessary for the protection of the public health and the preservation of such food in wholesome condition. The term 'frozen food,' as used in this section shall include food of any kind which has been preserved by a process of f r e e z i n g. Nothing in this section shall be construed to apply to delivery of such food by a retailer to the purchaser.

"Whoever violates any provision of this section or of any regulation made hereunder shall be punished by a fine of not more than one hundred dollars for the first offense, and not less than one hundred dollars nor more than five hundred dollars for each subsequent offense."

Mussels

TENNESSEE RIVER POPULATION STUDIES:

Surveys of the fresh-water mussel populations of the Tennessee River indicate that this important commercial resource has been drastically depleted in recent years. Little is known of the life history of the predominant species of these populations, the pigtoe mussel, Pleurobeme cordatum. If populations of this species are to be restored, knowledge of its cycle, growth, and ecology must be acquired.

In 1958 the U. S. Bureau of Commercial Fisheries Pensacola (Fla.) Laboratory began experiments at the Tennessee Valley Authority's abandoned Elk River Fish Hatchery in Limestone County, Ala., to propagate the pigtoe mussel.

Methods of propagation are based upon a peculiar feature of the normal course of development of fresh-water mussels. The very young mussels when first freed from the incubation pouches of the parent, with rare exception, must become parasitic upon fish in order to pass through the next stage of their existence. Therefore, if an opportunity occurs after liberation the young mussels or glochidia, as they are called in this stage, attach themselves to the gills, fins, or scales of a fish. The mussels of economic importance attach themselves almost exclusively to the gills. In attaching to or biting on the fish, a slight wound seems to be caused, which begins at once to heal over; but in the process of mending the glochidium is overgrown and, enclosed within the tissues of the fish. The mussel is then an internal parasite and remains in this condition for about two weeks. When the proper stage of development is reached, it frees itself from the host and falls to the bottom. If it finds suitable lodgment it continues its growth to form an adult mussel. Mussels do not attach to fish indiscriminately; for each species of mussel there is a limited number of species of fish which may serve as host.

National Fish Week

PRESIDENT EISENHOWER'S MESSAGE TO FISHING INDUSTRY:

On September 12, 1959, President Dwight D. Eisenhower sent the following message to the National Fish and Seafood Committee:

"The White House,
Washington, D. C., Sept. 12.

"F. M. Bundy, Chairman, National Fish and Seafood Week Committee, 1614 Twentieth St., N. W., Washington, D. C.

"You have told me of the National Fish and Seafood Week Committee's plans for the fifth annual observance of Fish and Seafood Week.

"Commercial fishing has long made a vital contribution to our people's diet and to the National economy. As our population continues to grow, we will rely to an increasing extent on the bounty of the sea.

"On this occasion, it is a pleasure to salute the men and women of the American fishing industry.

"/s/ Dwight D. Eisenhower"

This year's "Fish 'n' Sea Food Parade" promotion took place October 12-25.

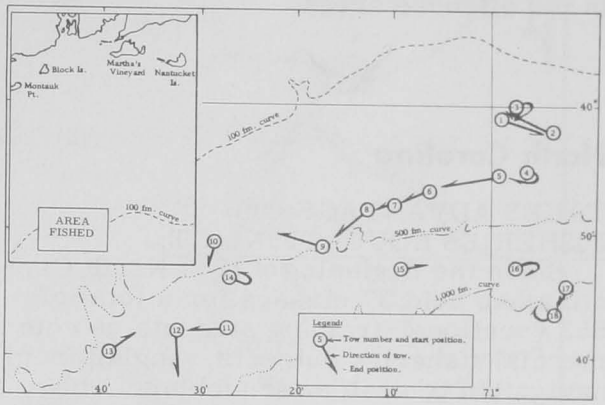
Note: Also see Commercial Fisheries Review, August 1959, front cover and back cover.

North Atlantic Fisheries Exploration and Gear Research

DEEP-WATER TRAWLING SUCCESSFUL:

M/V "Delaware" Cruise 59-10: Successful deep-water exploratory trawling was conducted along the continental slope by the U. S. Bureau of Commercial Fisheries research vessel Delaware August 24-29, 1959. Eighteen tows were made during the cruise with the net on the bottom during all except the first two tows. Tows were made at successive depths from 200 fathoms to beyond 1,000 fathoms, spaced at approximately 100-fathom intervals.

A 40-foot Gulf shrimp net, spread by 5-foot chain-bridle shrimp doors, was used on all experimental tows. The doors



M/V Delaware Cruise 59-10 (August 24-29, 1959).

were towed by a 14-fathom bridle from a single warp. The first 400 fathoms of the warp consisted of $\frac{1}{2}$-inch wire; the remaining 1,450 fathoms was $\frac{3}{4}$-inch wire. Fishing was conducted on the starboard side from the after gallows.

The main fishing problem experienced with this experimental gear in such deep water was snarling of the net. A large percentage of snarls apparently occurred while setting out, but indications are that this problem can be resolved. No gear loss was reported and little damage to the nets was incurred.

Information concerning the depth ranges of some of the deep-water fauna was gained. The American hake (Merluccius albidus) and long-finned hake (Urophycis chesteri) were found to be present to a depth of approximately 500 fathoms. Thirty pounds of each were taken at Station 9 in a depth of 485-520 fathoms. The common rat-tail grenadier (Macrourus bairdii) occurred in all depths fished. Lobsters (Homarus americanus) were found to occur in depths to 300-350 fathoms. The red crab (Geryon quinquedens) was found from the lower depth range of the lobsters to 1,040 fathoms--the greatest depth reached.

Night-light collections were made, and several rare specimens were collected by cooperating personnel from

the U. S. National Museum, Washington, D. C. In cooperation with the Woods Hole Oceanographic Institution, 342 drift bottles were released from 57 stations to assist in an oceanographic program designed to investigate current patterns in the offshore areas.

