TRENDS AND DEVELOPMENTS

Alaska

FOREIGN FISHING ACTIVITY OFF ALASKA, JULY 1964:

Soviet fishing activity decreased substantially in the waters off Alaska during July 1964. The same period in 1963 saw a general reduction in Soviet fishing efforts on Alaskan fishing grounds. However, while only about 50 Soviet vessels were active in 1964, nearly 200 Soviet vessels were in the same area a year earlier.

Japanese activity in the eastern Bering Sea was down to 4 factoryships and their catcher vessels. With the sale of Prince William Sound salmon to Japanese fishing companies, a number of vessels (including 5 stern trawlers) were diverted to that area to load fish.

U.S.S.R.: The major Soviet fishery off Alaska in July was the trawl fleet operating alternately between Albatross and Portlock Banks near Kodiak. That fleet was harvesting primarily Pacific ocean perch, with virtually no incidental species taken. Fleet gradually decreased and in July consisted of about 50 vessels of all types.

Fig. 1 - Soviet fishery transport vessel surrounded by factoryship and fishing vessels in the Bering Sea during early spring.

Three Soviet whale factory vessels and their accompanying killer vessels continued to operate in the Alaska area during the month. Their operations were farther offshore than in previous years and hence outside United States patrol areas.

Japan: Eastern Bering Sea fishing activities by the Japanese were also reduced during July, as one of the remaining fish meal factoryships moved progressively northwest toward Siberia. The remaining fish meal and freezer vessel, with 28 trawlers, was last reported fishing in the vicinity of the Pribilof Islands.

The Japanese shrimp factoryship Einin Maru, accompanied by 12 trawlers, continued operations north of the Pribilofs during July

Fig. 2 - Catch aboard a Japanese trawler operating in North Pacific and Bering Sea.

Three Japanese whaling fleets were operating from the vicinity of the Shumagin Islands westward along the Aleutian Chain during the month.

Only two Japanese vessels continued to fish in the Gulf of Alaska during July. The Tenryu Maru and the Kohoku Maru No. 2 were fishing for shrimp off Sitkalidak Island while the other vessels fishing in that area were diverted to Cordova to load salmon.

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BRISTOL BAY RED SALMON RUN FAILS:

The 1964 Bristol Bay red salmon fishery was officially labeled a disaster by the Alaska Department of Fish and Game. It was reported that the Naknek-Kvichak district had "absolutely failed." Preliminary data indicated that the Naknek segment was up to expectations and that the Kvichak River system accounted for the failure. All other major systems in the Bay produced reasonably close to the return forecast.

The predicted run for Bristol Bay had been placed at 17.4 million reds. Preliminary figures showed the run was slightly less than 11 million fish and was about equally divided between catch and escapement.

The 1963 Bristol Bay catch of 2.5 million reds salmon was the lowest ever previously recorded for that area, and was also declared a complete failure.

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SALMON WASTE UTILIZATION:

Over the past few years increasing use has been made of salmon waste for food, pharmaceutical, and bait purposes. Salmon eggs were processed at several Alaska canneries this year as red caviar under Japanese technical supervision and for export to Japan. For that product, eggs are removed after the fish are headed, then transported in open mesh baskets to the packing plant where they are salt-cured. The eggs are first washed in salt water to remove most blood and slime. They are then placed in a saturated brine solution (containing mild-cure salt plus certain color additives) and agitated mechanically for 20 minutes. Egg skeins are then sorted, trimmed, and graded for packing under very close Japanese supervision. A standard pack is made by layering individual skeins of eggs in polyethylene-lined wooden boxes with a modest sprinkling of salt between layers. Apparently the salt at that stage is not measured. Each box holds 10 kilos (22 pounds). After packing, the boxes are stored at room temperature for about one week, again inspected, and then placed in storage at 40° F. for shipment to Japan.

In some plants milts are separated at the same time that eggs are removed from the salmon. Those are placed in 55-gallon drums and treated with 7 gallons of caustic soda solution (5 pounds per gallon) as a preservative and as a first step in their processing. These are used in the production of certain pharmaceutical products.

Significant amounts of salmon heads and tails are also set aside and sold for halibut bait in locations where the halibut fleet sells or takes on bait. The traditional preparation of salmon eggs for sport fishing bait continues to expand each year.

While some Alaska canneries do not prepare any of those byproducts, it is estimated that $\frac{1}{4}$ to $\frac{1}{3}$ of the salmon waste in Alaska will be processed and sold this year.

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FILING OF FISHERY DISASTER LOAN APPLICATIONS ENDED SEPTEMBER 30, 1964:

The last date for the acceptance of applications using the Alaskan disaster criteria for fishery loans from the U. S. Bureau of Commercial Fisheries was September 30, 1964. Those special loans were made at 3 percent interest to eligible applicants for the repair or replacement of commercial fishing vessels or fishing gear damaged or lost as a result of the March 27, 1964, Alaskan earthquake or tidal wave.

Note: See Commercial Fisheries Review, July 1964 p. 8.

Alaska Fisheries Exploration and Gear Research

EXPLORATORY FISHING FOR SHRIMP AND SCALLOPS:

Exploratory fishing for shrimp was continued by the U. S. Bureau of Commercial Fisheries chartered exploratory vessel Paragon with coverage as of July 1964 extending from Kodiak Island west to Unimak Pass and including the Shumagin Islands. Catches of over 2,000 pounds in a half-hour trawl drag have been recorded. Both flat and semiballoon 40-foot Gulf of Mexico shrimp trawls were used. Pink shrimp accounted for about 80 to 85 percent of the catches with varying amounts of side-stripe and coon-stripe showing on occasion. Exploratory drags using an eight-foot scallop dredge were made in numerous bays and channels in the Shumagin Islands area. Only a few scattered scallops were located; the largest catch being 16 medium scallop in a half-hour tow in Pavlof Bay. The vessel

Paragon was scheduled to move into the Bering Sea and Bristol Bay during August and September.

Alaska Fisheries Investigations

PINK SALMON NURSERY AREAS DISCOVERED:

The M/V Heron, accompanied by the 20-foot reconnaissance-catcher vessel Blue Boat, completed an 11-day cruise (July 7-17, 1964) through all major channels in northern Southeast Alaska and West Sumner Strait. The cruise was the second of a series to trace seaward migrations of juvenile salmon as they move through summer nursery areas to the Gulf of Alaska. The cruise was highly successful as weather conditions were ideal and all gear worked perfectly. Four major summer nursery areas were discovered and all observed salmon populations were easily sampled by round haul seine from Blue Boat. Catches ranged from several hundred to many thousands per set. The success of this project in observing and capturing samples from major populations of migrating pink salmon represents an important breakthrough in Alaskan pink salmon research, and will lead to a much better understanding of mortality after leaving the stream.

Major concentrations of juvenile pink, chum, and coho salmon were discovered in:

(1) West Kuiu Island from Saginaw Bay to Gedney Harbor, with the population centered in Pillar Bay;

(2) Central Chatham Strait from Takatz Harbor to east Peril Strait, centered in Kelp Bay;

(3) West Icy Strait from Lisianski Inlet to Idaho Inlet, centered around Inian Islands;

(4) West Summer Strait from south Kelp Strait to Louise Cove, centered around Port Beauclerc.

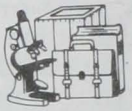
Length-frequency measurements of pink and chum salmon from various locations showed that there are significant differences between size of fish from different areas. Those differences will be useful in later identifying populations in catches by the M/V Commander, a Fisheries Research Institute vessel which was scheduled to begin sampling for juvenile salmon along the outside coast of Baranof Island about August 1. Icy Strait and central Chatham Strait juvenile pink salmon were the smallest, ranging in body length from 79 to 88 millimeters (3.1-3.5 inches); West Kuiu Island pinks ranged from 91 to 10[illegible] millimeters (3.6-4.2 inches); and West Sumner Strait pinks were from 112 to 136 millimeters (4.4-5.4 inches).

Atlantic Fisheries Technological Conference

MEETING ON OCTOBER 11-14, 1964:

The eighth annual Atlantic Fisheries Technological Conference was held at Martha's Vineyard, Mass., on October 11-14, 1964. The meeting was attended by United States and Canadian fishery scientists from industry, research institutes, universities, and Government agencies.

More than 50 papers were offered; topics included sanitation problems in fisheries, preservation techniques, research programs and applications, quality measurements, and economics.



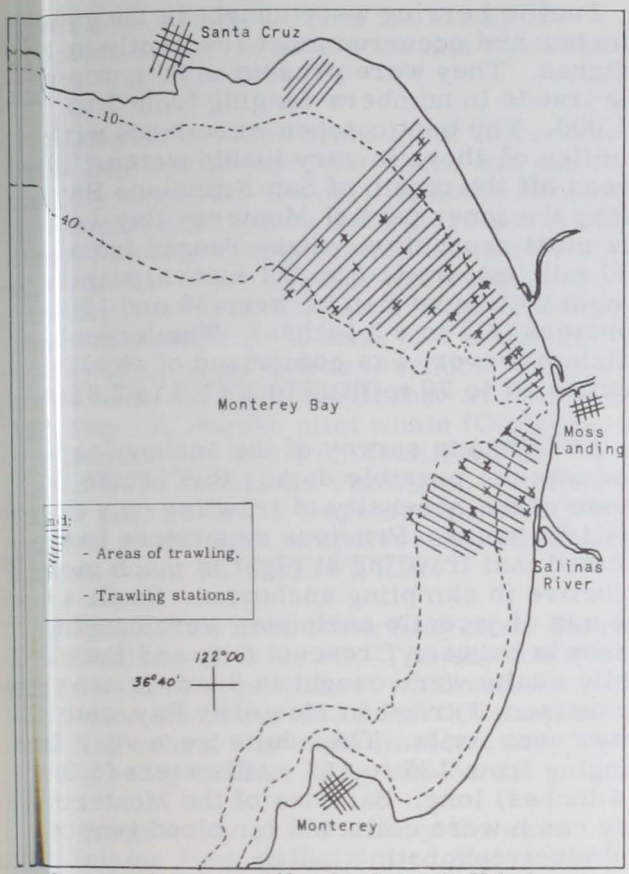
California

GROWTH STUDIES OF ENGLISH SOLE IN MONTEREY BAY:

M/V "Nautilus" Cruises 64-N-1a (February 4-7, 1964), 64-N-1b (April 7-10), 64-N-1c (June 9-12): To collect adult and juvenile English sole (Parophrys vetulus) in Monterey Bay in the vicinity of Moss Landing for use in a growth analysis study was the objective of these cruises by the California Department of Fish and Game research vessel Nautilus.

A $1\frac{1}{4}$-inch mesh Gulf of Mexico shrimp otter trawl with a 1-inch mesh cod-end was used. Trawling was conducted on both sides of the Monterey Canyon in depths of 3 to 50 fathoms with each tow lasting about 20 minutes.

A total of 34 tows was made during the three cruises. Of the fish taken, the sex of 593 English sole was determined and they were also measured. These fish ranged from



hows trawling areas of Nautilus Cruise 64-N-1a-b-c.

456 millimeters in length (about 3.8 to inches). An interopercle bone was taken two fish of each sex in each centimeter to be used for age determinations.

sex determination was also made on es of petrale sole (Eopsetta jordani) over sole (Microstomus pacificus) taken these cruises, together with their urements.

ee Commercial Fisheries Review, February 1964 p. 12.

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GIC FISH POPULATION EY CONTINUED:

V "Alaska" Cruise 64-A-3-Pelagic (May 4-24, 1964): This cruise by the rnia Department of Fish and Game re- h vessel Alaska was conducted in the al waters of northern and central Cali- a between Crescent City and Monterey, n the vicinity of Avila. The main ob- es of the cruise were to:

Survey the pelagic environment in the ern parts of the present northern an-

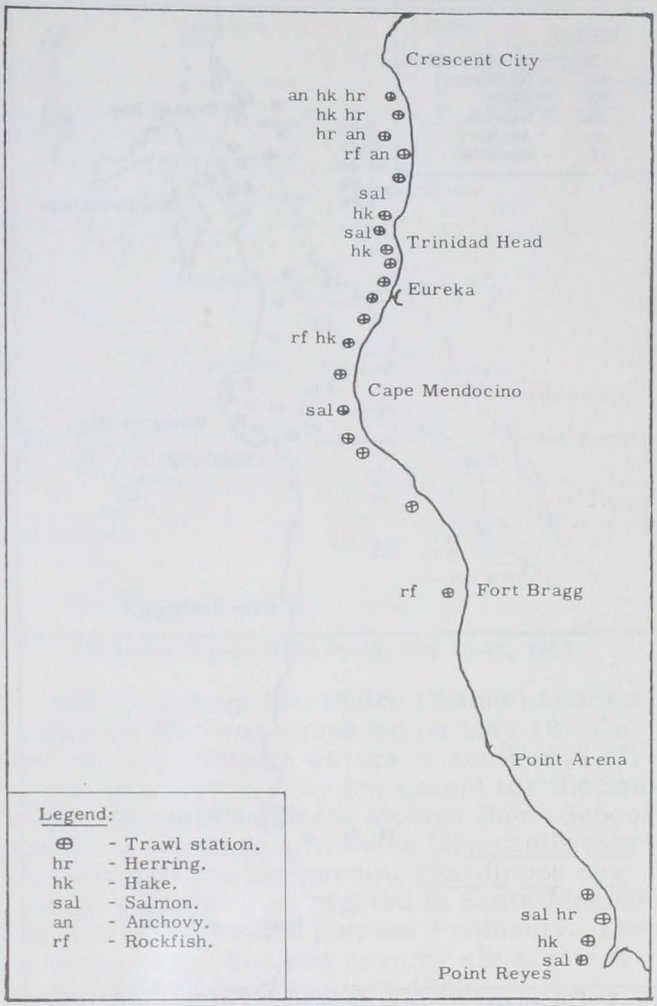

Fig. 1 - Fishing area of Alaska during Cruise 64-A-3-Pelagic Fish.

chovy (Engraulis mordax) and Pacific sardine (Sardinops caeruleus) ranges.

2. Assess the density, age, and size composition of the anchovy population in Monterey Bay.

3. Collect anchovies for subpopulation studies.

4. Collect juvenile salmon for the Ocean Salmon Project.

Sampling was accomplished with a large midwater trawl fished from the surface to a depth of 20 fathoms, with each tow lasting from 20 to 40 minutes. The effectiveness of the survey was substantially reduced by the large concentrations of jellyfish (Chrysaora gilbert) which clogged the net, and by the weather which permitted trawling only during daylight hours.

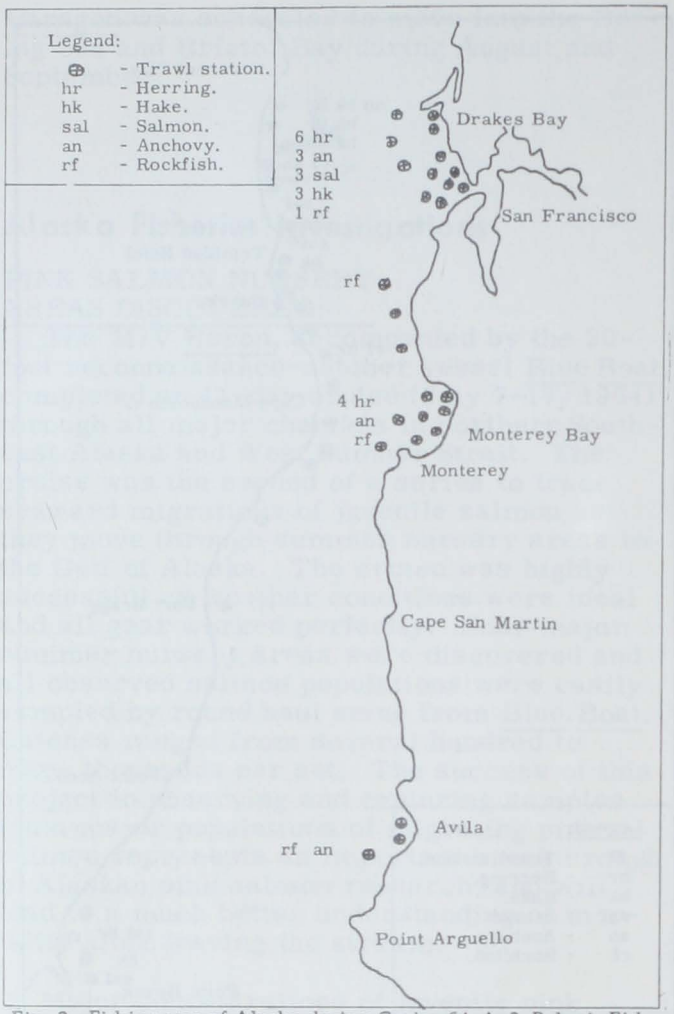

Fig. 2 - Fishing area of Alaska during Cruise 64-A-3-Pelagic Fish.