North Carolina

TAKES ADVANTAGE OF FISHERIES EDUCATION ACT:

Since the beginning of 1959 North Carolina has held 37 classes for a total of 552 vocational-training students on commercial fisheries subjects, ranging from navigation to crab meat picking. The program has been established with funds provided by the Fisheries Education Act of 1956 and administered by the U. S. Department of Health, Education, and Welfare and matching funds from the State.

North Pacific Exploratory Fishery Program

CHUKCHI SEA IN NORTHWEST ALASKA SURVEYED FOR ATOMIC ENERGY COMMISSION:

M/V "John N. Cobb" Cruise 43: As part of a cooperative program between the U. S. Bureau of Commercial Fisheries and the Division of Biology and Medicine of the Atomic Energy Commission, the Bureau's exploratory fishing vessel John N. Cobb surveyed the resources and commercial potential of the Chukchi Sea during an 8-week cruise that ended on September 11, 1959.

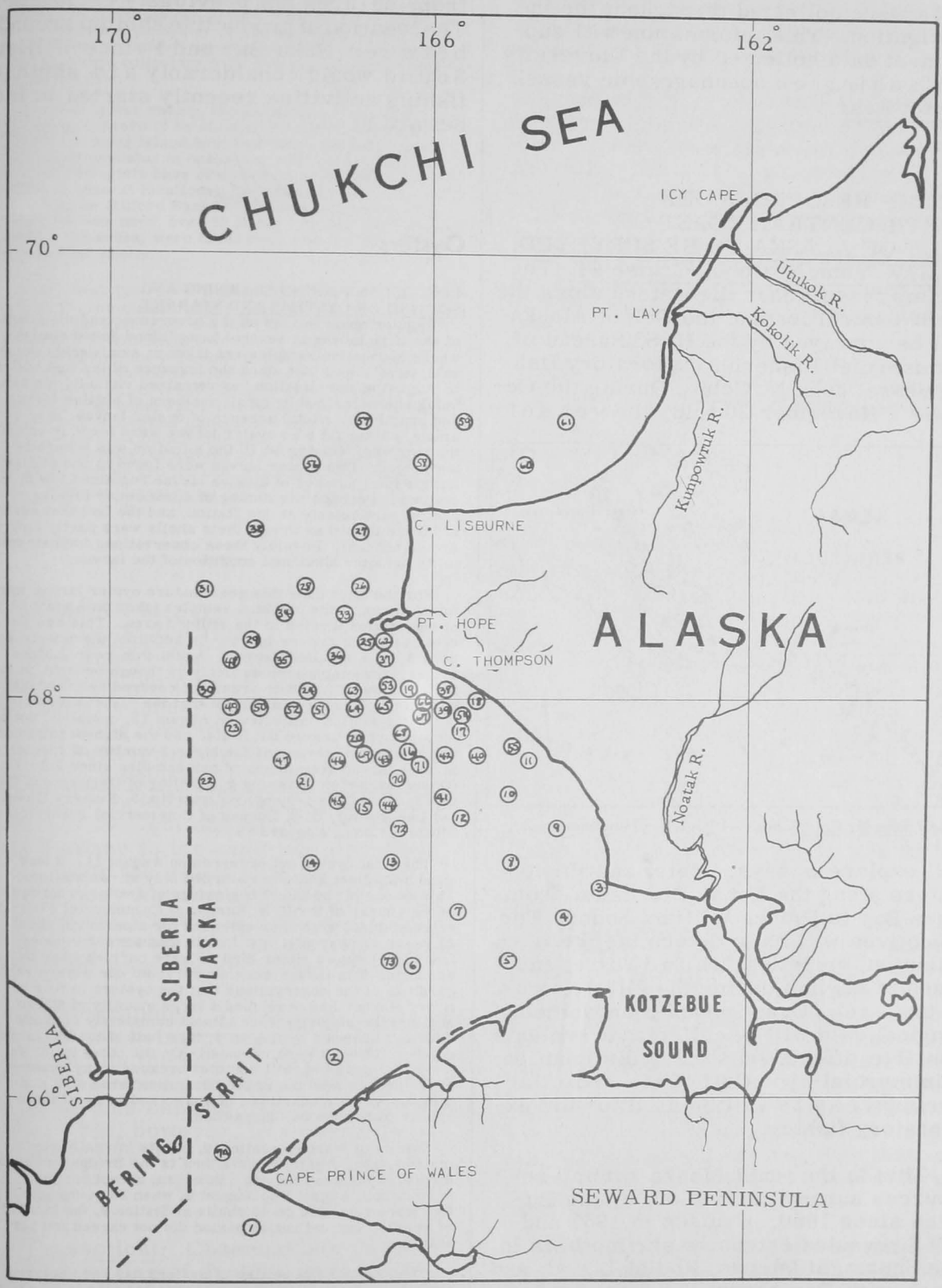
The objectives of this cruise were to determine the types, quantity, and distribution of marine fish and shellfish in the region; to investigate their commercial potential; and to assist the Commission in determining the biological cost of the detonation of nuclear devices in that area. The commission is tentatively planning an experiment in harbor excavation near Cape Thompson, Alaska, as part of the over-all Commission program for developing peaceful uses for atomic energy.

During the investigation the vessel cruised in excess of 8,000 miles, 2,500 of which were in the Chukchi Sea. The investigations were carried out in the area from Bering Strait to Cape Lisburne in Northwest Alaska. A total of 59 otter-trawl drags, 36 biological-dredge hauls, and 12 midwater-trawl hauls were made. In addition, investigations were made with gill nets, traps, and a beach seine. Extensive surveys also were made using fish-detecting devices to determine availability of pelagic fishes.

No commercial quantities of bottom fish were taken during the investigation in the Chukchi Sea area. Sole taken in the area appeared to be much smaller than those taken on commercial grounds to the south. One set with a gill net near the Cape Thompson blast site, produced 1,000 herring approximately 10 inches in length. This represented the only catch that indicated possible commercial abundance of pelagic fish in the area. Other hauls made with the midwater trawl and gill nets were not productive.

An extremely rich and varied invertebrate fauna, taken during the investigation, may represent one of the finest collections ever made in Arctic waters. Although no commercial quantities of shellfish were captured, the collections will greatly contribute to the knowledge of animal distribution in Arctic waters. Sighting of mammals in the Arctic waters was not frequent, but several large herds of California grey whales were noted southwest of the Eskimo village at Kivilina, Alaska. The grey whales were noted on four different occasions in the same general region.

Personnel from the Laboratory of Radiation Biology and the College of Fisheries of the University of Washington sampled and monitored fish, shellfish, and bottom deposits throughout the area to determine the extent of background radiation present. Analysis of these data will be continued at the University, and subsequent reports on these findings will be released by the Atomic Energy Commission. Oceanographic

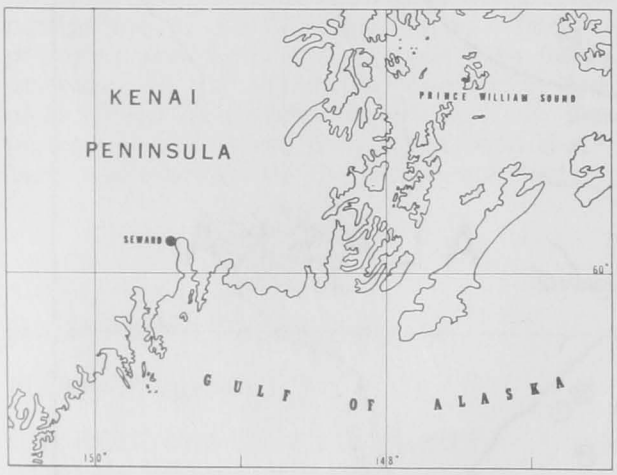


M/V John N. Cobb station pattern of Cruise 43 (July-September 1959).

data were collected throughout the investigation. This information will supplement data collected by the University of Washington oceanographic vessel Brown Bear.

* * * * *

SHRIMP RESOURCES OFF NORTH-CENTRAL COAST OF GULF OF ALASKA TO BE SURVEYED: M/V "John N. Cobb" Cruise 44: The shrimp resources in the waters along the north-central coast of the Gulf of Alaska will be surveyed by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. During the October 7-November 20 trip, the vessel



M/V John N. Cobb Cruise 44 (October 7-November 20, 1959).

will explore in bays, inlets, and offshore waters along the Kenai Peninsula from Nuka Bay to Prince William Sound. The objectives will be to determine the distribution, varieties, abundance, and sizes of shrimp during the fall season in that area. Oceanographic and meteorological data will be collected to evaluate possible affects on shrimp distribution. Commercial-type Gulf of Mexico flat shrimp trawls will be used for the exploratory fishing.

This is the tenth Alaska shrimp resources survey carried out by the Bureau since 1950. Cruises in 1957 and 1958 revealed extensive shrimp beds in the Shumagin Islands, Kodiak Island, and Kachemak Bay areas. Last year's findings in the latter two areas are being profitably exploited. The work planned for this fall will provide information from an area not previously explored. The location of productive shrimp grounds between Nuka Bay and Prince William Sound would considerably aid shrimp fishing activities recently started in the Seward area.

Oysters

LONG ISLAND SOUND SPAWNING AND SETTING OF OYSTERS AND STARFISH: Regular observations on the occurrence and distribution of shellfish larvae at several Long Island Sound stations, where 200-gallon samples are taken at semiweekly intervals, have shown that since the issuance of the last bulletin, on August 4, the situation has remained virtually the same being characterized by small numbers of bivalve larvae and practically a total absence of oyster larvae. For example, on August 6 no oyster larvae were found in any of the samples. On August 10 the situation was generally unchanged. Two oyster larvae were found at one station, but the total number of bivalve larvae remained low at all stations. Perhaps the finding of a few empty bivalve shells, particularly at one Station, and the fact that several larvae looked as though their shells were partly empty are significant. Possibly these observations indicate mortality or some abnormal condition of the larvae.

For the first time this year mature oyster larvae were found in one of the plankton samples taken on August 13 at one station located in the Milford area. This sample contained four mature larvae. In addition, there were about 3 or 4 smaller larvae. Again this year mature oyster larvae appeared suddenly as though brought in by the currents from other areas not covered by the plankton sampling. It is also important that the plankton sample from one station, collected on August 13, contained not only mature oyster larvae but it also had the highest total number of bivalve larvae and the highest number of species of bivalve larvae seen in any of our samples since July 13. (Observations on Spawning and Setting of Oysters and Starfish in Long Island Sound, Bulletin No. 3, Fishery Biological Laboratory, U. S. Bureau of Commercial Fisheries, Milford, Conn., August 18.)

The first oyster set occurred on August 11. It was extremely light and was recorded only at two stations. This is one of the latest beginnings of setting recorded in the course of the U. S. Bureau of Commercial Fisheries studies, which has extended for a period of about 25 years. Apparently, the larvae that were developed from local spawn either died or were carried away by currents. The larvae were absent from our waters regardless of the observations that the oysters in New Haven Harbor had developed a large quantity of spawn and that the majority were almost completely or more than half spawned by August 6, thus indicating that large numbers of eggs were released. On the other hand, we know that spawning will continue because many oysters at the deeper stations in the Bridgeport area still contain appreciable quantities of spawn and some of them appear to be ripe but unspawned.

Setting of starfish continued, but its intensity remained light. Again, two stations in the Bridgeport area displayed the heaviest set. However, except for the period from August 3 to August 6, when 30 young starfish were recorded on 40 shells at Station 9, the number of starfish per collection period did not exceed ten per station.