A total of 45 tows was completed between Crescent City and Monterey and 3 off Avila. The species commonly appearing in the catch with the number of trawls in which they occurred were: Pacific herring (Clupea pallasi) 14 fish, Pacific hake (Merluccius productus) 9, jacksmelt (Atherinopsis californiensis) 9, juvenile king samon (Oncorhynchus tshawytscha) 8, northern anchovy 8, starry flounder (Platichthys stellatus) 7, juvenile rockfish (Sebastodes sp.) 7, juvenile lingcod (Ophiodon elongatus) 6, and surf smelt (Hypomesus pretiosus) 5. Other species occurring less frequently included stickleback (Gasterosteus aculeatus), northern midshipman (Porichthys notatus), sand lance (Ammodytes hexapterus), wolf-eel (Anarrhichthys ocellatus), medusafish (Icichthys lockingtoni), cabezon (Scorpaenichthys marmoratus), whitebait smelt (Allosmerus elongatus), night smelt (Spirinchus starksi), and steelhead trout (Salmo gairdneri).

Pacific herring were caught in the greate number and occurred most frequently in the catches. They were present in 29 percent o the trawls in numbers ranging from 1 to 15,000. The best catches were made within 2 miles of shore in very turbid water. The areas off the mouth of San Francisco Bay a along the inner part of Monterey Bay were the most productive. Sizes ranged from 37 230 millimeters (1.5 to 9.1 inches) standar length with most fish between 55 and 160 mi limeters (2.2 to 6.3 inches). The largest catch, however, was comprised of small ju veniles 37 to 70 millimeters (1.5 to 2.8 inch

An adequate survey of the anchovy popul tion was not possible during this cruise because of the necessity of trawling only duri daylight hours. Previous experience has in dicated that trawling at night is much more effective in sampling anchovies. Small amounts of juvenile anchovies were caught in 3 trawls between Crescent City and Eureka, while adults were caught in 3 trawls near Sa Francisco, 1 trawl in Monterey Bay, and 1 trawl near Avila. The adults were very lar ranging from 135 to 163 millimeters (5.3 to 6.4 inches) long. Samples of the Monterey Bay catch were collected for blood genetic and electrophoretic studies.

Hake catches were spread over most of t survey area. Numbers were quite low, however, with over half of the catches amountin to a single fish; the best catch was 42 fish. Juvenile king salmon were taken off Cape Mendocino, Trinidad Head, and San Francis They ranged from 76 to 485 millimeters (3. to 19.1 inches) long, with up to 24 fish in a single trawl. Juvenile rockfish of several species were taken in quantity in 2 trawls, with catches of 500 and 4,700 fish, 43-65 mi limeters (1.7 to 2.6 inches) long.

Large concentrations of jellyfish were present inshore from Drakes Bay to Monte Bay. They seriously hampered trawl opera tions by clogging the net, causing heavy dam age to the net and doors. Squid were caught in 7 trawls, with catches of up to 5,600 of them taken in Monterey Bay.

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Airplane Spotting Flight 64-8-Pelagic Fis (May 4-6, 1964): To determine the inshore distribution and abundance of pelagic fish schools, the inshore area from Point Reyes, Marin County, to the United States-Mexican

B: er was surveyed from the air by the C: ornia Department of Fish and Game's C ena "182" 9042T.

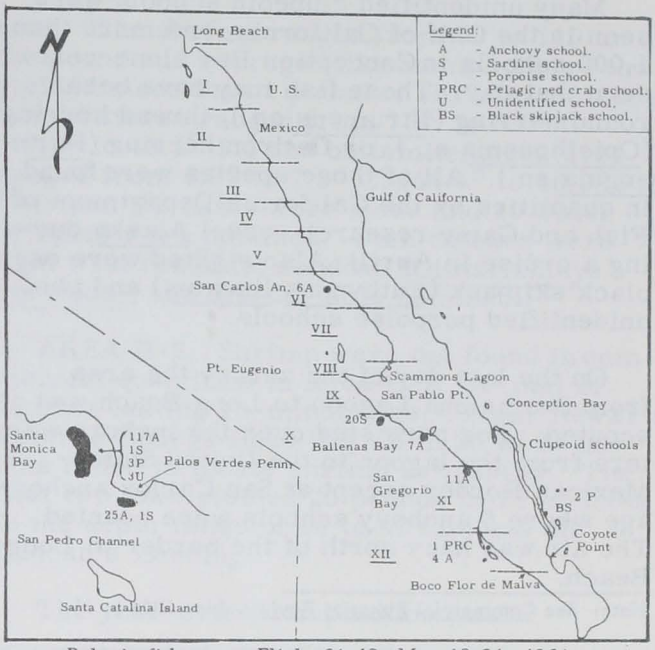
n May 4, the area from Point Reyes to M ro Bay was scouted but water and air v lity were fair to poor. A heavy, brown p plankton bloom, in the waters north of P n Point, severely restricted water visib . In the Monterey Bay area and south, th ter was clear but low broken clouds h ered visibility. A total of 8 northern a vy (Engraulis mordax) schools were s d near the harbor entrance at Half M Bay. A Pacific pilot whale (Globicep scammoni) and 2 unidentified fish s ls were seen near Point Sur. At Mont 3 purse seiners were setting on a large s l of squid (Loligo opalescens) several h ed yards off Cannery Row.

n May 5, the area from Half Moon Bay to S Monica was scouted. The sky was overc and a strong northwest wind was blowi Water visibility was poor. One unident fish school was seen in Monterey Bay a ely being worked on by sea birds.

n the last day of the survey the area from f Jalama Park to the United States-Mexic border was scouted. Rain squalls were e ntered near Jalama Park and the Bord Red tide was noted from Redondo Beach t Jolla--the first big concentration this y Five anchovy schools were seen in F Harbor, a part of the Los Angeles-L Beach Harbor.

rplane Spotting Flight 64-10-Pelagic F (May 18-21, 1964): To determine the im e and offshore distribution and abund a of pelagic fish schools, the waters off s ern California and Baja California were s yed from the air by the California Dep ent of Fish and Game's Beechcraft N D. The survey covered the offshore w s of southern California in the San Pedro C el; the inshore waters from Long Beach, C , to Boca Flor de Malva, Baja Califo a; and the waters of the Gulf of Californ rom Coyote Point, La Paz Bay to Conc on Bay.

his flight by the Beechcraft N5614D was th econd of four experimental flights plan or this year along the Baja California co line. The flights have been scheduled on quarterly basis.



Pelagic fish survey Flight 64-10, May 18-21, 1964.

The area from San Pedro Channel and Santa Monica Bay was surveyed on May 18. On that day the offshore waters of southern California were covered by fog except for the San Pedro Channel and Santa Monica Bay. School groups of northern anchovies (Engraulis mordax) and two Pacific sardine (Sardinops caeruleus) schools were sighted in Santa Monica Bay and off the Palos Verdes Peninsula. They were the first sardines seen by air spotters in that area since February 1962.

On May 19, the area from Long Beach to Ballenas Bay, Baja California, was surveyed. A low, dense fog prevailed over most of the coastline from Long Beach to Punta Eugenio but south of Punta Eugenio visibility was excellent. A total of 20 sardine schools were sighted near San Pablo Point and 7 anchovy schools were seen in Ballenas Bay.

Punta San Juanico to Boca Flor de Malva, Coyote Point, La Paz Bay to Conception Bay, Gulf of California, were scouted on May 20. Intermittent fog was encountered from Punta San Juanico to Cabo San Lazaro. Visibility was good at Magdalena Bay and throughout the area flown in the Gulf of California. Anchovy schools were seen in San Gregorio Bay and outside Magdalena Bay. A large school of pelagic red crabs (Pleuroncodes planipes), covering an estimated five acres, was sighted in Magdalena Bay.

Many unidentified clupeoid schools were seen in the Gulf of California, and more than 1,000 schools in Conception Bay alone were seen that day. Those fish may have been round herring (Etrumeus sp.), thread herring (Opisthonema sp.), or flatiron herring (Harengula sp.). All of those species were found in quantities by the California Department of Fish and Game research vessel Alaska during a cruise in April. Also sighted were one black skipjack (Euthynnus lineatus) and two unidentified porpoise schools.

On the last day of the survey the area from Scammons Lagoon to Long Beach was scouted. Fog persisted over the inshore waters from the lagoon to the United States-Mexican Border except at San Carlos anchorage where 6 anchovy schools were counted. The air was hazy north of the border to Long Beach.

Note: See Commercial Fisheries Review, June 1964 p. 11.

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SURVEY OF SHRIMP RESOURCES IN NORTHERN AND CENTRAL COASTAL WATERS CONTINUED:

M/V "N. B. Scofield" Cruise 63-S-2-Shrimp (March 29-May 1, 1964): The objectives of this cruise by the California Department of Fish and Game research vessel N. B. Scofield were to:

1. Locate concentrations of pink shrimp (Pandalus jordani) in Areas A, B-1, B-2, and C for population estimates.

2. Determine sizes, sex ratios, and weight of shrimp in each area.

3. Determine escapement of commercial size shrimp through $1\frac{1}{2}$-inch mesh cod-end of net.

4. Make bathythermograph and Nansen bottle casts for bottom temperatures and salinity samples in shrimp areas.

5. Identify, count, and weigh incidentally-caught fish species.

6. Collect specimens of cephalopods for special study.

A total of 139 tows were made in the combined survey areas in the coastal waters from Cape Ferrelo, Oreg., to Pt. Sal, Santa Barbara County, Calif. A 41-foot headrope

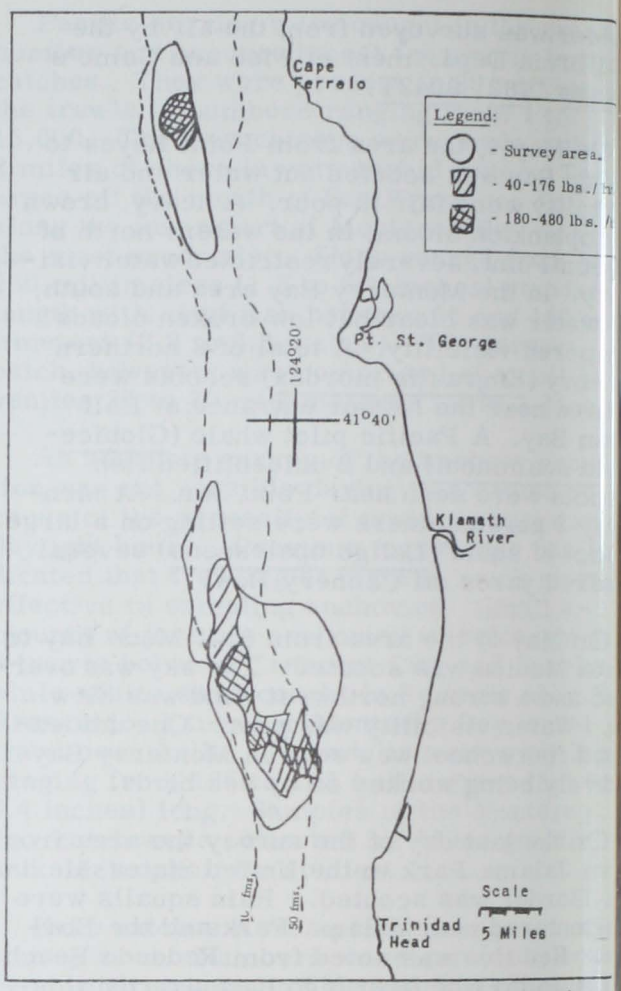

Fig. 1 - M/V N. B. Scofield Cruise 64-S-2, Area A.

Gulf of Mexico otter trawl having $1\frac{1}{2}$-inch stretch mesh in the cod-end was used. Of 59 tows made in Area A, 39 were made wi a $\frac{1}{2}$-inch stretched mesh liner on the cod- to catch shrimp escaping from the main n Preliminary analysis of data showed that commercial size shrimp were lost.

AREA A: Between Cape Ferrelo, Oreg., Trinidad Head, Calif. (fig. 1), a total of 59 to 15 minutes duration each was made in depth 40 to 94 fathoms. Shrimp were caught at an erage rate of 73 pounds an hour, ranging fro none to 480 pounds an hour. The population Area A is estimated to contain 530,000 to 750 pounds. Shrimp sizes (heads-on) ranged fro 55 to 169 a pound with an average of 125.

The year-class composition was:

Age Group	Percentage by No.	Percentage Weight
1 (1963)	43	24
11 (1962)	57	75
111 (1963)	Trace	1

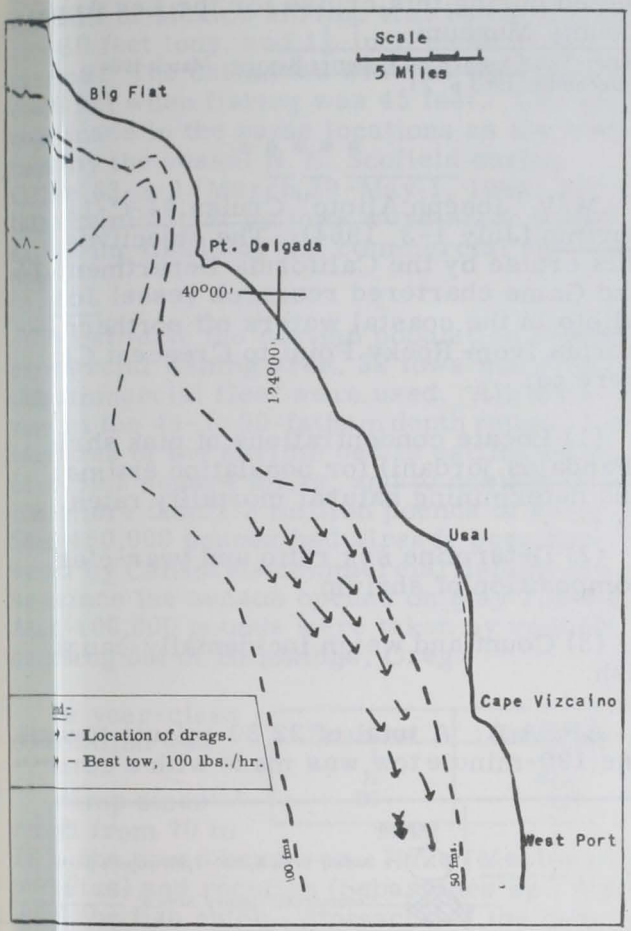

Fig. 2 - M/V N. B. Scofield Cruise 64-S-2, Area B-1.

ly 9 percent of the female shrimp examin- ere gravid. The incidental fish catch was li- consisting mostly of eulachon (Thaleichthys cificus), slender sole (Lyopsetta exilis), and sole (Glyptocephalus zachirus). Bottom ater samples were obtained at 11 stations or salinity determinations. A total of 29 bathermograph (BT) casts were made. Bottom mperatures ranged from 7.2° to 8.5° C. .0° to 47.3° F.); surface temperatures fr .8° to 10.5° C. (47.8° to 50.9° F.).

evaluation of the 1964 Area A fishery, m in the fall of 1963 (N. B. Scofield Cruise 63- and Ocean Shrimp Report for the 1963 se n) was accurate. The evaluation forecast a poor season due to weak 1962 and 1963 ye classes. The heavy 1962 landings ca d an extreme reduction in the spawning st This, it is believed, accounts for the sm 1963 year-class.

EA B-1: A total of 25 tows made from B at to Westport (fig. 2) in 43 to 82 fathoms d not take shrimp in commercial quantities The best tow yielded 100 pounds an hour. The shrimp ranged from 70 to 110 to the pound and averaged 81 shrimp. Only 1 tow yielded more than 1 pound of shrimp. Surface temperatures ranged from 7.8° to 9.0° C. (46.0° to 48.2° F.) and bottom temperatures ranged from 6.9° to 7.8° C. (44.4° to 46.0° F.). Thirteen BT casts were made and 10 water samples were obtained. Fish catches were light with rex sole, sanddab (Citharichthys sordidus), and slender sole dominant.

AREA B-2: Shrimp were not found in commercial quantities in Area B-2. A total of 46 tows lasting 15-minutes each from Stewarts Point to Bodega Head (fig. 3) in 26 to 72 fathoms failed to locate shrimp in quantity. The best two tows yielded 25 pounds in 15 minutes in the depth range of 44 to 47 fathoms off Duncan's Landing

The year-class composition was:

Age Group	Percentage by No.	Percentage by Weight
1 (1963)	26	15
11 (1962)	74	85

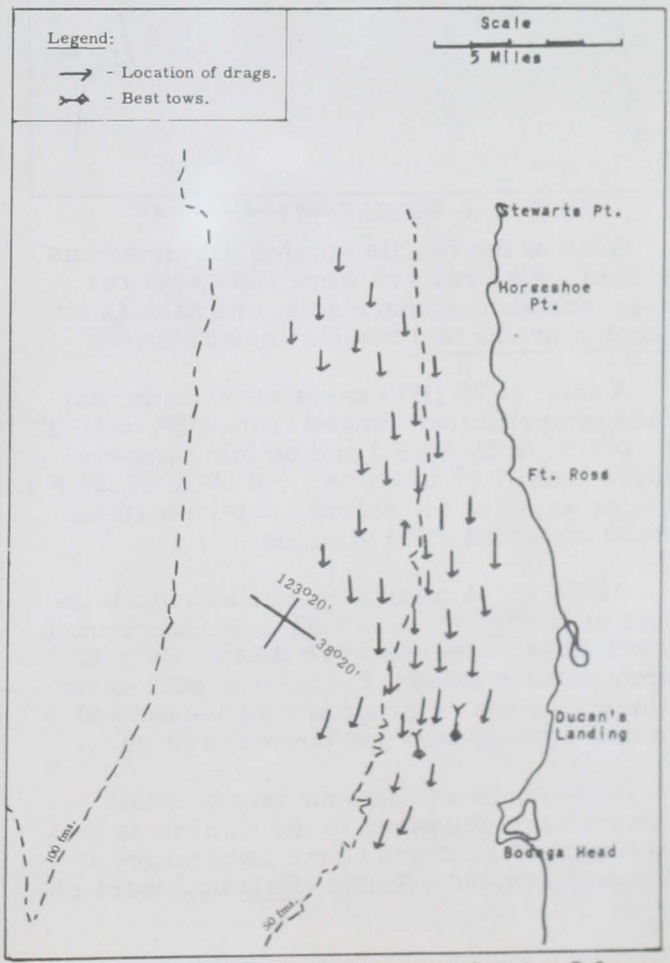

Fig. 3 - M/V N. B. Scofield Cruise 64-S-2, Area B-2.