The beginning of setting of oysters has been delayed not only in Long Island Sound proper but also in adjacent waters. According to the biologist of the Oyster Institute of North America, who in cooperation with the Bureau is conducting studies on the utilization of salt-water ponds for oyster culture, and who also carries on observations in the open waters of Long Island, the first oyster

set was recorded about August 12 on collectors placed at a depth of approximately 30 feet, north of Paradise Point in Southold Bay. No oyster larvae were previously seen in semiweekly plankton samples nor were any spat discovered on the collectors from that area until the above-mentioned date.

Another oyster enemy, the flatworm of the genus Stylochus, appears to be showing a rapid increase in numbers in Long Island Sound waters. We called attention to this predator in one of our 1956 papers and since then our biologists have observed its occurrence and behavior in several locations. This year in one of our experiments in Milford Harbor, where laboratory-grown oyster set was used, over 30 percent of the young oysters, in some instances, were found dead with the worms still inside of the shells.

In the near future the Bureau's laboratory, in cooperation with biologists of other groups of the Bureau of Commercial Fisheries and the Connecticut Shell Fish Commission, will begin a series of studies devoted to observations on the behavior of starfish under normal conditions and to the development of chemical methods to control them. Several biologist-SCUBA divers of the Bureau and an underwater television technician of the Woods Hole Biological Laboratory are helping. The State Shell Fish Commission is also cooperating by offering the oyster-spawning bed in the Milford area for these studies and the use of the State boat Shellfish.

Note: Also see Commercial Fisheries Review, October 1959, p. 35.

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STUDIES IN MARYLAND AND CONNECTICUT:

Maryland: The research of the U. S. Bureau of Commercial Fisheries Annapolis (Md.) Fishery Biological Laboratory is centering this year on the pattern of oyster setting in horizontal and vertical levels in a seed area of southern Maryland. Early indications are that the setting will be light and not of commercial significance in the experimental area. Evaluating the effect on oyster seed of a predatory flatworm, Stylochus ellipticus, recently found in these waters, is a part of the project. The occurrence of the worm was also light this summer.

Hydrographical and biological observations are being conducted in the waters surrounding the Oxford, Md., Laboratory site. The oyster-setting portion of these observations showed light spatfall during July. This, however, is a condition observed elsewhere in Maryland waters and indicates a general light setting this season.

Connecticut: Observations on spawning and setting of oysters and starfish in Long Island Sound began in July. Setting of starfish began July 2 and is continuing; however, it is not too heavy. No setting of oysters has been recorded. Although spawning occurred long ago, practically no oyster larvae have been found in the plankton samples.

In developing methods of larval culture of commercial mollusks several more antibiotics were evaluated on their ability to control undesirable bacteria that cause larval diseases. Achromycin, a preparation of tetracycline, gave promising results.

About 3.5 million oyster larvae were reared to the setting stage and released in experimental ponds.

Experiments on developing chemical barriers to control shellfish enemies made good progress.

* * * * *

USE OF PLASTIC SHEETS FOR CONVERSION OF SOFT, MUDDY BOTTOMS INTO OYSTER BEDS:

Many bottom areas and estuarine regions are too soft to support oysters or their shells. To convert these areas into oyster beds thousands of bushels of oyster shells have to be planted on each acre to harden the bottom. This an expensive undertaking, rendering the method virtually impractical. Nevertheless, problems of this nature have to be met in extensive areas along our coast when establishment of oyster beds is desirable in regions where the bottoms are too soft.

The problem can be solved by covering soft bottoms with a thin sheet of polyethylene or some other plastic material to serve as a support for oyster shells, other set collectors, seed oysters, or spawners. Some plastics are neutral, virtually indestructible materials which last many years. We have used polyethylene for years in our experiments and have found it extremely durable. It is inexpensive--sheets costing less than one cent per square foot if purchased in large quantities.

In the spring of 1958 an experiment was undertaken on the mud flats in Milford Harbor where a polyethylene sheet (6 mils thick and 20 feet wide) was spread on the bottom in such a manner that half of it was above and half below the mean

low-water mark (fig. 1). Soon after that, large quantities of oyster shells, loose and in special chicken-wire bags, were placed on the polyethylene. An extremely heavy set of oysters occurred on the shells resting on the plastic. This was also true for nearby areas, where oyster shells were resting directly on the bottom because of the unusually heavy oyster set that occurred that year in Long Island Sound and its tributaries. However, heavy setting on the shells placed directly on the plastic corroborated our earlier laboratory observations showing the lack of adverse effects of polyethylene on oyster larvae and set.

Continued observations indicated that the polyethylene sheet withstood seasonal changes very well and that even the severe winter of 1958/59, when the tidal flats froze frequently and large quantities of ice were formed in Milford Harbor, did not noticeably affect the plastic material. A year after the sheet was first placed in the water, the plastic showed no signs of deterioration and continued to support the heavy load of shells and oysters.

In addition to converting soft bottoms into usable ones, polyethylene sheeting can be used for still another purpose. For example, recent literature contains several remarks made by oyster biologists, especially the Japanese, concerning a gradual deterioration of good oyster bottoms after being used for some time. They ascribe this to the accumulation of molluscan waste products which gradually decompose, rendering the bottom toxic to oysters. Such areas could probably be restored to their former productivity by covering them with polyethylene sheeting or similar material, which would isolate oysters from the deleterious effects of polluted bottoms.

A polyethylene sheet serves as a support spread on soft, muddy bottom for oyster shells.

Still other uses of polyethylene sheeting suggest themselves. One, perhaps, is that of creating favorable conditions in specially-designed ponds and tanks for the cultivation of commercial species of sponges. The material can also be used for protecting the bottoms of oyster dikes and claires (small enclosed oyster ponds) from burrowing crustaceans, such as members of the genus Upogebia, and also for retaining the water in claires

built in areas where the natural soil is too porous.

Note: I wish to thank my colleagues, H. C. Davis and P. E. Chanley, for their help in establishing the experimental, plastic-covered bed in Milford Harbor.

-- V. L. Loosanoff, Director,
Biological Laboratory,
U. S. Bureau of Commercial
Fisheries, Milford, Conn.

Pacific Herring

AERIAL SPAWNING SURVEYS IN ALASKA:

The method of conducting Pacific herring spawning surveys on definite patterns by aircraft, which was instituted in 1957, was again used in the spring of 1959 in Alaska. Spawning beaches observed were charted during flights and miles of beach utilized for spawning computed.

During the aerial surveys from March 16 to May 19, 141.4 hours of flying time were expended and 20,170 miles of beach observed. Spawning was charted on 133.7 miles of shoreline. Insofar as spawning miles were concerned, the Ketchikan-Craig district accounted for 16.5 miles, the Sitka district 93.3 miles, and the Juneau district 24.1 miles. Calculations based on egg density, area, and herring fecundity indicate a minimum of 65,500 tons of herring contributed to the spawning observed.

Aerial spawning surveys were conducted in Prince William Sound also--12.9 miles of spawn were recorded. No surveys were conducted in Kodiak this year.

Ground surveys were made in 46 separate areas in southeastern Alaska and accounted for about 16 percent of all spawning observed.

Studies, conducted on subtidal and reef spawning in the Craig area, indicate it can be rather extensive.

Sardines

CALIFORNIA SARDINE CATCH DROP FORECAST FOR 1959:

Provided the tie-up over the ex-vessel price disagreement between producers and canners and other economic factors do not exert a depressing effect upon fishing operations, the California sardine landings during the 1959 season can be expected to be only slightly less than the 101,567 short tons landed in 1958. In 1957 only 20,455 tons were landed. This forecast was announced at a conference held in La Jolla, Calif., on July 28-30. The conference was attended by representatives from the California Department of Fish and Game, Scripps Institute of Oceanography, the U. S. Bureau of Commercial Fisheries, California Academy of Sciences, and Hopkins Marine Station for the purpose of reviewing their contributions to the California Cooperative Oceanic Fisheries Investigations. Industry members and other government officials attended also.

The information developed by the California Department of Fish and Game suggests that without economic restrictions the catch in Southern California waters should be about 67,000 tons. About 27,000 tons could be caught off central California (north of Pt. Arguello). The total California commercial sardine catch could reach about 94,000 tons; however, economic factors and fleet tie-ups may keep the catch down.

The percentage age composition of the catch should be about as follows:

Area	Year-Class			
	1957	1956	1955	1954+
	(Percent)			
California:				
Southern	61	33	5	1
Central	64	36	-	-

The programs carried out by the U. S. Bureau of Commercial Fisheries suggest that the availability of sardines will be about the same as last year. This is judged because the amount of spawning and the distribution of spawning is about like last year, and there are no indications of outstanding year-classes entering the fishery. A note of caution must be injected, however, because of indications of cooling of the ocean to the north. A marked persistent cooling might cause the sardines to be further south than last year.

At Monterey, 4 out of 6 canneries settled with sardine fishermen on September 1 to pay $35 ex-vessel for sardines landed at Monterey on a trial basis for about a week. One small sardine canner at Oxnard also settled at the same price. But in southern California no agreement had been reached as of September 1. The central California season opened August 1 and the southern California season September 1, but the boats have been tied up at the dock pending the settlement of the ex-vessel price.

On September 2 about 360 tons of sardines were caught and delivered to the four canneries at Monterey that have agreed to pay $35 a ton. Fishermen reported fish plentiful in Monterey Bay with seiners catching large sardines packing 5 to 6 fish per pound can.

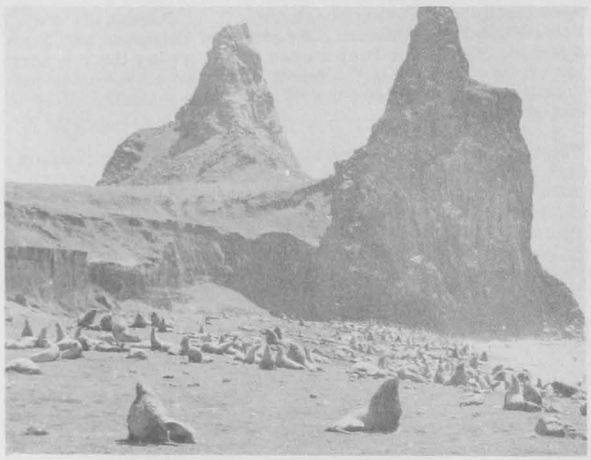
Sea Lions

ALASKA SEA LION STUDIES:

Biological studies on the sea lions in Alaska were conducted during the past three years by the Fishery Research Institute of Seattle under a contract from the U. S. Bureau of Commercial Fisheries. As a result of the research much

was learned concerning the distribution, abundance, feeding habits, general biology, and methods of harvesting sea lions.

The sea lion is a predator on salmon and halibut and at times causes considerable damage to fishing gear.



Sea lions on breeding grounds, Bogoslof Islands, Alaska.

Efforts were made this year to determine if their numbers might be reduced by initiating a commercial fishery for these animals. A total of 616 sea lions was killed and about 100 tons of sea lion meat and 18,000 pounds of livers were rendered. The meat is expected to be sold for mink feed or to canners of pet food.

The killing of the 616 sea lions was the result of a $50,000 contract awarded to a Pacific Coast fish-packing firm by the U. S. Bureau of Commercial Fisheries. The fishery company sent its freezership Arctic Maid for a two-months study near Kodiak Island and westward to the Aleutians.