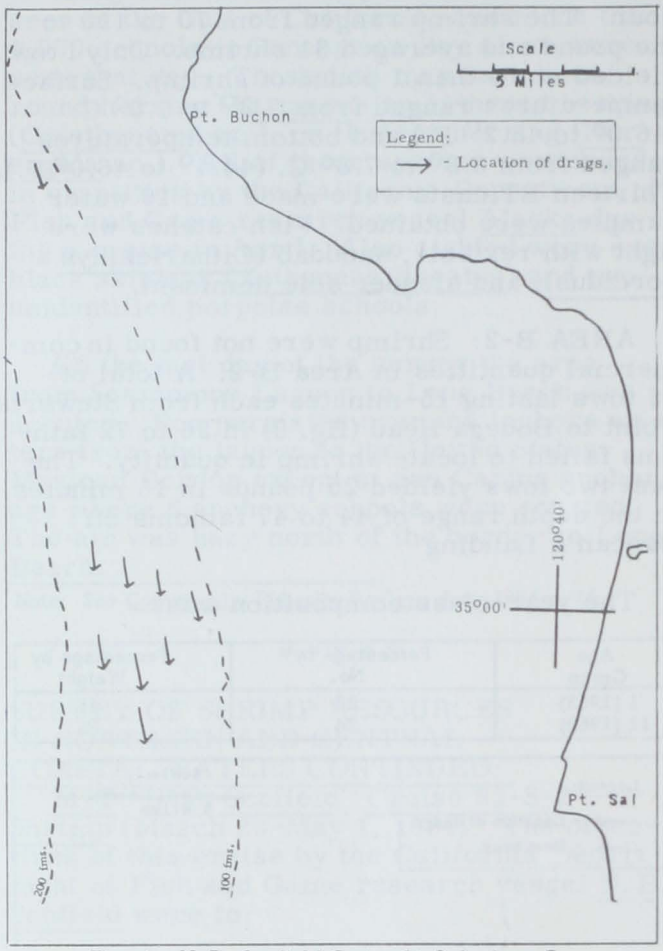

Fig. 4 - N. B. Scofield Cruise 64-S-2, Area C.

None of the female shrimp examined was gravid. Fish catches were light with rex sole, sanddab, slender sole, and hake (Merluccius productus) taken at most stations.

A total of 25 (BT) casts were made; surface temperatures ranged from 8.8° to 10.3° C. (47.8° to 50.6° F.) and bottom temperatures from 7.5° to 8.5° C. (45.5° to 47.3° F.). Water samples for salinity determinations were collected at 14 stations.

AREA C: A total of 9 tows was made in this area (fig. 4). Four BT casts were made and 2 water samples were taken. Only 42 shrimp were caught, but a large part of the shrimp-habitable grounds was unexplored because rough seas cut down activities.

Some squid and octopus taken on this cruise were delivered to the California Department of Fish and Game Laboratory at Terminal Island. Skates (Raja sp.) were collected during this cruise for the Los Angeles County Museum.

Note: See Commercial Fisheries Review, March 1964 p. 14; December 1963 p. 21.

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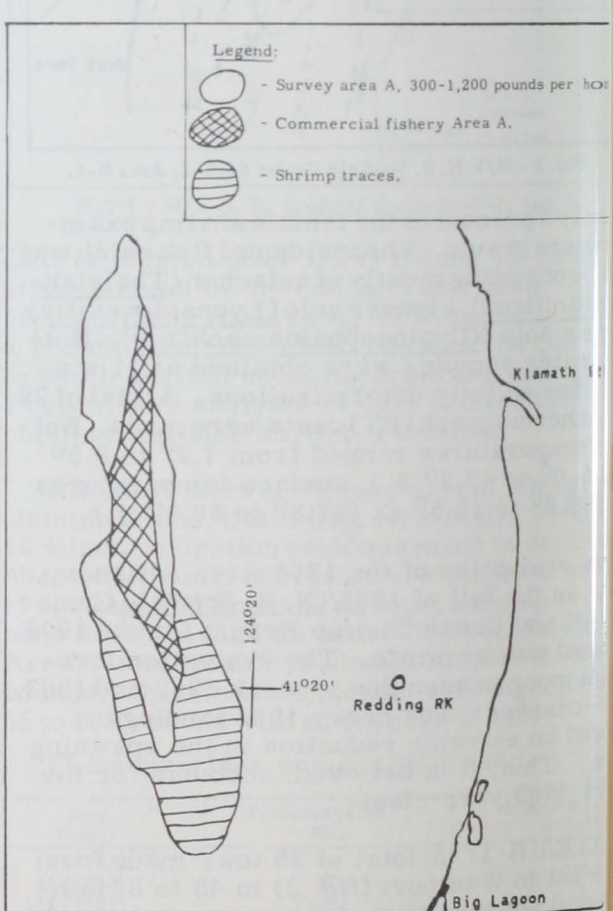
M/V "Joseph Alioto" Cruise 64-C-1-Shrimp (July 1-3, 1964): The objectives of this cruise by the California Department of Fish and Game chartered research vessel Joseph Alioto in the coastal waters off northern California from Rocky Point to Crescent City were to:

(1) Locate concentrations of pink shrimp (Pandalus jordani) for population estimates and determining natural mortality rates.

(2) Determine sex ratio and year-class composition of shrimp.

(3) Count and weigh incidentally-caught fish.

AREA A: A total of 22 30-minute tows and one 120-minute tow was made with a comm



Fishing area of Joseph Alioto during Cruise 64-C-1, July 1-3,

Gulf of Mexico shrimp trawl with a head-rope 30 feet long, and 1½-inch mesh in the cod end. The estimated width of the opening of the net when fishing was 45 feet. The tows were made in the same locations as the tows made by the vessel N. B. Scofield during Cruise 63-S-2 (March 29-May 1, 1964), with the exception that no tows were made in the area being fished by the commercial shrimp fleet.

To estimate the shrimp population in the commercial fishing area, 32 tows made by the commercial fleet were used. All tows were in the 49- to 90-fathom depth range. The total area of the shrimp bed is estimated to be 50.2 square miles, and to contain a little more than 2.2 million pounds of shrimp. Some 450,000 pounds had already been harvested by California commercial fishing vessels since the season opened on May 1, 1964. About 100,000 pounds were taken by vessels operating out of Brookings, Oreg.

The year-class composition was:

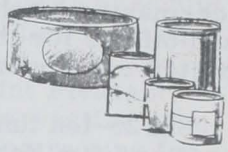
Year-Class	Percentage
I	45.3
II	52.0
III	2.7

Shrimp sizes ranged from 70 to 122 to the pound heads-on. Hake (Merluccius productus) and rockfish (Sebastodes sp.) dominated the fish catch. Stomachs of the hake were full of young-of-the-year shrimp.

Cans--Shipments for Fishery Products, January-June 1964

The amount of steel and aluminum consumed to make cans shipped to fish and shellfish canning plants during January-June 1964 was down 6.4 percent from that used during the same period in 1963. The decline was due partially to a drop in the canning of jack mackerel and Maine sardines.

In January-June 1964, shipments to the Pacific or Western Area accounted for 69.2 percent of total shipments; shipments to the Eastern Area accounted for 26.8 percent; and shipments to the Southern Area accounted for most of the remaining 4.0 percent. Most of the fish-canning facilities are located in the Pacific Area.



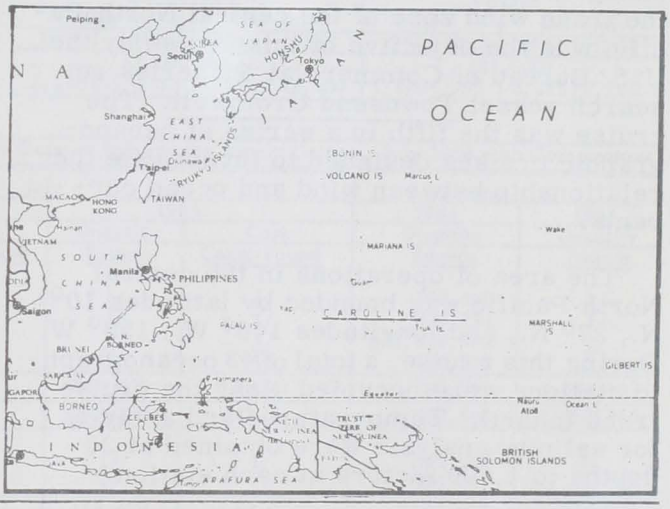
Notes: (1) Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" size. Tonnage figures for steel (tinplate) cans are derived by use of the factor 23.5 base boxes per short ton of steel. (In the years 1962 and 1963, tonnage data were based on the factor 21.8 base boxes per short ton of steel.) The use of aluminum cans for packing fishery products is small.

(2) See Commercial Fisheries Review, Sept. 1964 p. 14; July 1964 p. 9.

Caroline Islands

U. S. TUNA FISHING BASE IN PALAU ISLANDS PLANNED:

A United States west coast tuna-canning firm, which plans a tuna fishing and freezing base at Koror, Palau Islands, chartered the M/S Jaglaxmi (17,000-ton freighter) to deliver 610 tons of machinery and supplies to the base this past spring. The equipment arrived in April 1964.



U. S. Domestic Shipments of Metal Cans for Fishery Products, January-June 1963 and 1964
(Base Boxes of Metal Consumed in the Manufacture of Cans for Fishery Products)

Area	First Quarter		Second Quarter		January-June	
	1964	1963	1964	1963	1964	1963
[illegible]	187,707	155,814	173,530	215,924	361,237	371,738
[illegible]	24,761	21,010	28,390	38,197	53,151	59,207
Central	492	29	219	5	711	34
[illegible]	359,947	381,735	574,448	629,376	934,395	1,011,111
[illegible] all areas	572,907	558,588	776,587	883,502	1,349,494	1,442,090

1/ [illegible]es Puerto Rico.
2/ [illegible]es Alaska and Hawaii.

The firm's construction engineer arrived in Palau at about the same time to build a 1,500-ton cold-storage and freezer facility, ice-making machines, water-storage tanks, and offices for the new plant which was expected to be operating by July 1964.

Six 25-ton tuna vessels were to begin operating from Koror's main port with 72 Okinawans and 48 Palauans as crew and fishermen.

Under the provisions of the contract signed by Trust Territory officials and the United States firm, Palauans or other Micronesians will be trained as tuna fishermen. Eventually, all of the vessels are to be manned by Micronesians. The Palau Islands are part of the Caroline Islands group in the United States Trust Territory of the Pacific. (Pacific Islands Monthly, May 1964.)

Central Pacific Fisheries Investigations

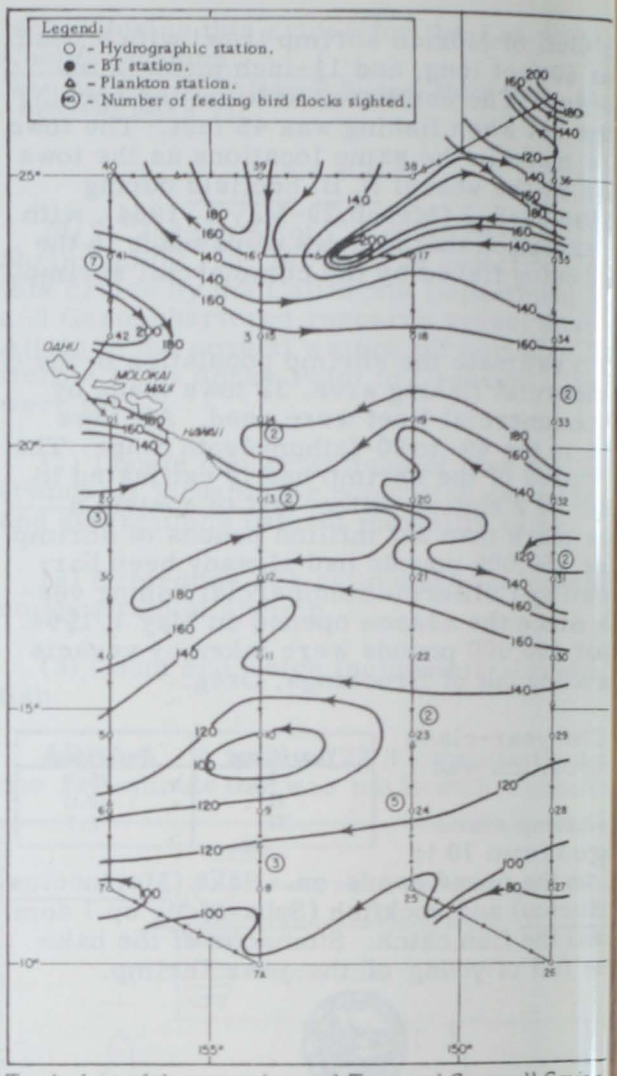
TRADE WIND ZONE OCEANOGRAPHIC STUDIES CONTINUED:

M/V "Townsend Cromwell" Cruise 5 (June 15-July 5, 1964): To determine the rate of change in the distribution of properties in the trade wind zone of the central North Pacific was the objective of this cruise by the U. S. Bureau of Commercial Fisheries research vessel Townsend Cromwell. The cruise was the fifth in a series of oceanographic cruises designed to investigate the relationship between wind and ocean currents.

The area of operations in the central North Pacific was bounded by latitudes 10° N., 27° N., and longitudes 148° W., 158° W. During this cruise, a total of 43 oceanographic stations were occupied along the cruise track (chart). Temperatures and samples for salinity analysis were obtained at 20 depths to 1,500 meters at each station.

Bathythermograms (BT's) were obtained at 30-mile intervals along the cruise track. Between stations 19 and 21, 26 and 28, 35 and 37, BT casts were made at 10-mile intervals.

At 24°00' N., 147°54' W., between stations 35 and 36, subsurface current measurements with a current meter were attempted while



Track chart of the research vessel Townsend Cromwell Cruise (June 15-July 5, 1964), showing depth contours of the 20° C isotherm in meters.

drifting relative to a parachute drogu set at 1,200 meters. But after only one lo ering, the meter became inoperative and station was abandoned.

During the cruise, a total of 10 plastic enclosed drift cards were released at 30- intervals along the entire cruise track an 1-hour intervals during the first and last hours of the cruise. Radiation from sun a sky was measured and recorded daily wit pyrheliometer. Colored photographs of c formations were made daily.

A standard watch for bird flocks and fi schools was maintained by vessel personn during daylight hours. In addition, obser aboard the vessel from the Smithsonian In stitution maintained their own watch for b

addition to the cruise track, the chart s the current pattern within the survey n as inferred from the uncorrected field of the distribution of the depth of the . isotherm. The flow pattern is similar t obtained from the Townsend Crom- cruise 4 (May 14-June 5, 1964); how- between stations 12 and 13 the counter- wise eddy noted during cruise 4 was re- d by a large clockwise eddy. To the f this feature counterclockwise flow , suggesting that those eddies are mov- rough the region, which would explain versal of flow between stations 12 and

total of 26 unidentified fish schools and jack tuna schools were sighted during ruise. No apparent relation was found en the occurrence of fish schools and atures of the circulation pattern shown track chart.