Tuna

FROZEN TUNA TRANSFERRED FROM FISHING VESSEL TO CARGO SHIP AT SEA:

A United States west coast tuna-packing company made a trial transshipment of frozen tuna in Panama Bay off Taboga Island September 5, 1959. The chartered refrigerated cargo ship, Maria Horn, anchored some 200 yards off Taboga Island which has a protective deep-water cove. The company's two tuna vessels, the Westport with 230 tons and the Missouri with 240 tons of frozen tuna aboard, tied up alongside the Maria Horn, one aft and the other forward. Using ships' gear and cargo nets, the transfer of the frozen tuna was made without incident.

The open-sea transshipment is estimated to have saved the company some $2,000. A total of 48 stevedores from Panama City and 32 native laborers from Taboga Island were used in the operation. The wage scale paid was 90 cents an hour to the gang foreman, 75 cents an hour to winchmen, and 50 cents an hour to stevedores. Time-and-a-half was paid for Sunday work.

The company is studying the feasibility of operating its tuna fleet of 20 boats from a base on Taboga Island. The company would expect eventually to establish dock facilities and a freezing plant of some 2,500- to 3,000-ton capacity on the Island.

In 1956 a shrimp company initiated construction of a fish-meal plant on this sheltered cove of Taboga Island. It was the first of a three-stage program providing for a shipyard with dry docks, marine railroad and supply base, and a shrimp-freezing plant. The fish-meal plant was completed but operation has been limited for lack of an adequate fish supply. Further construction was deferred in view of the reversal in the Panama shrimp industry and the company's extension of operations to Ecuador. The United States tuna company would probably acquire the site of the shrimp company as building areas are limited on this small resort island. An adequate fresh-water supply is lacking. (United States Embassy, Panama, September 11, 1959.)

* * * * *

UNITED STATES-JAPANESE GOVERNMENTAL TUNA CONFERENCE:

The U. S. Interior, State and Commerce Departments have indicated qualified approval of the tuna industry's proposal for government-to-government talks on tuna between the United States and Japan. The following letter, signed by representatives of the three government departments, was mailed towards the end of August 1959 to those concerned with the meeting in the United States:

"Representatives of the Departments of Interior, State and Commerce have examined with great care the plan of action for talks on tuna between the United States and Japanese Governments submitted on July 8 by representatives of the Southern California tuna industry. Equally careful consideration has been given to the views expressed by other representatives of the tuna industry and to statements submitted to the interested agencies subsequent to the meeting on July 8.

"The plan of action submitted on July 8 contained a recommended series of agenda items for the proposed tuna conference under the following headings: (1) conservation; (2) efficiency of harvesting; (3) quality of production; (4) efficiency of marketing; (5) market research and development; and (6) Japanese price and volume controls.

"The above mentioned Departments have concluded that certain objectives of the tuna industry might appropriately be sought and promoted by informal discussions between representatives of the United States and the Japanese Governments under the first five of these headings. It will, of course, be necessary to reach agreement on the details of an agenda.

"We have concluded, however, that it would not be desirable to include in any discussions between governments the subject of future Japanese price and volume controls. Japanese exports of fresh and frozen tuna and canned tuna to the United States are presently subject to unilateral controls. The proposed plan of action refers by implication to the fact that at the present time Japanese exports to the United States of certain types of cotton textiles are subject to voluntary controls at certain specific levels. It is apparently with this arrangement in mind that the plan of action refers to the establishment of a precedent for industries other than tuna similarly affected by Japanese imports. It is true that this Administration has discussed with the Japanese Government its program of control over exports of textiles. However, this program is regarded as an exceptional one and not as establishing a precedent for similar action in other cases, including the tuna industry.

"The interest of the tuna industry in government-to-government discussions of Japanese price and volume controls affords an opportunity to make clear the policy of the Administration with respect to the question of intergovernmental agreements for the voluntary control of exports to the United States. As you know it is the policy of the United States Government to encourage free competitive enterprise, both domestically and internationally. Negotiated voluntary controls are in basic conflict with that policy. It has been the experience of our Government that negotiation of "voluntary" controls over exports does not result in satisfaction to the industries seeking the controls, or those industries dependent upon access to imported materials, or domestic consumers, or the foreign governments involved.

"The plan of action submitted by the Southern California tuna industry is regarded as a helpful attempt to move forward, in cooperation with appropriate government agencies, in a constructive program for the improvement of the situation in the tuna industry. The plan of action stated the belief of the industry that a conference would be eminently worthwhile irrespective of the range of subjects that the Administration might feel should be recommended to the Japanese Government for discussion at this time. On that basis, the United States Government proposed to the Japanese Government that informal discussions be held as indicated in the third paragraph in this letter, with the specific understanding that the discussions will not deal in any way with future price or volume controls.

"The Japanese Government has now agreed in principle to an intergovernmental meeting, and it is anticipated that they will be able to give their formal agreement as soon as the agenda has been mutually approved. The Government is prepared to invite a limited number of representatives of the tuna industry to attend the meeting as members of the United States Delegation.

"If you agree that government-to-government discussions on the basis indicated in this letter would be beneficial to the tuna industry, it would be appreciated if you would so indicate in your acknowledgment of this letter. Copies of this letter are being sent to all participants in the July 8 meeting and their views are likewise being requested.

"In conclusion, it should be understood, of course, that none of the actions discussed in this letter affect in any way the applicability of the antitrust laws of the United States and the Order of the Federal Trade Commission in Docket No. 6623, July 24, 1957, so far as they may be relevant.

"Sincerely yours,

"Ross Leffler
Assistant Secretary of Interior
for Fish and Wildlife

"W.T.M. Beale
Deputy Assistant Secretary
of State
for Economic Affairs

"Bradley Fisk
Deputy Assistant Secretary of Commerce
for International Affairs"

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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 1959 at the 12½-percent rate of duty is 52,372,574 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports from January 1-August 29, 1959, amounted to 31,345,084 pounds, according to data compiled by the Bureau of Customs, January 1-August 30, 1958, a total of 31,034,647 pounds had been imported. The quota for 1958 of 44,693,874 pounds was reached on November 20, 1958.