See Commercial Fisheries Review, September 1964 p. 15; 1964 p. 17.

hs

TATION QUALITY STUDY IN MIDDLE ATLANTIC AREA:

oint study by New York, New Jersey, e U.S. Public Health Service to inves- the effect of harvesting, processing, and marketing upon the bacteriological quality of the surf clam was started on July 13, 1964. At that time, personnel from the U.S. Public Health Service Northeast Shellfish Sanitation Research Center, Narragansett, R.I., boarded a clam dredging vessel at Point Pleasant, N.J., for a week to observe harvesting practices and to establish a working routine for standardized field procedures.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES:

January-July 1964: FRESH AND FROZEN: For the use of the Armed Forces under the Department of Defense, less fresh and frozen fishery products were purchased by the Defense Subsistence Supply Centers in July 1964 than in the previous month. The decline was 19.7 percent in quantity and 19.9 percent in value. Compared with the same month in the previous year, purchases in July 1964 were up 9.0 percent in quantity and 17.6 percent in value.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, July 1964 with Comparisons

QUANTITY				VALUE			
July		Jan.-July		July		Jan.-July	
1964	1963	1964	1963	1964	1963	1964	1963
(1,000 Lbs.)				($1,000)			
2,128	1,953	15,514	13,831	1,170	995	8,213	7,768

Table 2 - Purchases of Principal Fresh and Frozen Fishery Products by Defense Subsistence Supply Centers, July 1964 with Comparisons

Product	July				January-July	
	1964		1963		1964	1963
	Quantity Pounds	Cost Cents/Pound	Quantity Pounds	Cost Cents/Pound	Quantity Pounds	Quantity Pounds
adless	88,900	84.1	1/	1/	798,450	1/
and deveined	103,568	107.2	1/	1/	608,714	1/
d	300,200	68.7	1/	1/	2/2,518,900	1/
and breaded	47,500	57.1	1/	1/	274,770	1/
shrimp	540,168	77.6	540,629	79.4	4,200,834	3,684,492
	249,660	57.4	293,486	47.8	1,990,860	1,650,365
	45,844	97.1	1/	1/	511,630	1/
	15,200	58.9	1/	1/	172,472	1/
oysters	61,044	87.6	118,429	89.0	684,102	661,989
	10,236	30.0	31,790	30.1	181,809	161,682
	40,200	26.5	45,718	29.1	281,666	421,321
er and sole	232,600	28.8	208,730	29.3	2,037,766	1,985,134
ck	240,500	29.2	170,006	32.1	1,265,104	1,388,433
perch	176,800	25.0	392,098	28.7	2,123,920	2,303,532
t	128,300	40.2	86,348	39.5	760,072	812,177
n	16,300	68.8	13,993	58.6	125,225	114,181
ish	500	46.4	2,700	53.7	8,430	19,730

1/ own not available.
2/ d.

Total purchases in the first 7 months of 1964 were up 12.2 percent in quantity and 5.7 percent in value from those in the same period of 1963. In January-July 1964, there were larger purchases of shrimp and scallops, but noticeably lower purchases of cod fillets, haddock fillets, ocean perch fillets, halibut steaks, and swordfish steaks.

Table 3 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, July 1964 with Comparisons

Product	QUANTITY				VALUE			
	July		Jan.-July		July		Jan.-July	
	1964	1963	1964	1963	1964	1963	1964	1963
	(1,000 Lbs.)				($1,000)			
Tuna	1/	174	2,617	2,064	2/	81	1,201	1,007
Salmon	-	2	679	18	-	2	416	12
Sardine	21	24	175	321	10	9	111	131

1/Less than 500 pounds.
2/Less than $500.

CANNED: In the first 7 months of 1964, total purchases of the 3 principal canned fishery products (tuna, salmon, and sardines) were up 46.3 percent in quantity and 50.3 percent in value from those in the same period of 1963. The increase was due to larger purchases of tuna and salmon. The gain was partly offset by smaller purchases of canned sardines.

January-June 1964: FRESH AND FROZEN: For the use of the Armed Forces under the Department of Defense, more fre and frozen fishery products were purcha by the Defense Subsistence Supply Cente in June 1964 than in the previous month. increase was 19.9 percent in quantity an 30.2 percent in value. Compared with th same month in the previous year, purcha in June 1964 were up 31.0 percent in qua and 35.6 percent in value due mainly to l er purchases of shrimp, oysters, flound sole fillets, and ocean perch fillets. Av prices were somewhat lower for most o items purchased in larger quantity in Ju 1964. On the other land, a decline in sc purchases corresponded with an increas average scallop prices this June.

Total purchases in the first 6 months 1964 were up 12.7 percent in quantity an percent in value from those in the same riod of 1963. In January-June 1964, the were larger purchases of shrimp, scallo oysters, and clams, but noticeably lower chases of cod fillets, haddock fillets, ha steaks, and swordfish steaks.

CANNED: Tuna was the most import item among the canned purchases in June 1

Table 4 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, June 1964 with Comparisons

QUANTITY				VALUE			
June		Jan.-June		June		Jan.-June	
1964	1963	1964	1963	1964	1963	1964	1963
(1,000 Lbs.)				($1,000)			
2,651	2,024	13,386	11,878	1,462	1,078	7,043	6,773

Table 6 - Canned Fishery Products Purchased by Defen Subsistence Supply Centers, June 1964 with Comparis

Product	QUANTITY				VALUE		
	June		Jan.-June		June		Jan.-
	1964	1963	1964	1963	1964	1963	1964
	(1,000 Lbs.)				($1,000)		
Tuna	775	427	2,617	1,890	386	203	1,201
Salmon	1/	2	679	16	2/	1	416
Sardine	27	55	154	297	11	21	101

1/Less than 500 pounds.
2/Less than $500.

Table 5 - Purchases of Principal Fresh and Frozen Fishery Products by Defense Subsistence Supply Centers, June 1964 with Com

Product	June				January-Jun	
	1964		1963		1964	
	Quantity Pounds	Cost Cents/Pound	Quantity Pounds	Cost Cents/Pound	Quantity Pounds	
Shrimp:						
raw headless	185,200	91.5	1/	1/	709,550	
peeled and deveined	127,676	113.5	1/	1/	505,146	
breaded	592,420	70.3	1/	1/	2,445,970	
Total shrimp	905,296	80.7	633,894	85.0	3,660,666	3,
Scallops	347,100	58.4	411,060	43.8	1,741,200	1,
Oysters:						
Eastern	63,296	94.8	1/	1/	465,786	
Pacific	52,108	58.3	1/	1/	157,272	
Total oysters	115,404	78.3	44,861	99.5	623,058	5
Clams	30,040	31.8	10,308	30.7	171,573	1
Fillets:						
Cod	44,850	26.0	75,662	27.7	241,466	3
Flounder and sole	294,350	29.4	242,580	32.8	1,805,166	1,7
Haddock	161,790	29.2	171,853	31.1	1,024,604	1,2
Ocean perch	424,100	24.9	249,462	29.8	1,947,120	1,9
Steaks:						
Halibut	103,050	38.8	113,349	39.6	631,772	7
Salmon	18,296	72.4	10,693	63.8	108,925	1
Swordfish	1,110	49.0	3,158	2/	7,930	

1/Breakdown not available.
2/Not available.

EEZE-DRIED: Fishery purchases for thi rmed Forces in June 1964 included 849 po s of freeze-dried shrimp with an aver- ag lue of $10.40 a pound.

Not 1) Armed Forces installations generally make some local pu es not included in the data given; actual total purchases ar er than indicated because data on local purchases are no inable.
2) See Commercial Fisheries Review, Aug. 1964 p. 20.

Gr Lakes

AM NDER NEW FISHERIES LAW
GE GREAT LAKES AREA:

assist the Great Lakes area fishing in- du recover from economic losses suffer- ed 963, the Secretary of the Interior has ta action under provisions of a new law.

tion 4(b) of Public Law 88-309 (Com- m al Fisheries Research and Development Ac gned by the President on May 20, 1964, pr es that the Secretary may make avail- ab to $400,000 to aid a fishing industry wh e determined that a commercial fish- er lure due to a resource disaster has oc ed.

Secretary has determined that the Gr Lakes fishing industry, as well as pr ssors and distributors of smoked fish fr he Great Lakes area, incurred sub- st l economic injury in October 1963 as a t of a temporary loss of market for sm d fish. About 2 million pounds of fro- ze h on hand at the time of the incident we ill in storage. Because of the length of ge, the fish, even though frozen, de- te ted to a point where they could not be us r human food, or, for the most part, ev r pet food. Those stocks were to be re d from normal trade channels and co e used only for fish meal or destroyed. Th plicable section of the new law pro- vi hat funds available in fiscal year 1965 be d to alleviate the serious situation in th at Lakes area.

ubsequent years, such funds will be av le to other segments of the industry su ng fishery failures arising from re- so disasters.

Not pp. 85-86 of this issue.

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COMMERCIAL FISHERY LANDINGS, 1963:

United States Great Lakes commercial fishery landings in 1963 totaled 55.8 million pounds (valued at $5.1 million ex-vessel), a decline of 9.7 percent in quantity (the value was down about $234,000) from 1962. The 1963 landings were lower in all of the lakes except Lake Ontario (fished mostly by Canada).

Fig. 1 - The Great Lakes showing connecting channels.

Lake Michigan was the largest producer for United States fishermen in 1963 with 21 million pounds or nearly 38 percent of the total United States Great Lakes landings, but the catch from that lake was down 10.5 percent from the previous year. Chub was the leading species for a total of 7.5 million pounds--down about 3.7 million pounds from 1962 as a result of adverse economic conditions in the smoked fish industry during the latter part of the year when fishing for chubs virtually ceased. (The Great Lakes chub is used exclusively by the smoked fish industry.)

Lake Erie landings in 1963 amounted to 17.2 million pounds, down 12.3 percent from the previous year principally because of a decline in catches of yellow perch and carp. The 1963 landings of 12.1 million pounds from Lake Superior were down 4 percent from 1962

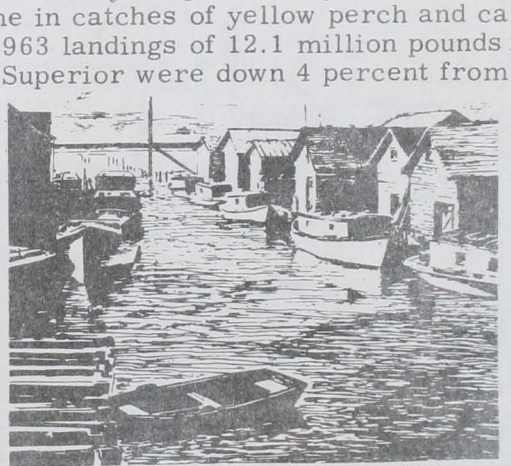


Fig. 2 - Great Lakes fishing village with fishing vessels at anchor.

and those from Lake Huron of 5.2 million pounds declined 11 percent from the previous year.

Canada's 1963 Great Lakes commercial fishery landings of 44.8 million pounds (preliminary data) were 17.9 percent lower than the previous year, but the ex-vessel value of $4.2 million was about 3 percent higher than in 1962. Lake Erie accounted for about 80 percent of the total Canadian Great Lakes commercial fish landings in 1963, but the Canadian fish catch from that lake was about 9 million pounds below 1962. The smelt catch was down sharply in 1963 (from 19.1 million pounds in 1963 to 10.6 million pounds in 1962) and the Canadian yellow perch catch of 18 million pounds was 2.9 million pounds less than 1962.

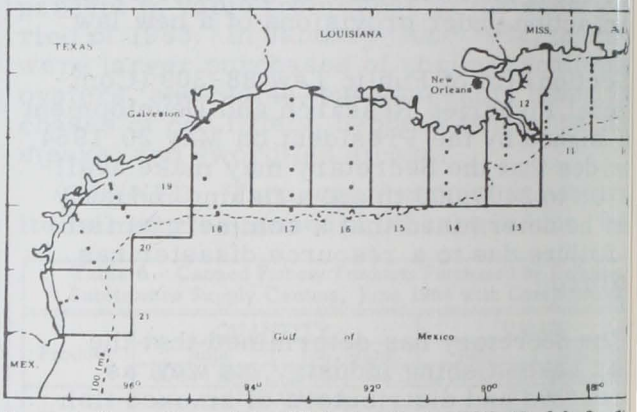
Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-19 (July 9-19, 1964): Shrimp sampling in the northwest Gulf of Mexico was continued during this cruise by the chartered research vessel Gus III, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Galveston, Tex. Shrimp sampling was conducted in 8 statistical areas from off the coast of Louisiana to Texas with standard 3-hour tows using a 45-foot shrimp trawl.

During this cruise, the scientists made a total of 35 tows with the flat trawl, 50 plankton tows, and 44 bathythermograph and 41 nansen bottle casts.

Areas 18, 19, and 20 yielded the largest catches of brown shrimp (31-40 count) from the 10- to 20-fathom depth range. The most productive tow was from area 18 with a total of 91 pounds of that size brown shrimp. The areas combined also yielded 23 pounds of large white shrimp (ranging from 12-20 count) from the under 10-fathom depth, and a small quantity of medium size (12-40 count) pink shrimp.



Shows station pattern of Gus III during Cruise GUS-19, July 9 - 1 1964.

Large brown shrimp (20 pounds of 15-20 count) were caught in the over 20-fathom depth of area 13. Other depths in that area yielded only fair amounts of smaller brown shrimp and a few pounds of large white shrimp from the under 10-fathom depth.

A total of 67 pounds of shrimp was taken from area 16 with large (12 to 20 count) brown and white shrimp predominating. These were from depth ranges of up to 10 fathoms and over 20 fathoms. The 10- to 20-fathom depth in that area yielded less than one pound of shrimp.

The smallest yield during the cruise was from area 14--about 11 pounds of brown shrimp, mostly 51-67 count.

Note: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, Sept. 1964 p. 2

Trawler Gus III (85 feet) is chartered by the U. S. Bureau of Commercial Fisheries and used by the Bureau's Galveston (Tex.) Biological Laboratory scientists for shrimp studies in the northern Gulf of Mexico.

Industrial Fishery Products

U.S. FISH MEAL, OIL, AND SOLUBLES: Production by Areas, July 1964: Preliminary data on U.S. production of fish meal, oil and solubles for July 1964 as collected by the U.S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in the table.

U.S. Production[1] of Fish Meal, Oil, and Solubles by Areas, July 1964 (Preliminary) with Comparisons

	Meal	Oil	Solubles	Homogenized[3]
	Short Tons	1,000 Pounds	(Short Tons)	
July:				
Gulf	37,771	28,321	16,332	-
West Coast[2]	3,302	3,522	1,306	-
Total	41,073	31,843	17,638	-
January-July 1964				
Total	125,039	106,740	52,003	-
January-July 1963				
Total	128,293	99,688	50,133	6,372

1/ Does not include crab meal, shrimp meal, and liver oils.
2/ Includes American Samoa and Puerto Rico.
3/ Includes condensed fish.

* * * * *

Production, June 1964: During June 1964, a total of 43,604 tons of fish meal and scrap and 40.2 million pounds of marine animal oils was produced in the United States. Compared with June 1963 this was an increase of 8,741 tons in meal, and over 12.0 million pounds in oil production. Fish solubles production amounted to 16,791 tons--an increase of 2,702 tons compared with June 1963.

U.S. Production of Fish Meal, Oil, and Solubles, June 1964[1] with Comparisons

Product	June 1964	June 1963	Jan.-June 1964	Jan.-June 1963	Total 1963
	(Short Tons)				
Fish Meal and Scrap:					
Herring	1,256	299	1,684	299	7,537
Menhaden 2/	37,035	29,182	63,021	68,597	181,750
Tuna and mackerel	1,870	939	8,466	10,369	26,957
Unclassified	3,443	4,443	10,795	11,787	22,415
Total	43,604	34,863	83,966	91,052	238,659
Shellfish, marine-animal meal and scrap	3/	3/	3/	3/	14,793
Grand total meal and scrap	3/	3/	3/	3/	253,452
Fish Solubles:					
Menhaden	14,475	12,259	25,120	26,977	74,831
Other	2,316	1,830	9,245	12,007	25,347
Total	16,791	14,089	34,365	38,984	100,178
Homogenized condensed fish	-	1,341	-	3,841	7,224
	(1,000 Pounds)				
Oil, body:					
Herring	1,962	448	2,148	494	5,709
Menhaden 2/	37,243	26,701	68,732	64,901	167,635
Tuna and mackerel	424	269	1,758	1,652	5,735
Other (including whale)	601	775	2,259	2,542	6,748
Total oil	40,230	28,193	74,897	69,589	185,827

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

* * * * *

Production, May 1964: During May 1964, a total of 27,304 tons of fish meal and scrap and 29.4 million pounds of marine-animal oils was produced in the United States. Compared with May 1963, this was a decrease of 12,598 tons in meal, and a decrease of 4.1 million pounds in oil. Fish solubles amounted to 11,736 tons--a decrease of 4,011 tons.

Menhaden meal production for May 1964 amounted to 22,664 tons--a decrease of 11,760 tons as compared with May 1963. The menhaden oil production amounted to 28.5 million pounds--a decrease of 4.0 million pounds. Tuna and mackerel meal production amounted to 1,389 tons for May 1964--a decrease of 874 tons, while oil (222,000 pounds) produced from tuna and mackerel showed a slight increase of 9,000 pounds over May 1963.

A total of 59,543 tons of fish meal was imported during May 1964--an increase of 29,144 tons as compared with May 1963. Imports of fish meal for the first 5 months in 1964 amounted to 221,914 tons--an increase of 58,432 tons as compared with the same period in 1963. Imports from Peru for January through May 1964 amounted to 181,196 tons--an increase of 55,198 tons as compared with the same period in 1963.

U.S. Production of Fish Meal, Oil, and Solubles, May 1964[1] with Comparisons

Product	May 1964	May 1963	Jan.-May 1964	Jan.-May 1963	Total 1963
	(Short Tons)				
Fish Meal and Scrap:					
Herring	-	-	2/	-	7,537
Menhaden 3/	22,664	34,424	25,986	39,415	181,750
Sardine, Pacific	-	-	1	-	-
Tuna and mackerel	1,389	2,263	6,596	9,430	26,957
Unclassified	3,251	3,215	7,779	7,344	22,415
Total	27,304	39,902	40,362	56,189	238,659
Shellfish, marine-animal meal and scrap	4/	4/	4/	4/	14,793
Grand total meal and scrap	4/	4/	4/	4/	253,452
Fish solubles:					
Menhaden	9,320	12,882	10,645	14,718	74,831
Other	2,416	2,865	6,929	10,177	25,347
Total	11,736	15,747	17,574	24,895	100,178
Homogenized condensed fish	-	1,250	-	2,500	7,224
	(1,000 Pounds)				
Oil, body:					
Herring	-	-	-	-	5,709
Menhaden 3/	28,482	32,500	31,489	38,200	167,635
Tuna and mackerel	222	213	1,334	1,383	5,735
Other (including whale)	722	831	1,845	1,813	6,748
Total oil	29,426	33,544	34,668	41,396	185,827

1/ Preliminary data.
2/ Included in "other" or "unclassified."
3/ Includes a small quantity of thread herring.
4/ Not available.

* * * * *

Major Indicators for U. S. Supply, June 1964: United States production of fish meal in 1964 was higher by 25.1 percent as compared with June 1963. Production of fish oil was up by 42.7 percent and that of fish solubles increased 8.8 percent.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, June 1964

Item and Period	1/1964	1963	1962	1961	1960
	. . . . (Short Tons)				
Fish Meal:					
Production:					
June	43,604	34,863	61,171	54,399	44,311
January-May 2/	40,362	56,189	60,665	48,103	35,920
Year 3/	-	253,452	312,259	311,265	290,137
Imports:					
June	34,515	18,452	26,453	19,317	11,178
January-May	221,914	163,482	114,433	88,509	55,197
Year	-	383,107	252,307	217,845	131,561
Fish Solubles 4/:					
Production:					
June	16,791	15,430	24,745	17,772	20,735
January-May 2/	17,574	27,395	26,762	22,428	16,211
Year	-	107,402	124,334	112,241	98,929
Imports:					
June	249	323	872	207	149
January-May	1,802	2,116	3,418	1,012	2,369
Year	-	6,773	6,308	6,739	3,174
	. . . . (1,000 Lbs.). . . .				
Fish Oils:					
Production:					
June	40,230	28,193	54,924	49,686	35,907
January-May 2/	74,897	41,396	40,698	39,340	20,433
Year	-	185,827	250,075	258,118	209,143
Exports:					
June	117	255	4,921	21,035	15,629
January-May	56,139	97,806	58,084	47,092	37,191
Year	-	262,342	123,050	122,486	143,659

1/Preliminary.
2/Data for 1964 based on reports which accounted for the following percentage of production in 1963: Fish meal, 95 percent; solubles and homogenized fish, 99 percent; and fish oils, 99 percent.
3/Small amounts (10,000 to 25,000 pounds) of shellfish and marine animal meal and scrap not reported monthly are included in annual totals.
4/Includes homogenized fish.

* * * * *

U. S. FISH MEAL AND SOLUBLES:

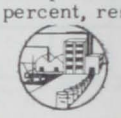
Production and Imports, January-June 1964: Based on domestic production and imports, the United States available supply of fish meal for January-June 1964 amounted to 340,395 short tons--67,409 tons (or 24.7 percent) more than during January-June 1963. Domestic production was 7,086 tons (or 7.8 percent) less, but imports were 74,495 tons (or 40.9 percent) higher than in January-June 1963. Peru continued to lead other countries with shipments of 205,135 tons.

The United States supply of fish solubles (including homogenized fish) during January-June 1964 amounted to 36,416 tons--a decrease of 19.5 percent as compared with the same period in 1963. Domestic production and imports dropped 19.8 percent and 15.9 percent, respectively.

U. S. Supply of Fish Meal and Solubles, January-June 1964 with Comparisons

Item	Jan.-June 1/1964	Jan.-June 1963	Total 1963
	. . . (Short Tons). . .		
Fish Meal and Scrap:			
Domestic production:			
Menhaden	63,021	68,597	181,750
Tuna and mackerel	8,466	10,369	26,957
Herring	1,684	299	7,537
Other	10,795	11,787	37,208
Total production	83,966	91,052	253,452
Imports:			
Canada	30,015	23,328	50
Peru	205,135	136,051	291
Chile	10,036	16,798	24
Norway	-	331	1
So. Africa Republic	9,538	4,466	12
Other countries	1,705	960	
Total imports	256,429	181,934	38
Available fish meal supply	340,395	272,986	63
Fish Solubles:			
Domestic production	34,365	2/42,825	2/10
Imports:			
Canada	1,031	1,341	
Iceland	-	105	
So. Africa Republic	780	81	
Other countries	240	912	
Total imports	2,051	2,439	
Available fish solubles supply	36,416	45,264	11

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



Inventions

FLOAT FOR FISHING LINE PATENTED:

The inventor of a float for fishing stat that the device stays in the direction of t angler, loose on the line, allowing ease i casting and pulling. The float, which is e quipped with a clamp, is loosely connecte with the fishing line when the angler mak cast. The float can be held in position b adhesive which weakens upon contact wit water. This allows the float to grip the in an advantageous position on the surfac the water while the bait is always at the tom, according to the inventor. (Patent 3,087,275, SIC No. 3949, granted Ernst S boda, Meiselstr. 65, Vienna 14, Austria.)

Lobsters

NEW TAGGING METHOD AIDS POPULATION STUDIES:

Success in permanently marking lobsters with interna tags has been reported by a University of Rhode Island o ographer in the first phase of a study to learn more of th life and habits of the northern lobster.

The first known successful molt of an internally-tagg North Atlantic lobster took place July 15, 1964, in the lo pound of a Rhode Island shellfish company when a lobste crawled out of its external skeleton still retaining a num

(Table continued on next column.)

plas[illegible]oated slug in its body. That development removes one [illegible] major technical barriers to a study that could play a sig[illegible]ant role in shaping lobster fishing legislation in the vari[illegible]states.

In [illegible]ent years a disagreement has arisen involving the offsh[illegible]lobstermen who fish with otter trawls on the continental [illegible]lf and the inshore lobstermen who use baited traps or p[illegible] shallower waters. In dispute is whether the inshore [illegible] offshore lobsters are separate populations that should [illegible] controlled by different rules and standards or whether [illegible]e offshore group is the major breeding stock for the e[illegible] population.

In [illegible]ing studies to answer those and other questions, the [illegible]ternal-tagging method for lobsters may represent a ma[illegible]eakthrough. Half-inch tags, weighing 0.16 grams or a[illegible]5 times less than a dime, are inserted behind the eye [illegible] of lobsters, using a needle-sharp, stainless-steel, hollo[illegible]ger. Insertion takes only a matter of seconds and does[illegible]pair or affect a lobster's sight or other body functions. [illegible]e cavity where the tag lodges has no "meat" and is not e[illegible]by humans.

S[illegible]e tag contains a small amount of iron, it can be spott[illegible] a very sensitive and sophisticated metal detector. For [illegible]urpose an electrical engineer has developed two oppo[illegible]stopper coils encased in a single plastic case which creat[illegible]agnetic flux when energized. Shaped in the form of a [illegible]v pipe about a foot long and a foot in diameter, the coils [illegible]hooked into an amplifier. The passage of a tagged lobst[illegible]rough the pipe creates a pulse which can be used to close[illegible]lay and activate a light, buzzer, or other warning signa[illegible].

W[illegible] investment of about $5,000, it is thought that 10 additio[illegible]nd more compact detectors could be built and placed aboa[illegible]mmercial lobster vessels. Since lobsters have to be cru[illegible]and handled individually to detect the presence of egg-[illegible]ng females, researchers believe it may be feasible to as[illegible] commercial catches be funneled through a detector and t[illegible]arked lobsters be put aside for further study.

In [illegible]ast, scientists attempting to tag lobsters have used varie[illegible]ternal devices which are lost when the crustacean molti[illegible] out every year for adult males and every two years for a[illegible]emales. The younger lobsters shed their skeletons even[illegible] frequently.

B[illegible]ing lobsters and returning them to their natural habit[illegible]be caught by commercial fishermen, scientists hope to le[illegible]ore about rates of growth, molting frequency, natural [illegible]ity rates, migratory patterns, and rates of harvesti[illegible]ll on a long-term basis. In addition, the offshore catch[illegible]bject to seasonal variations. Do lobsters merely dispe[illegible]er wide areas or do they travel to some other particul[illegible]ation? Such knowledge could be used to increase catch[illegible] the new internal-tagging technique may help provide [illegible]rs. The developer of the new tagging method has cauti[illegible]however, that more research is needed on the long-term[illegible]ts of the tags on lobsters. (University of Rhode Island,[illegible]t 23, 1964.)

M[illegible] Sardines

CA[illegible]D STOCKS, JULY 1, 1964:

C[illegible]rs' stocks of Maine sardines on July 1, 1964, were 129,[illegible] cases less than those on hand July 1, 1963, but were 140,[illegible] cases above stocks on hand two years earlier on July[illegible]962 (the pack for the 1961 season was exceptionally [illegible]).

C[illegible]over stocks at the canners' level amounted to abou[illegible],000 cases on April 15, 1964, which is the traditiona[illegible]ning date of the Maine sardine packing season. Carry[illegible]r stocks amounted to 660,000 cases on April 15, 1963[illegible]only 33,000 cases on April 15, 1962, following the short[illegible]k year.

Table 1 - Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, July 1, 1964, with Comparisons

Type	Unit	7/1/64	7/1/63	7/1/62
Distributors	actual cases	234,000	217,000	134,000
Canners	std. cases 1/	514,000	643,000	374,000

1/ 100 3¾-oz. equal one standard case.

Source: U. S. Bureau of the Census, Estimates of Distributors' and Canners' Stocks -- July 1, 1964.

During April 15-July 25, 1964, the Maine sardine pack totaled 315,750 standard cases, according to the Maine Sardine Council. That was much less than the 728,988 cases packed during the same period of 1963, but considerably larger than the 179,000 cases packed in the same period in 1961 when fishing was extremely poor.

In late July 1964, fishing conditions for Maine sardines were favorable and the pack was expected to improve during August.

Marketing

EDIBLE FISHERY PRODUCTS, JANUARY-JUNE 1964:

Supplies of edible fishery products during the first 6 months of 1964 were larger than in the same period a year earlier. United States holdings of fishery products in cold-storage at the beginning of the year, together with increased fishery products imports, more than offset the lower fishery landings of the first 6 months in 1964. With retail prices somewhat lower than in the corresponding period a year earlier, the domestic consumption of fishery products rose slightly.

At midyear, stocks of edible frozen fishery products were about 5 percent lower than for

Retailers waiting for their purchases in loading area in the salt-water section of New York City's Fulton Fish Market.

the same period a year earlier. Cold-storage holdings of fish sticks and portions, halibut and cod fillets, and steaks were down considerably. But stocks of haddock fillets, crabs (including crab meat), and raw headless shrimp were larger than on June 30, 1963.

United States consumption of fishery products will likely continue above a year earlier throughout the summer and fall months. Although present conditions point to lower domestic fishery landings of some major species--scallops, halibut, and ocean perch, in particular--increasing imports are likely to more than compensate for the decline. Marked increases over 1963 are anticipated in the 1964 United States imports of tuna, scallops, ocean perch, and cod fillets.

Retail prices for the balance of 1964, it is believed, will continue at least as favorable for consumers as last year. The retail food price index for fishery products is expected to average slightly below a year earlier during the latter half of this year. Some slight seasonal increase in prices may be expected toward the end of the year.

Note: This analysis was prepared by the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in U. S. Department of Agriculture's August 1964 issue of the National Food Situation (NFS-109).

North Atlantic Fisheries Investigations

BLACKBACK FLOUNDER STUDIES AIDED BY DISCOVERY OF DISTINCTIVE GROUP ON GEORGES BANK:

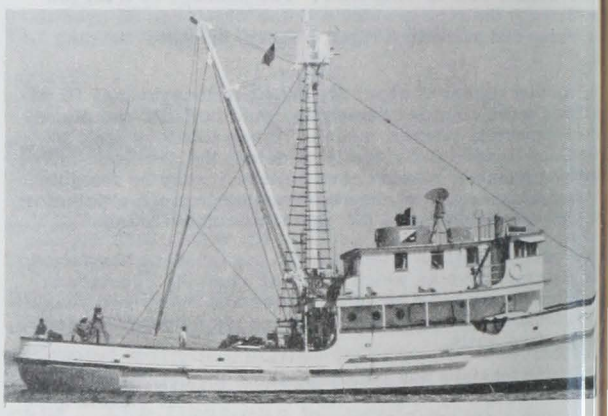
Blackback flounder do not usually migrate great distances as many tagging experiments have shown. How little they move about even on offshore fishing banks was recently indicated when one small area on Georges Bank was discovered to harbor a substantial percentage of abnormally pigmented blackbacks. When it turned out that almost all were exactly the same age, 5 years, it was even more apparent that the fish tend to stay in one place. Current opinion is that color abnormalities are the result of external factors and are not genetic. Oceanographic data for 1959 are being carefully examined for clues that may help explain the unusual markings. The location of the isolated and distinctive group of fish is considered a timely discovery by the U. S. Bureau of Commercial Fisheries Woods Hole (Mass.) Biological Laboratory which is attempting to termine the origin of blackbacks on Geor Bank.

Note: See Commercial Fisheries Review, August 1964 p. 3

North Pacific Exploratory Fishery Program

HAKE DISTRIBUTION STUDY:

M/V "John N. Cobb" Cruise 67 (Augus October 9, 1964): To study hake resourc off the Washington, Oregon, and northern fornia coasts in depths from 35 to 100 fa oms was the purpose of this cruise by th U. S. Bureau of Commercial Fisheries re search vessel John N. Cobb which left Sea August 10, 1964, for 8 weeks of explorato fishing.



John N. Cobb, U. S. Bureau of Commercial Fisheries explo fishing vessel, this past summer was studying the hake reso off Washington, Oregon, and northern California.

The main objective of the cruise was t investigate the bathymetric and geograph distributions of the hake populations fro Cape Flattery, Wash., to northern Califo Secondary objectives were to attempt to a sess the magnitude of the hake resources those waters, and to collect pertinent dat the environmental factors influencing the tribution and abundance patterns.

The method of operation included echo sounding transects to locate concentratio of hake, and the use of various trawls to s ple the density of the hake population whe located.

* * * * *

AGIC TRAWL
ELOPMENT PROGRAM:
V "St. Michael" Cruise 3: To evaluate and modify a newly-designed multipurpose pelagic trawl having very long wings in a configuration similar to a lampara seine was the purpose of this cruise by the U.S. Bureau of Commercial Fisheries chartered gear research vessel St. Michael.

The vessel left Seattle, Wash., on August 1964, for 4 weeks of operations in bay and coastal waters. The cruise plan called for underwater and surface observations and measurements of the new trawl which is to be developed for off-bottom, midwater, and surface fishing. Actual fishing trials of the net will be conducted during subsequent cruises.

Oceanography

GULF OF GUINEA INVESTIGATIONS BY RESEARCH VESSEL "GERONIMO":
V "Geronimo" Cruise 4 (July 10-November 4, 1964): To continue oceanographic studies in the Gulf of Guinea is the purpose of this 118-day cruise by the research vessel Geronimo, operated by the U.S. Bureau of Commercial Fisheries Biological Laboratory, Washington, D.C. The studies to be undertaken on this cruise will be along the same lines as those conducted during Geronimo Cruise 3 (January 15-May 15, 1964), when she participated in EQUALANT III of the International Cooperative Investigations of the Tropical Atlantic (ICITA).

Cruise 4 started on July 10, 1964, when the vessel departed Norfolk, Va., with Dakar, Senegal, scheduled as the first port of call on July 27. The vessel's operational schedule lists Abidjan, Ivory Coast, as the last port of call on October 14, and return thereafter to the United States with arrival at Washington, D.C., on November 4, 1964.

The objectives of this cruise are:

1. Extension of the current measurement program in conjunction with biological and environmental studies in the Gulf of Guinea.

2. Surveys of the distribution of schools of fish in surface waters of the Gulf of Guinea and related environmental parameters.

3. Field training for staff technicians and personnel detached from other activities.

4. Evaluation of new analytical instruments and various anti-ocidants as stabilizers of biological color in preserved plankton studies.