United States Fishing Fleet 1/ Additions

JULY 1959:

A total of 60 vessels of 5 net tons and over were issued first documents as fishing craft during July 1959--a decrease

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, July 1959

Area	July		Jan.-July		Total
	1959	1958	1959	1958	1958
	(Number)				
New England	2	-	10	10	13
Middle Atlantic	1	2	6	9	13
Chesapeake	11	11	56	55	99
South Atlantic	15	15	59	76	135
Gulf	12	29	88	178	270
Pacific	11	18	70	84	112
Great Lakes	-	2	5	5	10
Alaska	8	1	28	24	31
Virgin Islands	-	-	-	1	1
Total	60	78	322	442	684

Note: Vessels have been assigned to the various areas on the basis of their home ports.

1/ Includes both commercial and sport fishing craft.

of 18 vessels compared with the same month last year. The South Atlantic area led with 15 vessels, while the Gulf area was second with 12 vessels, followed by the Chesapeake and Pacific areas with 11 vessels each.

Table 2 - U. S Vessels Issued First Documents as Fishing Craft by Tonnage, July 1959

Net Tons	Number
5 to 9	27
10 to 19	16
20 to 29	9
30 to 39	44
40 to 49	1
50 to 59	3
Total	60

During the first seven months of 1959, a total of 322 vessels were issued first documents as fishing craft--120 below the same period of 1958. Most of the decline occurred in the Gulf area where 90 fewer vessels were documented in 1959 than in 1958.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JULY 1959:

Imports of edible fresh, frozen, and processed fish and shellfish into the United States during July 1959 increased 16.7 percent in quantity, but dropped 0.7 percent in value as compared with June 1959. The increase was due primarily to higher imports of groundfish fillets (up 10.8 million pounds) and frozen albacore and other tuna (up 3.4 million pounds), and to a lesser degree, an increase in the imports of canned tuna in brine. The increase was partly offset by a 1.9-million-pound-decrease in the imports of lobster and spiny lobster.

U. S. Imports of Edible Fishery Products, July 1959 with Comparisons

Item	Quantity			Value		
	July		Year	July		Year
	1959	1958	1958	1959	1958	1958
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & shellfish:						
Fresh, frozen, & processed1/	93.4	100.7	956.8	27.0	28.3	278.4
Exports:						
Fish & shellfish:						
Processed only1/ (excluding fresh & frozen)	6.2	1.9	41.2	1.4	1.0	15.6

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

Compared with July 1958, imports in July this year were lower by 7.3 percent in quantity and 4.6 percent in value due to lower imports of frozen albacore tuna (down 7.1 million pounds), groundfish fillets (down 3.3 million pounds), and canned sardines not in oil (down 3.2 million pounds). Compensating for the decline was an increase of about 6.0 million pounds in the imports of frozen tuna other than albacore and frozen shrimp (up 1.6 million pounds).

United States exports of processed (mostly canned fish and exclusive of fresh and frozen) fish and shellfish in July 1959 were up by 37.8 percent in quantity and 7.7 percent in value as compared with June 1959. Compared with the same month in 1958, the exports this July were higher by 226.3 percent in quantity and only 40.0 percent in value. The higher exports in July this year were due to increased exports of canned California sardines, salmon, and squid. Those products accounted for about 90 percent of total exports of processed fish and shellfish in July this year.

* * * * *

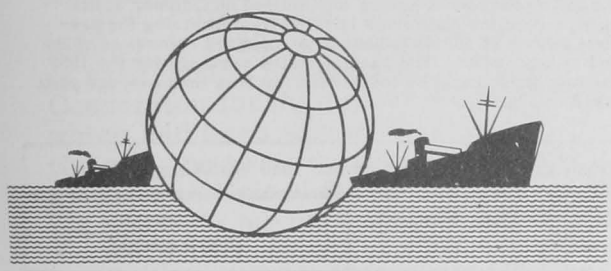
EXPORT TRADE PROMOTION SERVICE INITIATED BY COMMERCE DEPARTMENT:

The inauguration of a new trade promotion service as part of a program to increase United States export sales was announced by the Assistant Secretary of Commerce for International Affairs.

To put prospective buyers in speedy touch with their local sources of supply for United States products, the Commerce Department's Bureau of Foreign Commerce is asking United States manufacturers and exporters to fill out a 3 x 5 card identifying each of their agents and licensees in foreign countries. These cards will be transmitted by that Bureau to U. S. Foreign Service Posts to be used as part of an "Agency Index" for ready reference when United States commercial officers are asked the important question: "Where can I buy a specified United States product?"

United States Foreign Service Officers handling commercial matters abroad

frequently are asked, both by businessmen and foreign government representatives, how purchase of United States products can be made. Although overseas representatives of many firms are well known to U. S. Foreign Service Posts, complete listings usually are not available. By having at their fingertips the names and addresses of agents or licensees, commercial officers serving the interests of United States firms abroad will be able to place before potential customers information on all local



sources of supply. If a buyer is interested in a trademarked product or replacement equipment, the name of the representative on the scene can be supplied readily.

The 3 x 5 cards (Form FC-30) may be obtained from any of the Commerce Department's 33 field offices or from the Commercial Intelligence Division, Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C. The data furnished by United States firms will not be published.

The Assistant Secretary of Commerce said that vigorous competition in foreign trade today demands greater cooperative action between Government and private business, and the new Agency Index service is one means by which the Government can better serve the needs of private business, particularly small business.

All firms having representatives or licensees abroad should take advantage of the Agency Index service.