Schedule of Observations:

1. Norfolk, Va., to Dakar (July 10-27):

   a. Equipment shakedown station will be occupied in 1,000 fathoms of water east of Cape Henry. Work will include bathythermograph (BT) cast, 18 bottle hydrographic cast to 1,000 meters, current meter observation, Neuston net haul, Clarke Bumpus haul.

   b. A BT cast and surface salinity sample every 3 hours. An ASWEPS BT message will be transmitted every 6 hours.

   c. Weather observations every 6 hours, at 0000, 0600, 1200, 1800 GMT. All messages will be transmitted as synoptically as practicable.

   d. While under way and during daylight hours, a record will be maintained of the occurrence of fish schools, birds, and mammals observed at the sea surface.

   e. A productivity station will be made at local noon daily. Measurements will be made at depths of 100, 50, 25, 10, 1 percent of incident solar radiation. Phosphate and salinity samples will be analyzed at each depth sampled.

   f. A 30-minute surface plankton tow with a one-meter net to be made each midnight.

   g. A 15-minute Neuston haul to be made just preceding the productivity station at LAN and each midnight following the meter-net haul.

   h. A two-hour nightlight station following the plankton tows each midnight while in the Sargasso Sea.

2. Dakar, Senegal, to Lagos, Nigeria--Tuna Survey I (July 30-August 25):

   a. Baiting: Search for suitable bait will begin in the evening off the coast of Senegal. Local sources of bait information will be utilized. After adequate bait supplies have been obtained, a 12-hour "settling down" period will be allowed before proceeding to survey area. If bait is not found the search will be continued off the coast of Sierra Leone. Surface water temperature and salinity observations will be made wherever bait is obtained.

   b. Tuna surveys: These surveys will be conducted during daylight hours, about 0600-1800 each day. The search will follow an "in-out" pattern with lines extending south

from the 100-fathom curve for a distance of about 90 miles, the transects beginning at 7°30' west longitude, being spaced at 30-minute intervals and terminating at 3°30' east. If bait is completely unavailable, survey transects will be run using either jigs or long line gear.

Samples of tuna from a maximum number of schools are desired. Pole-and-line fishing will be attempted on each school encountered. Jigs will be trolled continuously during the tuna surveys. If the fish bite, fishing will be broken off after 25 fish of each species in the school are aboard. If the fish do not come up to the vessel and start biting after 2 passes, chumming will be broken off and the survey resumed. It is not known at what point in the survey that the initial supply of live bait may become exhausted. In the event that this does occur, an attempt will be made to replenish the supply of bait, after which the survey will be resumed.

Observations to be made upon successful sampling of tuna schools will include:

(a) Fork length, sex, weight.

(b) Preserve 10 ovaries from among the 25 caught from each school sampled.

(c) Preserve stomach samples from each of the 25 caught from each school.

Supplemental observations during the tuna surveys:

(1) 0500-0600 BT and Nansen bottle cast.

(2) BT's every hour and at each fishing station.

(3) Productivity station, hydrographic cast and meter-net haul at local noon daily.

(4) BT cast, Nansen bottle cast, and meter net haul 1800-1900 daily.

(5) Weather observations every 6 hours.

(6) At midnight a ½-hour meter-net haul at the surface.

(7) After the meter-net haul, two 15-minute hauls with the Neuston net.

(8) A two-hour nightlight station following the net tows.

(9) Bathymetry. The EDO will be operated at all times while under way. A time-reference notation will be made on the fathogram every half hour.

3. Lagos to Freetown, Sierra Leone (August 28-September 17):

a. A total of 30 stations will be occupied:

(1) BT casts before and after Nansen bottle casts.

(2) 18-bottle hydrographic cast to 1,000 meters.

(3) At 13 of the hydrographic stations a current meter will be lowered from the vessel to 500 meters using an anchor buoy as a reference.

(4) A one-half hour meter-net haul at the surface.

(5) A 15-minute Neuston haul.

b. Between stations, BT casts and surface salinity samples every hour.

(1) Weather observations every 6 hours.

(2) A productivity station daily at local apparent noon.

(3) Bathymetry observations throughout.

(4) Nightlighting as opportunity affords.

(5) A transect of 6 depth Clarke Bumpus hauls crossing the equator on a line between 3° N. and 3° S.

(6) A 24-hour Clarke Bumpus station will be occupied at a suitable location in equatorial waters. C-B hauls at 6 depths will alternate with BT casts throughout the period.

c. Additional shallow drogue observations will be carried out as required to properly implement the current meter observations.

4. Freetown to Abidjan (September 20-October 16):

Tuna Survey II will be a repeat of Tuna Survey

5. Abidjan to Washington, D. C. (October 16-November 4):

The same observational schedule will be followed as during passage from Washington, D. C. to Dakar.

Note: See Commercial Fisheries Review, July 1964 p. 24; 1964 p. 46.

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NEW OCEANOGRAPHIC RESEARCH VESSELS LAUNCHED BY U. S. NAVY:

The oceanographic research vessel The G. Thompson (AGOR-9) was launched July 1964, at Marinette, Wis., by the U. S. Navy. vessel is designed to be a floating laborato be used in support of the National Oceanogr Research Program. It will be operated by t University of Washington. The new vessel 209 feet in overall length and displaces 1,3 tons.

* * * * *

The USNS Silas Bent was launched Ma 1964, as the first of a series of five inter mediate-sized oceanographic vessels for U. S. Navy. The Silas Bent was designed marily to do surveying work programme the United States Naval Oceanographic Of

...th Arctic and tropical waters. The fore-...on of the vessel is sufficiently ice-...gthened to navigate Arctic waters and ...essel is air-conditioned throughout. The ...ipal dimensions of the vessel are: length ...ll 285 feet; beam, maximum moulded, ...; depth, moulded to main deck, 23½ ...nd displacement, full load, 2,550 long ... Accommodations are provided for 12 ...rs, 32 crewmen, and 34 scientists.

... Silas Bent is powered by a single-... Diesel-electric propulsion system, ...ing a sustained service speed of 15 ... and an endurance of 12,000 miles at ...ts. The principal machinery consists ... 1,260 kw. Diesel generators coupled ...ingle shaft through a 3,000-hp. motor. ...essel also has a trainable and retract-...ow propulsion unit that is capable of ...g or maintaining the vessel's position ... desired direction while it is engaged ...anographic operations.

Launching of the Silas Bent at Loraine, Ohio.

...er features include a 15,000-pound ...lic anchor windlass, 12 electric winches ...dling scientific equipment, and an ...ated crane with a 2,500-pound capacity ...dial outreach of 57 feet.

... Silas Bent has been named in honor ...ited States Naval officer who was a ... in oceanographic work. As a lieu-... Silas Bent (1820-1887) was active in ... work and served under Commodore ...w Perry on expeditions to Japan.

...harge of hydrographic surveying on ...expeditions, Lieutenant Bent's most ...cant achievement was to establish the ...tion and description of the Kuro Siwo ...ck Tide, the great northward-flowing stream in the Pacific Ocean, comparable to the Gulf Stream in the North Atlantic.

The Silas Bent is scheduled for completion by July 1965. The vessel will be under the operational control of the Military Sea Transportation Service and under the technical control of the Naval Oceanographic Office. (Sea-lift Magazine, August 1964.)

Oregon

SALMON ESCAPEMENT AIDED BY BRIEF INDUSTRIAL PLANT SHUTDOWN AT WILLAMETTE FALLS:

A 3-hour shutdown of operations at 2 industrial plants at Willamette Falls, Oreg., on June 18, 1964, resulted in the escapement of a substantial number of adult spring chinook salmon that had been trapped in a cul-de-sac on the west side of the river. An Oregon Fish Commission biologist reported that 841 chinook successfully negotiated the fish ladder at the Falls following the shutdown on that day as contrasted with only 39 fish passing the previous day. The fishery scientist commended the industries for their cooperation in the conservation effort. He said the companies involved have agreed to the temporary shutdown each season for many years despite the considerable cost to them.

The cul-de-sac is a deep pocket or cove located on the west side of the river just below the falls. It has long been a problem area since water flowing into the pocket from industrial operations at the site creates a current which attracts upstream migrating fish. Many of the fish that are drawn there mill about endlessly, apparently unwilling to leave the attractive current flowing from the industrial plants.

Shutting down the plants for a period of time eliminates the cul-de-sac attraction thus encouraging the fish to move out of the blind alley. Much of the water that normally flows through the plants and into the cul-de-sac is diverted to the fish ladder or over the falls in the immediate vicinity of the ladder during a shutdown. This creates a stronger than usual attraction flow that enables the fish to much more readily locate the entrance to the passage facility.

A tabulation of this season's spring chinook run showed that 36,370 chinook had pass-

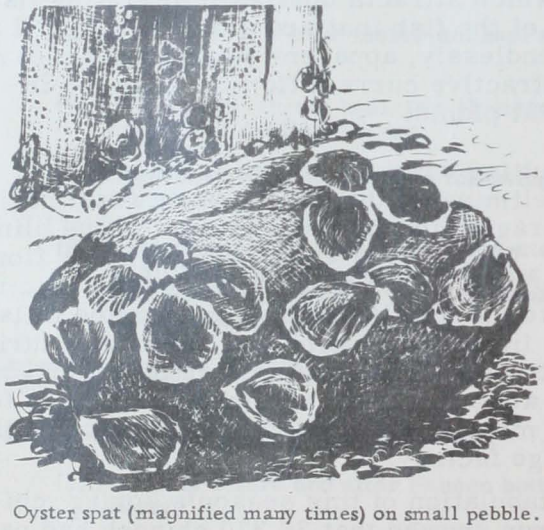
ed over the ladder at Willamette Falls by late June 1964. During the same period, the sport chinook catch in the Willamette, from the mouth of the Falls, and in the lower Clackamas River totaled about 18,600 fish. The total Willamette-Clackamas spring chinook run was about 58,000 fish, including 3,000 escapement tabulated on the Clackamas River. The average run for the past 17 years has been 50,000 spring chinook. (Oregon Fish Commission, June 22, 1964.)

Oysters

MARYLAND OBSERVATIONS FOR 1964:

Information on oyster growth and related data will again be issued this year in a series of reports by the Chesapeake Biological Laboratory (Solomons, Md.) of the University of Maryland Natural Resources Institute. Information on spatfall, fouling of shells, oyster growth and condition, oyster mortality, hydrographic conditions, and general biological information will be included. Following are excerpts from Bulletin No. 1 of July 23, 1964:

The 1964 Spatfall: The program of continuous spatfall monitoring has been somewhat modified this year to increase its efficiency. With the cooperation and assistance of the Department of Chesapeake Bay Affairs, the Biological Laboratory is making weekly collections of test cultch from selected actual or potential seed areas. Whereas in the past 25 test shells in a chicken wire bag have been used as cultch, this year the shells have been replaced by $4\frac{3}{4}$-inch square plates of an asbestos composition board. The plates of that kind are exposed in specially designed wooden holders hung just above the bottom at each station. Previous tests have shown that the plates are attractive to the same organisms as oyster shells.



Oyster spat (magnified many times) on small pebble.

Each week the holders are changed and the plates are brought to the Laboratory and examined under a microscope. Spat, as well as barnacles, blisters, and other associated fouling organisms are counted, and tallied in a systematic manner, thus showing when the potential set reaches a peak in any given area. With the use of the plates, it is possible to count spat faster and with more accuracy than before. Investigations have the additional advantage of examining a precisely known area of cultch.

Setting began late this spring, since the water temperature took longer than usual to reach the sustained high level required for spawning. As of late July 1964, the set had not reached the level of last season.

The 1963 Spatfall: The 1963 spatfall was well above average in both intensity and range and proved to be the best general set in over 15 years. Most of the shell plantings were highly successful and the seed areas produced valuable seed. A few areas, such as Holland Straits, were spotty and irregular. The St. Marys River and the Wicomico tributary of the Potomac River were both high producing areas. Parts of Eastern Bay, Harris Creek, Broad Creek, the Little Choptank River, and Kedges Straits also exhibited high counts, as did the Honga River. In the Potomac River the Jones Shore-Cornfield area was the site of the highest set. Further up the Bay, even the South River had a good strike, most of which caught on mussel shells.

Notes: (1) For more detailed data write to the Chesapeake Biological Laboratory, Natural Resources Institute, University of Maryland, Solomons, Md. ("Report of Maryland Oyster Survey for 1964," Bulletin No. 1, July 23, 1964.)

(2) See Commercial Fisheries Review, Feb. 1964 p. 3

Radiation Preservation

PACKAGING REQUIREMENTS FOR IRRADIATED PRODUCTS:

A major consideration in using radiation to preserve fishery products is a selection of suitable packaging materials in which the product can be irradiated and marketed. S

materials must be nontoxic, must not be affected by irradiation, and must protect the product from oxidation and bacterial contamination. In addition, the materials should be relatively strong so that they will withstand moderate to severe handling, must be easily and effectively sealed and despite rough handling must retain an effective seal, should be inexpensive, and should be lightweight to minimize shipping costs.

In view of those requirements, tests on various types of plastic films are being conducted by the U. S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester, Mass. Eight plastic films have been investigated. The results indicate that 4 of the films--nylon 11, "saran" (coated nylon 11), and 2 different polyolefin films (coated polyesters)--are suitable in that they meet the requirements described above.

Three films--polyethylene, polypropylene, and nylon 6--were found to be poor oxygen barriers. Those films allowed increased bacterial multiplication during storage. That was probably due to oxygen permeability. Cellophane was found to be a good oxygen barrier, but had poor sealing characteristics.

* * * * *

MASSACHUSETTS FISHERY PRODUCTS IRRADIATOR NEAR COMPLETION:

The Marine Products Development Irradiator being built adjacent to the U. S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester, Mass., is expected to be ready for dedication about the end of September. The facility will be operated as part of the research and development program conducted in cooperation with the Atomic Energy Commission (AEC) by the Bureau's Technological Laboratory at Gloucester. When completed, the plant is expected to operate on a near-commercial scale, processing marine products at a rate of up to one ton an hour using a 250,000-curie cobalt-60 radiation source.

The plant will be the second largest cobalt-60 food irradiator in the world with special operating features enabling it to have a production greater than any food irradiator in operation elsewhere--or any known to be in the planning stage. The largest is the U.S. Army's irradiator at Natick, Mass.

The fishery products irradiator is being built to demonstrate the feasibility of extending the refrigerated storage life of fresh fishery products as a part of the AEC radiation-pasteurized food program.

The Bureau's Gloucester Laboratory has been developing plans for consumer acceptance tests of irradiated fishery products.

Note: See Commercial Fisheries Review, September 1963 p. 33.

Salmon

MARKING PROGRAM ON THE COLUMBIA RIVER REVEALS MIGRATION PATTERNS:

Significant information on the Pacific migrating habits of Columbia River salmon is being obtained by "Operation Fin Clip," the gigantic fish-marking program of the U. S. Bureau of Commercial Fisheries. Cooperating State and Canadian fishery agencies report that large numbers of the marked fish have been taken by commercial and sport fishermen in the North Pacific.

"Operation Fin Clip," is designed to determine the contribution made by Columbia River hatcheries to the commercial and sport catch of fall chinook salmon. It involves the marking of approximately 32 million fish over a 4-year period. The Bureau of Commercial Fisheries, which provides about $2 million a year for the operation and maintenance of 22 State and Federal hatcheries on the Columbia River and its tributaries, wants to find out how much they contribute to the total fish catch in order to decide whether it should continue spending money on them.

A summary of the program to mid-1964 showed that a total of 2,223 three-year olds had been recovered from the first 7.5 million marked baby salmon which were released into the River in 1962. The heaviest recoveries were made off the west coast of Vancouver Island, British Columbia. Large concentrations of marked fish were also recaptured off the Oregon and Washington coasts, while relatively small returns were noted in California and Alaskan waters. State and Canadian agencies have stationed trained observers at key spots to tabulate the marked fish as they are brought in by sport and commercial fishermen.

The Bureau of Commercial Fisheries plans to expand the program this year by placing recovery crews on all tributaries of the Columbia below the fish hatcheries. In addition,

efforts will be made to sample Indian catches for marked fish. The crews expected to begin their surveys late in the summer of 1964 when fall chinook start returning from the ocean and begin running upstream to spawn. Other streams also will be surveyed to find out whether there is any straying by the hatchery-bred chinooks from the streams where they were spawned.

To assess sport fishing intensity, an aerial observer in a chartered plane will aid in counting the number of sport fishermen on the main Columbia River between the Dalles Dam and Tongue Point near the mouth of the River. There will also be a pole-count of fishermen on the ground as well as a postal-card survey.

Reports in early August 1964 indicated that hatchery-marked fall chinook salmon had begun entering the Columbia River.

* * * * *

NORTH PACIFIC MIGRATION STUDY OFF WESTERN ALEUTIANS:

In a continuing study on high-seas salmon distribution and abundance in the North Pacific, the U. S. Bureau of Commercial Fisheries research vessel George B. Kelez left Seattle in late Aguust 1964 for a 2-months cruise off the western Aleutian Islands. The main objectives of the cruise are: (1) to determine the western extent and migration routes of immature salmon known to pass through the central Aleutian area each summer; (2) to compare catch rates and selection qualities of surface gill nets and floating long lines; and (3) to test two sound (sonar) systems for detecting salmon. Salmon specimens taken during the cruise will also provide data for studies on the continental origin of North Pacific salmon.

Primary interest during this cruise will center on the area between longitudes 175° E. to 165° E. (Attu Island to Komandorski Island) and between latitudes 50° N. and 54° N. This marks the first attempt of United States research vessels to determine distributional patterns and migration routes of salmon in the central Aleutian area in the late summer and early fall seasons.

School Lunch Program

NATIONAL SCHOOL LUNCH WEEK:

The week of October 11-17 was set asi as National School Lunch Week by Preside tial proclamation. Providing a lunch for million youngsters every school day requi a tremendous amount of food. Last year food bill totaled $876 million. Approxima $688 million of that amount was spent in l food markets.

School-lunch cafeteria serving fish.

For the year ending July 1963, school-lunch purchases of fishery products amou to 44.9 million pounds valued at $21.8 mil lion, according to the U. S. Department of Agriculture.

Shellfish

FIFTH NATIONAL SHELLFISH SANITAT WORKSHOP TO BE HELD:

The U. S. Public Health Service will ho the fifth National Shellfish Sanitation Wor shop November 17-19, 1964, in Washingto D. C. The meeting will bring together me bers of industry and Government officials who are concerned with shellfish sanitati

The Workshop will open with a progra status report by the Director of the Oyste Institute of North America and a report b representative of the U. S. Public Health Service. Subjects to be presented and dis cussed at the Workshop include depuratio (cleansing), advances in shellfish culture imports, bacteriological standards, the us of chemicals on or near shellfish growing areas, a study of a hot dip process, and p

ed changes in Parts I, II, and III of the lfish Sanitation Manual. The Workshop conclude with a status report on shell- sanitation research centers.

* * * * *

TH PACIFIC INDUSTRY AFFECTED ECENT DISASTERS:

he West Coast shellfish industry was af- ed by 2 recent disasters--1 natural and the r manmade. Damage to 2 Washington commercial oyster beds as a result of dal wave following the Alaskan earth- e is reported to be over $400,000. Sub- ial oyster seed plantings in California rs a few weeks prior to the quake were reported swept away by the tidal action.

he Washington State razor clam industry adversely affected when a fuel barge ed with 56,000 barrels of Diesel oil and ine ran aground at Moclips, Wash., h 12, 1964, during a coastal storm. Fuel akage destroyed the entire razor clam ation along an 8- to 10-mile strip of h.

* * * * *

NE CONDUCTS RESEARCH ANITATION:

$11,988 research contract on shellfish ration (cleansing) has been negotiated en the U. S. Public Health Service and aine Department of Sea and Shore Fish- . The contract extends from April 15, through April 14, 1965, with research performed at Boothbay Harbor and ord Pool, Maine. Studies of the flow determine the optimum water flow for ation of soft clams; the keeping quality llfish that have undergone depuration; linity acclimatization and its influence llfish depuration are some of the pro- hat will be undertaken.

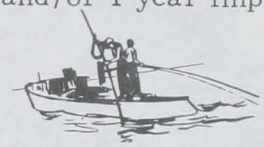
e Maine Department of Sea and Shore ries has also announced approval of the ruction of the first commercially- and ely-operated clam depuration plant in e.

* * * * *

LAMATION PROJECT W YORK STATE:

e New York Legislature has appropri- $50,000 revolving fund to the State Conservation Department for the purpose of reclaiming shellfish from closed shellfish areas. Initial harvesting operations were begun in Flanders Bay (east end of Long Island) on May 11, 1964, and by July 1964 some 6,000 bushels of clams had been harvested and sold to various Long Island townships for redistribution. The Marine Fisheries Sanitarian in the New York Conservation Department stated that the project has been highly successful and that township officials welcome this means of increasing their shellfish resources.

In related action, the New York Legislature increased penalties for persons taking shellfish from condemned areas. Maximum fines are now $1,500 and confiscation of equipment and/or 1 year imprisonment.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, JULY 1964:

Item and Period	1964	1963	1962	1961	1960
	. . . (1,000 Lbs. Heads-Off) . . .				
Total landings, So. Atl. and Gulf States:					
September	-	18,045	13,012	9,691	18,832
August	-	19,769	12,340	10,944	20,441
July	15,000	16,291	12,294	10,500	21,746
June	11,197	13,134	11,309	8,233	12,427
January-May	27,790	26,249	20,838	22,797	24,348
January-December	-	138,254	105,839	91,395	141,035
Quantity canned, Gulf States 1/:					
September	-	3,697	1,759	598	2,222
August	-	3,121	1,355	1,090	4,427
July	2,080	3,726	3,551	2,793	5,802
June	4,170	5,234	4,913	3,438	6,920
January-May	1,834	4,778	2,625	1,525	2,114
January-December	-	29,468	23,322	14,500	26,394
Frozen inventories (as of end of each mo.) 2/:					
September 30	-	27,356	12,843	13,361	24,492
August 31	-	24,803	12,754	12,728	20,171
July 31	-	25,460	13,677	14,849	17,397
June 30	25,546	24,047	13,796	19,416	15,338
May 31	28,082	24,053	13,904	24,696	17,540
April 30	28,524	24,954	15,637	27,492	20,502
March 31	31,428	27,970	16,607	31,345	23,232
Imports 3/:					
September	-	10,236	9,696	8,629	8,190
August	-	8,598	7,381	6,743	6,407
July	-	11,002	8,265	6,635	7,319
June	10,528	9,439	9,397	8,065	8,932
January-May	60,274	61,046	54,403	49,103	42,433
January-December	-	151,530	141,103	126,268	113,418
	. .(¢/lb., 26-30 Count, Heads-Off). .				
Ex-vessel price, all species, So. Atl. and Gulf Ports:					
September	-	57.9	90.9	70.1	52.2
August	-	59.0	83.6	66.1	52.0
July	4/58-69	63.5	82.1	55.8	54.6
June	4/60-72	77.0	84.4	53.7	64.1
May	4/59-69	80.9	83.7	52.8	62.9
April	4/57-61	83.6	82.2	55.4	60.6
March	59.6	85.5	80.9	56.0	56.3

(Table continued on next page.)

Item and Period	1964	1963	1962	1961	1960
	. .(¢/lb., 26-30 Count, Heads-Off). .				
Wholesale price, froz. brown (5-lb. pkg.), Chicago, Ill.:					
September	-	73-77	113-118	87-90	65-70
August	-	75-81	110-112	76-91	64-67
July	80-85	77-97	-	70-75	72-77
June	80-85	95-102	102-104	67-72	76-77
May	72-83	100-103	96-103	67-69	74-77
April	72-74	100-105	94-97	69-70	74-75
March	72-75	102-106	94-95	69-71	65-68

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 30.3.
2/Raw headless only; excludes breaded, peeled and deveined, etc.
3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
4/Range in prices at Tampa, Fla.; Morgan City, La., area; Port Isabel and Brownsville, Tex., only.
Note: July 1964 landings and quantity used for canning estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to head-on weight multiply by 1.68.

Trout

RAINBOW TROUT EGGS FROM AUSTRALIA HELP EXPAND IDAHO FISH FARM PRODUCTION:

A large United States commercial trout farm in Idaho imported 500,000 rainbow trout eggs from Australia in 1963 to provide new stock during that period of the year when native American rainbow trout are not spawning.

An Australian consignment of 150,000 eggs and another of 117,000 eggs arrived in excellent condition from the Victorian Fisheries and Wildlife Department, and the hatching and survival rate was as high as 90 percent. However, there was a 50-percent mortality rate in the third shipment of 233,000 eggs in October 1963. The losses were caused by the heat and early hatching resulting from a 3-day delay in transit.

The trout hatched from the Australian eggs were reared under the advanced methods developed by the owner of the Idaho farm. The 90 ponds at the farm are fed with flowing water by an extensive underground lake which gushes 250,000 gallons a minute at a temperature of 58° F. all year. Trout at the farm reach market size about a year after hatching. They are fed a diet of fish meal, yeast, whey, soybeans, and alfalfa. The trout are said to grow an inch a month on that diet. Biologists at the farm regularly take blood tests and samples to see that the fish are free of disease and growing properly. After harvesting, the trout are processed by an eviscerating machine capable of cleaning 1,000 fish an hour. The farm also markets live trout.

New breeding methods have been developed at the farm. A stock of rainbow trout has been developed which spawn at the age of 2 years rather than 3 years, and the spawning period is said to have been expanded from to 9 months. The resources of the farm should be further expanded by the addition of the Australian trout. The farm has also developed a special strain of trout--a mutation and has engaged a computer specialist to assess the prospects of line breeding the new strain. (Australian Fisheries Newsletter, May 1964.)

Note: See Commercial Fisheries Review, Aug. 1964 p. 40.

United States Fisheries

COMMERCIAL FISHERY LANDINGS, JANUARY-JULY 1964:

The United States catch of fish and shellfish in 1964, mostly for the first 7 months (in some instances various periods through August 9), was down about 42 million pounds as compared with the same period in 1963. The decline

Fig. 1 - Baiting a lobster pot aboard a New England lobster boat.

ted States Commercial Fishery Landings of Certain Species for Periods Shown, 1964 and 1963

ies	Period	1/1964	1963	Total 1963
		(1,000 Lbs.)		
es, Calif. 2/ .	6 mos.	1,500	2,062	3,774
e	6 mos.	1,400	1,262	1,960
3/.	7 "	15,700	19,794	31,475
tal cod		17,100	21,056	33,435
r:				
e	6 mos.	700	811	1,216
. . . . .	7 "	51,600	52,142	91,876
tal flounder		52,300	52,953	93,092
:				
e	6 mos.	1,300	1,146	2,878
3/	7 "	78,300	70,606	106,075
tal haddock		79,600	71,752	108,953
4/				
a	7 mos.	12,700	17,956	22,372
& Oreg. . . .	7 "	6,200	8,268	11,871
tal halibut.		18,900	26,224	34,243
r, Maine	6 mos.	10,200	25,108	152,317
ial fish, & Mass.) 5/ . .	6 mos.	14,700	19,035	47,897
rel:				
/.	6 mos.	35,100	42,932	98,078
c 2/.	6 "	4,200	15,196	36,974
ten	7 mos.	924,500	965,208	1,779,500
perch:				
e	6 mos.	22,600	30,116	63,905
. . . . .	7 "	18,100	28,954	44,387
al ocean perch		40,700	59,070	108,292
(Me. &) 3/.		6,200	6,726	13,216
Alaska to August 9		217,400	171,054	208,000
, sea, New d (meats) . .	7 mos.	8,100	9,791	15,941
(heads-on), & Gulf	7 mos.	84,800	88,522	219,900
alif. 2/. . . .	6 mos.	5,700	6,676	7,942
alif. . . . to August 8		177,300	150,022	285,285
. . . . .	6 mos.	4,900	4,169	15,942
. . . . .	7 "	23,717	34,547	64,571
al whiting		28,617	38,716	80,513
al all above erns		1,726,917	1,772,103	3,327,352
. . . . .		249,983	247,224	1,422,793
and total		1,976,900	2,019,327	4,750,145

ty.
receipts.
eight.
weight.
menhaden.
landings for species not listed.
fish generally converted to round weight, crustaceans to weight in the shell, lusks reported in meats only.

d principally in landings of menhaden, ocean perch, erring, jack and Pacific mackerel, and whiting. As st 21, the New England whiting catch was up sharply. en landings to July 31, 1964, totaled 924.5 million -a drop of 40 million pounds as compared with the riod in 1963. The decline in menhaden landings was to the Middle Atlantic area where the catch was only d as large as in the same period the previous year.

Fig. 2 - At Gloucester, Mass., a small dragger unloading iced ocean perch into a truck.

Fig. 3 - Unloading haddock from a trawler at Boston Fish Pier.

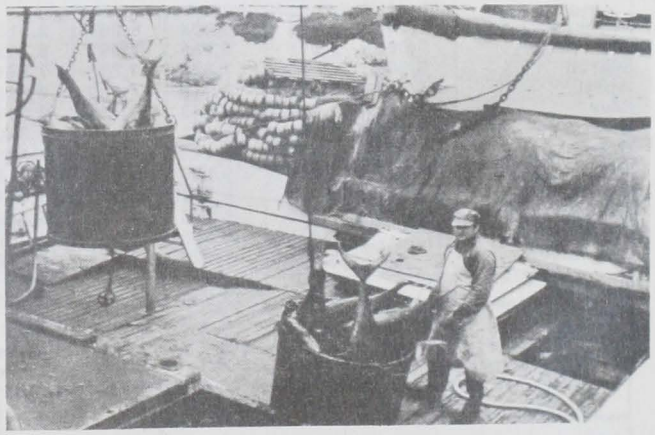


Fig. 4 - Unloading tuna at a southern California dock.

Increased landings were reported principally for salmon in Alaska, tuna, and haddock. On the basis of the reported pack of canned salmon and fresh salmon sales to Japanese freezerships, it was estimated that the catch of salmon to August 9, 1964, totaled 217 million pounds--a gain of 46 million pounds as compared with the same period in 1963.

* * * * *

FISH STICKS AND PORTIONS PRODUCTION, APRIL-JUNE 1964:

United States production of fish sticks and fish portions amounted to 39.9 million pounds during the second quarter of 1964, according to preliminary data. Compared with the same quarter of 1963, this was a decrease of 2.5 million pounds or 5.9 percent. Fish portions (24.5 million pounds)

Table 1 - U.S. Production of Fish Sticks by Months and Type, April-June 1964 1/

Month	Cooked	Raw	Total
	(1,000 Lbs.)		
April	5,547	394	5,941
May	5,025	397	5,422
June	3,642	451	4,093
Total 2nd Qtr. 1964 1/	14,214	1,242	115,456
Total 2nd Qtr. 1963	17,446	975	18,421
Total 1st 6 months 1964 1/	33,940	2,766	36,706
Total 1st 6 months 1963	40,129	2,140	42,269
Total Jan.-Dec. 1963	74,132	5,163	79,295

1/Preliminary.

Table 2 - U.S. Production of Fish Sticks by Areas, April-June 1964 and 1963

Area	1/ 1964		2/ 1963	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	22	11,292	22	15,227
Inland & Gulf States	5	2,365	7	1,997
Pacific Coast States	12	1,799	10	1,197
Total	39	15,456	39	18,421

1/Preliminary.
2/Revised.

Table 3 - U.S. Production of Fish Sticks by Months, 1960-64

Month	1/1964	2/1963	1962	1961	1960
	(1,000 Lbs.)				
January	7,226	7,554	6,082	6,091	5,511
February	7,061	8,241	6,886	7,097	6,542
March	6,963	8,053	7,658	7,233	7,844
April	5,941	6,546	5,719	5,599	4,871
May	5,422	5,750	5,643	5,129	3,707
June	4,093	6,125	5,117	4,928	4,369
July	-	4,870	3,740	3,575	3,691
August	-	5,696	5,760	6,927	5,013
September	-	5,865	6,582	5,206	5,424
October	-	8,128	6,698	6,133	6,560
November	-	6,471	6,305	6,288	6,281
December	-	5,996	6,027	5,618	5,329
Total	-	79,295	72,217	69,824	65,142

1/Preliminary.
2/Revised.

Table 4 - U.S. Production of Fish Portions by Areas, April-June 1964 and 1963

Area	1/1964		2/1963	
	No. of Firms	1,000 Lbs.	No. of Firms	1,000 Lbs.
Atlantic Coast States	21	15,573	23	14,182
Inland & Gulf States	6	8,257	10	9,021
Pacific Coast States	9	627	9	783
Total	36	24,457	42	23,986

1/Preliminary.
2/Revised.

Table 5 - U.S. Production of Fish Portions by Months and Type, April-June 1964 1/

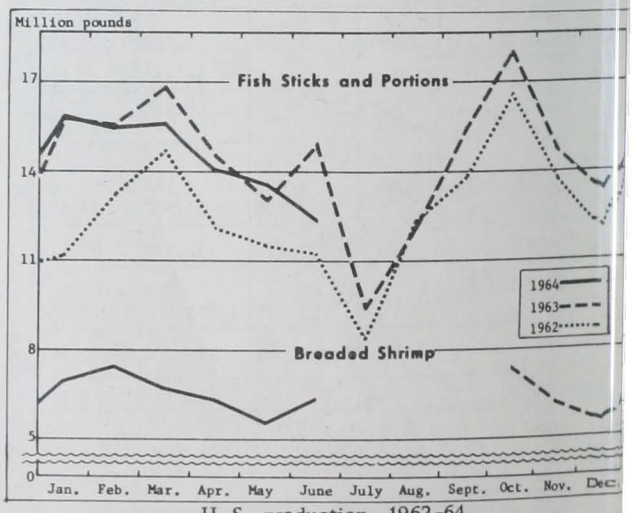
Month	Breaded			Unbreaded	Tot
	Cooked	Raw	Total		
	(1,000 Lbs.)				
April	1,917	6,054	7,971	93	8,0
May	1,808	6,162	7,970	166	8,1
June	1,374	6,739	8,113	144	8,2
Total 2nd Qtr. 1964 1/	5,099	18,955	24,054	403	24,4
Total 2nd Qtr. 1963	4,081	19,266	23,347	639	23,9
Total 1st 6 mos. 1964 1/	10,485	38,220	48,705	1,259	49,9
Total 1st 6 mos. 1963	8,220	38,682	46,902	1,453	48,3
Total Jan-Dec. 1963	16,623	74,970	91,593	3,054	94,6

1/Preliminary.