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GROUNDFISH FILLET IMPORTS, AUGUST 1959:

Imports of groundfish (including ocean perch) fillets and blocks into the United States in August 1959 amounted to 15.1 million pounds--a gain of 421,000 pounds or 3 percent as compared with August 1958. Canada continued to lead all other countries in these imports with 9.9 million pounds--a decline of 180,000 pounds as compared with the corresponding month of last year. Iceland was second with 2.3 million pounds--1.4 million pounds below August 1958. Denmark followed with 1.6 million pounds--a gain of 1.1 million pounds over the same month last year. The remaining 1.3 million pounds were imports from Norway, West Germany, Greenland, the United Kingdom, Miquelon and St. Pierre, and the Netherlands.

During the first eight months of 1959, total imports of groundfish and ocean perch fillets and blocks into the United States amounted to 119.9 million pounds. Compared with the same period of 1958, this was a gain of 14.9 million pounds or 14 percent. Canada (58.2 million pounds) accounted for 49 percent of the 1959 eight-months total. Imports from Iceland--32.8 million pounds--made up 27 percent of the total, while Denmark was next with 13.6 million pounds or 11 percent, followed by Norway with 10.0 million pounds or 8 percent. Seven other countries accounted for the remaining 5.3 million pounds or 5 percent.

Note: See Chart 7 in this issue.

Wholesale Prices, September 1959

Due primarily to higher wholesale prices for large drawn haddock, fresh shrimp, and canned pink salmon, the September 1959 wholesale price index for edible fishery products (fresh, frozen, and canned) rose about 1.7 percent from the preceding month, but was lower by 6.4 percent as compared with September a year ago.

Shorter supplies of large haddock at Boston and light receipts of Lake Superior drawn whitefish at Chicago were responsible for the increase of 5.1 percent in the index for the drawn, dressed, and whole finfish subgroup from August to September this year. The sharp rise (40.3 percent) in the ex-vessel price of large drawn fresh haddock and a 13.3 percent increase in the drawn whitefish price were partly offset by

some declines in the wholesale prices for frozen halibut, fresh round yellowpike, and round whitefish at New York. Compared with September a year ago, the subgroup index this September was up slightly (1.1 percent). Lower wholesale prices for western halibut and whitefish at New York were more than offset by higher prices for the balance of the items in this subgroup.

Fresh processed shellfish prices in mid-September 1959 were higher by 3.3 percent than the previous month. Fresh headless shrimp prices were higher by 4.0 percent and shucked oysters up by 4.2 percent. On the other hand, fresh small haddock fillet prices declined 6.8 percent from August to September this year. The fresh processed fish and shellfish subgroup index this September dropped by 12.7 percent from the same month of 1958 because of sharply lower wholesale prices for haddock fillets at Boston (down 25.8 percent) and fresh headless shrimp (down 24.0 percent) at New York City. However, due to scarce supplies of oysters, prices were up about 4.2 percent from September 1958 to September this year.

The continuing weakness in the market for frozen shrimp was responsible for the decline of 4.5 percent in the September 1959 index for the processed frozen fish and shellfish subgroup as compared with the preceding month. Frozen shrimp prices at Chicago declined about 5 cents a pound or 8 percent during this period. In addition, a drop of 1.4 percent occurred in frozen flounder fillet prices from August to September this year. From September 1958 to September this year all subgroup items were priced lower and resulted in a 20.4 percent decrease in the subgroup index. In September this year frozen haddock fillets were lower by 17.7 percent, frozen flounder fillets down by 9.8 percent, ocean perch lower by 6.8 percent, and frozen shrimp down 26.6 percent.

Canned fish prices rose again (1.4 percent) in September this year from the preceding month. By mid-September 1959 earlier predictions of a very small canned salmon pack were realized and prices jumped about 3.1 percent at Seattle. Other canned fish prices this September were unchanged from the preceding month. Compared with September of last year, prices this September were up 1.5 percent due to higher canned salmon prices (up 16.6 percent) and canned Maine sardine prices (up 6.4 percent). These increases from September 1958 to this September offset a decline of 9.6 percent in canned tuna and a 28.8 percent in canned California sardine prices. The dispute between the sardine fishermen and canners over ex-vessel prices was settled on October 3, but prospects of the California sardine fleet attaining the predicted catch of 100,000 short tons appeared remote as of the end of September. The pack of Maine sardines for the 1959 packing season will be lower than the less than average pack made in 1958.

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

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			Sept. 1959	Aug. 1959	Sept. 1959	Aug. 1959	July 1959	Sept. 1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					121.8	119.8	123.0	130.1
Fresh & Frozen Fishery Products:					135.2	132.8	139.0	150.0
Drawn, Dressed, or Whole Finfish:					159.9	152.2	160.2	158.1
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.15	.11	153.1	109.1	169.5	151.9
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.33	.35	101.1	107.8	103.6	113.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.80	.80	179.7	179.7	171.3	174.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.73	.64	179.7	158.6	151.2	161.1
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.73	.80	146.7	161.8	159.8	200.2
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.73	.83	170.0	193.5	190.0	140.7
Processed, Fresh (Fish & Shellfish):					125.5	121.5	123.0	143.8
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.35	.37	117.4	125.9	139.5	158.2
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.67	.64	105.1	101.1	104.3	138.2
Oysters, shucked, standards	Norfolk	gal.	6.25	6.00	154.7	148.5	145.4	148.5
Processed, Frozen (Fish & Shellfish):					107.2	112.3	120.9	134.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.37	.38	96.8	98.2	102.1	107.3
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.33	.33	102.0	102.0	105.2	124.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.27	.27	108.8	108.8	112.8	116.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.64	.69	98.0	106.5	118.4	133.5
Canned Fishery Products:					103.4	102.0	100.5	101.9
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.50	23.75	127.8	123.9	122.6	109.6
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	10.80	10.80	77.9	77.9	77.9	86.2
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.50	7.50	88.1	88.1	85.1	123.7
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.75	8.75	93.1	93.1	87.8	87.5

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.