Table 6 - U.S. Production of Fish Portions by Months, 1960-1964

Month	1/1964	2/1963	1962	1961	1960
	(1,000 Lbs.)				
January	8,526	8,173	5,077	4,303	3,63
February	8,397	7,361	6,360	4,902	3,50
March	8,584	8,835	7,036	5,831	4,70
April	8,064	7,919	6,408	4,484	3,49
May	8,136	7,293	5,818	3,879	3,25
June	8,257	8,774	6,137	4,039	3,99
July	-	4,524	4,679	3,962	4,08
August	-	6,684	6,687	4,963	3,55
September	-	9,621	7,180	5,745	4,63
October	-	9,877	9,871	6,759	5,27
November	-	8,136	7,406	5,789	4,79
December	-	7,450	6,019	5,191	4,45
Total	-	94,647	78,678	59,847	49,38

1/Preliminary.
2/Revised.



U. S. production, 1962-64.

were up 0.5 million pounds or 2.1 percent, while fish sti (15.4 million pounds) were down 3.0 million pounds or 1 percent.

Cooked fish sticks (14.2 million pounds) made up 92.0 percent of the April-June 1964 fish stick total. There w 24.1 million pounds of breaded fish portions produced, o which 19.0 million pounds were raw. Unbreaded fish por tions amounted to 403,000 pounds.

e Atlantic States remained the principal area in the
ction of both fish sticks and fish portions, with 11.3
.6 million pounds, respectively. The Inland and Gulf
ranked second with 2.4 million pounds of fish sticks
3 million pounds of fish portions. The remaining
illion pounds of fish sticks and fish portions were pro-
by firms in the Pacific States.

Foreign Trade

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January-August 1, 1964, amounted to 21,726,482 pounds (about 1,034,600 standard cases), according to preliminary data compiled by the U. S. Bureau of Customs. This was substantially less (25.2 percent) than the 29,036,028 pounds (about 1,382,700 standard cases) imported during January 1-August 3, 1963.

The quantity of tuna canned in brine which can be imported into the United States during the calendar year 1964 at the 12½-percent rate of duty is limited to 60,911,870 pounds (about 2,900,565 standard cases of 48 7-ounces). Any imports in excess of that quantity will be dutiable at 25 percent ad valorem.

* * * * *

PROCESSED EDIBLE FISHERY PRODUCTS, JUNE 1964:

United States imports of processed edible fishery products in 1964 were up 3.2 percent in quantity and 12.4 percent in from those in the previous month. In June there were increases in imports of canned sardines not in oil, fresh and frozen fish fillets, and most other fish fillet items (except sea catfish fillets). The increase was almost offset by smaller imports of fish blocks and slabs, sea catfish fillets, and canned albacore tuna in brine.

Compared with the same month in 1963, imports in June 1964 were up 9.1 percent in quantity and 19.8 percent in value. In June there were larger imports of flounder fillets, haddock steaks, swordfish steaks, yellow pike fillets, canned oysters, and canned sardines in oil and not in oil. But there was a considerable decline in arrivals of groundfish fillets and slabs and as a result of smaller shipments from countries in Western Europe.

For the first 6 months of 1964, imports were up 1.3 percent in quantity and 5.3 percent in value from those in the same period of 1963. During January-June 1964, there was a sharp increase in imports of fish blocks and slabs, flounder fillets, and yellow pike fillets. But there was a considerable decline in imports of canned tuna, canned sardines, and canned crab meat.

Exports of processed edible fish and shellfish from the United States in June 1964 were up 27 percent in quantity and 40 percent in value from those in the previous month due to increased shipments of canned shrimp (increase mostly to Canada and the United Kingdom), canned mackerel, and canned sardines in oil and not in oil. Exports of canned salmon (principally to the United Kingdom) showed little change from the previous month. There was a modest decline in exports of canned squid due to smaller shipments to Greece.

U. S. Imports and Exports of Processed Edible Fishery Products, June 1964 with Comparisons

Item	Quantity				Value			
	June		Jan.-June		June		Jan.-June	
	1964	1963	1964	1963	1964	1963	1964	1963
	(Millions of Lbs.)				(Millions of $)			
Fish & Shellfish:								
Imports 1/	38.4	35.2	243.9	240.8	12.7	10.6	73.4	69.7
Exports 2/	3.3	2.0	20.8	16.6	1.4	1.0	9.0	6.6

1/Includes only those fishery products classified by the U. S. Bureau of the Census as "Manufactured foodstuffs." Included are canned, smoked, and salted fishery products. The only fresh and frozen fishery products included are those involving substantial processing, i. e., fish blocks and slabs, fish fillets, and crab meat. Does not include fresh and frozen shrimp, lobsters, scallops, oysters, and whole fish (or fish processed only by removal of heads, viscera, or fins, but not otherwise processed).
2/Excludes fresh and frozen.

Compared with the same month of the previous year, the exports in June 1964 were up 65 percent in quantity and 40 percent in value. This June there were larger shipments of most of the leading canned fish export items except canned squid. Exports of canned salmon to the United Kingdom this June increased 319 percent from those in the same month a year earlier.

Processed fish and shellfish exports in the first 6 months of 1964 were up 25 percent in quantity and 36 percent in value from those in the same period of 1963. In January-June 1964 there were much larger shipments of canned mackerel. Shipments of canned salmon, canned sardines in oil, and canned shrimp were also higher, but exports of canned sardines not-in-oil and canned squid were down sharply.

Notes: (1) Prior to October 1963, the data shown were included in articles on "U. S. Imports and Exports of Edible Fishery Products." Before October 1963, data showing "U. S. Imports of Edible Fishery Products" summarized both manufactured and crude products. At present, a monthly summary of U. S. imports of crude or nonprocessed fishery products is not available; therefore, only imports of manufactured or processed fishery products are reported. The import data are, therefore, not comparable to previous reports of "U. S. Imports of Edible Fishery Products."

The export data shown are comparable to previous data in "U. S. Exports of Edible Fishery Products." The export data in this series of articles have always been limited to manufactured or processed products.

(2) See Commercial Fisheries Review, Sept. 1964 p. 45.

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AIRBORNE IMPORTS OF FISHERY PRODUCTS, JANUARY-APRIL 1964:

Airborne fishery imports into the United States in April 1964 were up 37.0 percent in quantity and 46.4 percent in value from those in the previous month due mainly to larger shipments of shrimp, particularly from Venezuela.

Total airborne shrimp imports in April 1964 consisted of 544,100 pounds of fresh and frozen raw headless and 34,247 pounds of unclassified shrimp. About 97 percent of the airborne shrimp arrivals in April 1964 entered through the Customs District of Florida. The remainder entered through the Customs Districts of New Orleans (La.) and Los Angeles (Calif.).

Airborne imports of shellfish other than shrimp in April 1964 included Caribbean shipments of 30,446 pounds of spiny lobster products most of which entered through the Customs District of Florida, with the remainder going to Puerto Rico.

Airborne finfish imports in April 1964 consisted mainly of fish fillets from Mexico.

Total airborne fishery imports in January-April 1964 were down 25.1 percent in quantity and 28.9 percent in value from

U. S. 1/Airborne Imports of Fishery Products, January-April 1964 with Comparative Data

Product and Origin 2/	1964 April Qty. 3/	1964 April Value 4/	1964 Jan.-Apr. Qty. 3/	1964 Jan.-Apr. Value 4/	1963 Jan.-Apr. Qty. 3/	1963 Jan.-Apr. Value 4/
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Fish:						
Portugal	-	-	0.1	0.1	-	-
Mexico	29.3	8.0	108.8	30.4	99.2	31.1
British Honduras	-	-	1.8	0.4	30.6	7.6
Honduras	-	-	-	-	15.5	4.0
Japan	-	-	-	-	2.0	8.2
United Kingdom	-	-	1.7	3.2	1.1	2.7
Iran	-	-	-	-	1.2	7.4
France	0.4	0.6	4.3	7.8	0.4	0.3
Israel	-	-	1.3	0.8	-	-
Venezuela	-	-	4.6	1.7	-	-
Ireland	-	-	-	-	0.8	0.3
Denmark	-	-	0.2	0.1	-	-
Canada	-	-	13.2	4.3	-	-
Iceland	-	-	1.8	1.2	-	-
Spain	0.8	0.6	0.8	0.6	-	-
Total fish	30.5	9.2	138.6	50.6	150.8	61.6
Shrimp:						
Guatemala	-	-	-	-	101.5	53.9
El Salvador	57.0	35.5	144.1	86.4	145.2	101.7
Honduras	-	-	-	-	5.8	3.3
Nicaragua	24.5	13.9	31.1	18.0	193.4	61.6
Costa Rica	9.3	4.6	149.2	82.4	284.0	137.3
Panama	85.6	51.7	335.2	196.9	607.7	326.4
Venezuela	391.4	194.7	1,529.4	661.3	1,464.8	715.4
Ecuador	-	-	-	-	72.4	23.1
France	-	-	-	-	2.6	0.9
British Guiana	10.5	5.2	10.5	5.2	-	-
Total shrimp	578.3	305.6	2,199.5	1,050.2	2,877.4	1,423.6
Shellfish other than shrimp:						
Mexico	-	-	9.0	4.8	70.9	41.5
British Honduras	15.2	3.4	82.8	50.4	98.2	76.4
El Salvador	-	-	-	-	5.0	3.6
Honduras	-	-	8.4	8.6	1.6	0.8
Nicaragua	10.3	9.1	50.5	40.0	47.8	37.9
Costa Rica	-	-	9.3	9.5	73.8	60.1
Jamaica	11.6	10.0	43.6	36.2	44.3	33.4
Netherlands Antilles	-	-	-	-	29.1	18.3
Colombia	-	-	-	-	2.9	4.5
Ecuador	-	-	-	-	2.2	1.8
Tunisia	-	-	-	-	0.5	0.6
British Guiana	-	-	8.6	1.6	1.7	0.3
Canada	-	-	1.2	0.9	1.8	0.7
Venezuela	-	-	-	-	13.7	6.0
Dominican Republic	3.1	0.5	3.6	0.6	6.2	5.0
Bahamas	4.1	3.7	10.6	6.8	-	-
Haiti	1.3	0.7	4.0	2.1	-	-
Other countries	0.2	0.2	0.2	0.2	1.6	0.5
Total shellfish (excl. shrimp)	45.8	27.6	231.8	161.7	401.3	291.4
Grand total	654.6	342.4	2,569.9	1,262.5	3,429.5	1,776.6

1/Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.
2/When the country of origin is not known, the country of shipment is shown.
3/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.
4/F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.
5/Less than 50 pounds.
Note: These data are included in the overall import figures for total imports, i.e., these imports are not to be added to other import data published.
Source: United States Airborne General Imports of Merchandise, FT 380, April 1964, U. S. Bureau of the Census.

those in the same period of 1963. The decline was due to smaller shipments of shrimp and spiny lobster tails.

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

Wholesale Prices

EDIBLE FISH AND SHELLFISH, AUGUST 1964:

The wholesale price index for edible fish and shellfish (fresh, frozen, and canned) dropped 1.1 percent from July to August 1964 mainly because of lower fresh and frozen shrimp prices. August prices for other fresh fishery products and canned fish were invariably higher or remained at the same level as in July except for lower prices on ex-vessel large haddock and frozen ocean perch fillets. At 105.4 percent of the 1957-59 average, the index this August was lower by only 0.1 percent from the same month a year earlier. Lower prices for a number of fresh and frozen fishery products this August than in August 1963 were offset by higher prices for fresh and frozen shrimp, fresh halibut, and most of the canned fish items.

A decline of 0.3 percent from July to August in the subgroup index for drawn, dressed, or whole finfish was the direct result of lower ex-vessel prices at Boston for large haddock (down 6.0 percent). August prices for western fresh halibut at New York City rose 3.7 percent from the previous month because of a drop in seasonal Pacific Northwest halibut landings, and those prices were up 7.8 percent as compared with August 1963. Prices this August were higher than in July for Great Lakes fresh yellow pike (up 5.9 percent), but were unchanged for other items in the subgroup. As compared with August 1963, all items in the subgroup except halibut were lower-priced this August and the subgroup index was down by 1.2 percent.

The subgroup index for processed fresh fish and shellfish in August 1964 was down 4.2 percent from the previous month. Lower prices for South Atlantic fresh shrimp (down 8.9 percent) at New York City were largely responsible, but prices for fresh haddock fillets at Boston rose (up 2.9 percent). As compared with the same month a year earlier, the subgroup index this August was lower by 3.3 percent because of lower prices for haddock fillets and shucked standard oysters, while fresh shrimp prices were 9.3 percent higher than in August 1963.

From July to August, prices dropped for ocean perch fillets (down 1.7 percent) at Boston and frozen shrimp (down 4.1 percent) at Chicago, and the subgroup index for frozen fish and shellfish dropped 2.4 percent. Prices for other fish fillets in the subgroup were unchanged from the previous month. As compared with August 1963, the subgroup index this August was higher by 1.1 percent because of higher prices for frozen shrimp and haddock fillets.

The subgroup index for canned fishery products was up 0.9 percent from July to August as a result of price increases for canned tuna (up 0.5 percent) and canned Maine sardines (up 5.7 percent). Because of intensive advertising, demand for tuna was up but price increases in August were nominal and confined only to certain packers' brands. But canned fish prices in the aggregate were 6.2 percent higher this August than in the same month of 1963. Higher prices for canned Maine sardines generally stemmed from the relatively light 1964 season pack. As of August 29, the new pack was 525,000 cases--substantially less than the pack of 1.3 million cases for the same period in 1963. Prices for canned pink salmon this August were unchanged from the previous month, but supplies will continue liberal. The total Alaska salmon pack this year was about 3.4 million cases as of the end of August with pink salmon accounting for more than half of the total. The subgroup index this August was lower than in August 1963 by 1.5 percent. Prices for all items in the subgroup were above those of a year earlier, but canned pink salmon prices were 7.3 percent lower because of liberal supplies.

Wholesale Average Prices and Indexes for Edible Fish and Shellfish, August 1964 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1957-59=100)			
			Aug. 1964	July 1964	Aug. 1964	July 1964	June 1964	Aug. 1963
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					105.4	106.6	105.6	105.5
Fresh & Frozen Fishery Products:					106.9	109.3	107.8	108.0
Drawn, Dressed, or Whole Finfish:					114.6	114.9	106.3	116.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.11	.11	83.3	88.6	75.2	84.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.42	.40	122.7	118.3	107.0	113.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.93	.93	129.2	129.2	124.7	129.2
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.53	.53	78.3	78.3	63.4	98.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.54	.51	88.4	83.5	69.6	104.8
Processed, Fresh (Fish & Shellfish):					101.1	105.5	114.8	104.5
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.36	.35	86.2	83.8	77.7	91.1
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.77	.84	89.6	98.4	117.2	82.0
Oysters, shucked, standards	Norfolk	gal.	7.00	7.00	118.0	118.0	118.0	134.9
Processed, Frozen (Fish & Shellfish):					100.0	102.5	98.7	98.9
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.38	.38	95.0	95.0	92.5	98.9
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.37	.37	108.5	108.5	101.1	105.5
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.31	.31	106.9	108.7	105.2	115.7
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.80	.84	94.9	99.0	96.6	93.1
Canned Fishery Products:					103.1	102.2	102.2	101.6
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	22.25	22.25	97.0	97.0	97.0	104.6
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.56	11.50	102.6	102.1	102.1	96.6
Mackerel, jack, Calif., No.1 tall (15 oz.), 48 cans/sc.	Los Angeles	cs.	6.25	6.25	105.9	105.9	105.9	97.5
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.31	8.81	119.4	113.0	113.0	104.0

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.

SHRIMP FARMING

The idea of shrimp farming, or cultivation of shrimp under controlled conditions in [illegible]- or brackish-water ponds, has aroused much interest in the United States in recent [illegible]s. Shrimp appear particularly desirable for artificial cultivation because of their rap[illegible]rowth and high market value. In addition to their worth as human food, shrimp are in [illegible]: demand seasonally as live bait for sport fishing.

Methods used in shrimp farming take advantage of the ability of certain shrimp to sur[illegible] and grow rapidly in shallow estuarine waters. By constructing ponds, the shrimp [illegible]e alters the natural environment so that the poundage of shrimp normally harvested [illegible] the estuarine areas is greatly increased. It is anticipated that by proper timing, a [illegible]mp farmer may control the development of his stocks, so that abundant live-bait shrimp [illegible]ppropriate size can be harvested at the peak of demand.

The culture of shrimp and other marine animals is an important industry in certain [illegible]ltime countries of Southeast Asia. Shrimp farming in the United States is still in its [illegible]cy, however, and extensive research is required to determine its biological and ec[illegible]nic feasibility.

[illegible] Shrimp culture as it is practiced in Southeast Asia and possible application of techniques developed there to shrimp farming [illegible]e United States are discussed in Fishery Leaflet 551, "Shrimp Farming," U. S. Bureau of Commercial Fisheries, Washington, [illegible].