



TRENDS AND DEVELOPMENTS

Alaska

FOREIGN FISHING ACTIVITY OFF ALASKA, JANUARY 1965:

U.S.S.R.: The Soviet trawling fleet which had been operating in the general vicinity of Yakutat consisted of about the same number of vessels through January 1965 as in the previous month of December 1964. Some 15 vessels made up that fleet. It was the first time the Soviets have maintained fishing operations during the winter months in the Gulf of Alaska.



Fig. 1 - Soviet salvage tug in Bering Sea.

It was believed that by the end of January more than 100 vessels in the Soviet fleet were operating generally northwest of the Pribilof Islands in the Bering Sea, reportedly fishing for herring.

Japan: The Japanese shrimp factoryship Chichibu Maru, accompanied by 9 trawlers, returned to the Bering Sea during January and resumed fishing for shrimp north of the Pribilof Islands.

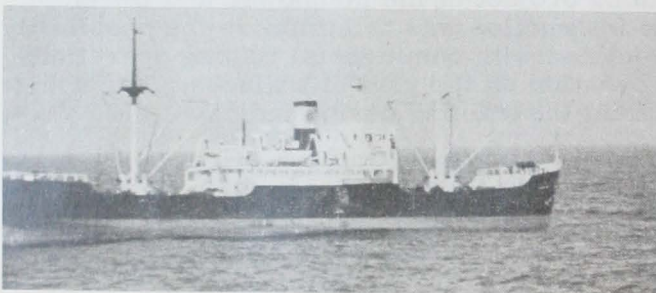


Fig. 2 - Japanese supply ship in Bering Sea.

The large factory stern trawler Aso Maru which had been fishing in the Aleutian Islands reportedly returned to Japan briefly during the month. According to Japanese sources, the vessel Aso Maru, accompanied by one small trawler, was scheduled to sail from Japan on January 21 for the eastern Bering Sea. Three other Japanese factory stern trawlers (the Akebono Maru's Nos. 71 and 72 and the Taiyo Maru No. 82) were also reported fishing in the eastern Bering Sea.

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GOOD SALMON RUN FORECAST FOR BRISTOL BAY IN 1965:

Preliminary data indicate that the 1965 sockeye salmon run to Bristol Bay may be the largest since 1960. The 1965 run could total between 20 and 24 million fish (with allowances for the Japanese high seas catch).



Alaska Bristol Bay salmon gill-net vessels docked at a cannery dock.

The Kvichak River run is expected to dominate the fishery as in the "dominant-year" Kvichak runs of 1956 and 1960. Most young sockeye produced by the spawning in 1960 remained in Lake Iliamna 1 year longer than normal. This has caused a 5-year interval between large runs on that cycle.

The preliminary forecast for Bristol Bay is based on studies of spawning from previous runs. This fresh-water information collected by the Alaska State Department of Fish and Game will be combined later with high seas data collected by other agencies to produce a final forecast of the 1965 Bristol Bay run of sockeye salmon. (Alaska Department of Fish and Game, January 6, 1965.)

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SALMON RUNS TO PRINCE WILLIAM SOUND AFFECTED BY 1964 EARTHQUAKE:

In the Prince William Sound area, direct salmon fry losses caused by the earthquake of March 27, 1964, are expected to result in about 330,000 fewer pink salmon in the 1965 run, and 50,000 fewer chum salmon in 1966, 1967, and 1968. Direct salmon fry losses from earth movement and gravel silting caused by the earthquake were relatively minor compared to over-winter mortalities from other sources.

The effect of land changes on subsequent salmon runs will probably be far more important than that caused by direct salmon fry losses in 1964. About two-thirds of the Prince William Sound area was uplifted with the elevation ranging from a few inches to 33 feet. By contrast, about one-tenth of the area dropped from 1 to 7 feet. Since pink and chum salmon in the Prince William Sound area spawn almost entirely in intertidal and immediately adjacent stream zones, adult salmon returning in 1964 were faced with highly altered and often unstable environments for egg deposition. Far fewer spawners used intertidal zones than in previous cycle years, but in the uplifted area 52 percent of the pink salmon spawners utilized riffle areas never before used for spawning. Egg sampling in October 1964 showed that eggs deposited in the "new" riffles were being lost at a fairly high rate compared to eggs in riffles formerly in use, mainly due to excessive erosion in the "new" riffle areas.

The unstable spawning conditions are expected to reduce salmon production for a short period, but the significant increase in spawning ground area caused by land uplift could add greatly to the potential in future years. (Alaska Department of Fish and Game, January 6, 1965.)



Alaska Fisheries Investigations

CHANGES IN KING CRAB ABUNDANCE OBSERVED BY SCUBA DIVERS:

During January 1965, SCUBA divers of the U. S. Bureau of Commercial Fisheries Auke Bay Biological Laboratory made several observations on adult king crab in the Auke Bay area. At the beginning of the month, female Paralithodes camtschatica and male and female P. platypus were observed in the Auke Bay Recreation area. At that time female P. platypus were most abundant. By the middle of the month, the divers were unable to locate any P. camtschatica, but reported that the abundance of male P. platypus was increasing. During the latter part of January, males (P. platypus) were more abundant than females. On at least one occasion, adult males (P. platypus) were concentrated into a group or "pod." The first mating pair of P. platypus was observed on January 24.



California

SILVER SALMON STOCKING PROGRAM TO CONTINUE:

Despite flood losses in December 1964, the program of stocking 500,000 silver salmon annually in California's north coastal streams is nearly back on schedule. The floods demolished the Cedar Creek Hatchery and carried away 370,000 silver salmon eggs and 120,000 yearling silver salmon. But 380,000 silver salmon yearlings at Darrah Springs Hatchery survived the floods and will be planted on schedule early in 1965 to maintain the stocking program.

In 1966, the planting of 500,000 yearling silver salmon will be made on schedule with stock from the Darrah Springs Hatchery and the Mt. Shasta Hatchery.

"By making above normal use of other facilities on a temporary basis we can maintain the silver salmon program despite loss of the Cedar Creek Hatchery," said the Director of the California Department of Fish and Game. "On a permanent basis, however, maintenance and expansion of the program will probably have to be accomplished at some location other than Cedar Creek since the hatchery site there seems too hazardous from the standpoint of floods to justify re-

building the installation." (California Department of Fish and Game, January 23, 1965.)

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SALMON PLANTING PROGRAM IN RUSSIAN RIVER:

The November 1964 planting of 50,000 eight-month-old early winter straining salmon in the Russian River near Ukiah, Calif. completed the 2nd year of a 4-year cooperative Federal-State program. The program is aimed at establishing a self-sustaining run of kings in the Russian River system. The fish released in November 1964 were from the same hatch as the 500,000 fingerlings that were planted in May 1964. The larger fingerlings have all been marked as a means of checking their return to the river at a future date.

Earlier efforts to establish a fall run of king salmon in the Russian River failed because the adult fish returned to the river at the time when water conditions were unfavorable to successful spawning. Because of that problem, a winter strain of king salmon was introduced in May 1963. At that time 500,000 fingerlings were planted. That was followed in November 1963 with an additional 50,000 marked, larger-sized fingerlings of the same hatchery brood.

It is hoped that the early winter strain will adapt to the Russian River and develop a self-maintaining population.

Salmon fingerlings for the Russian River program are being supplied by the Coleman National Fish Hatchery. (Outdoor California, January 1965.)

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PELAGIC FISH POPULATION SURVEY CONTINUED:

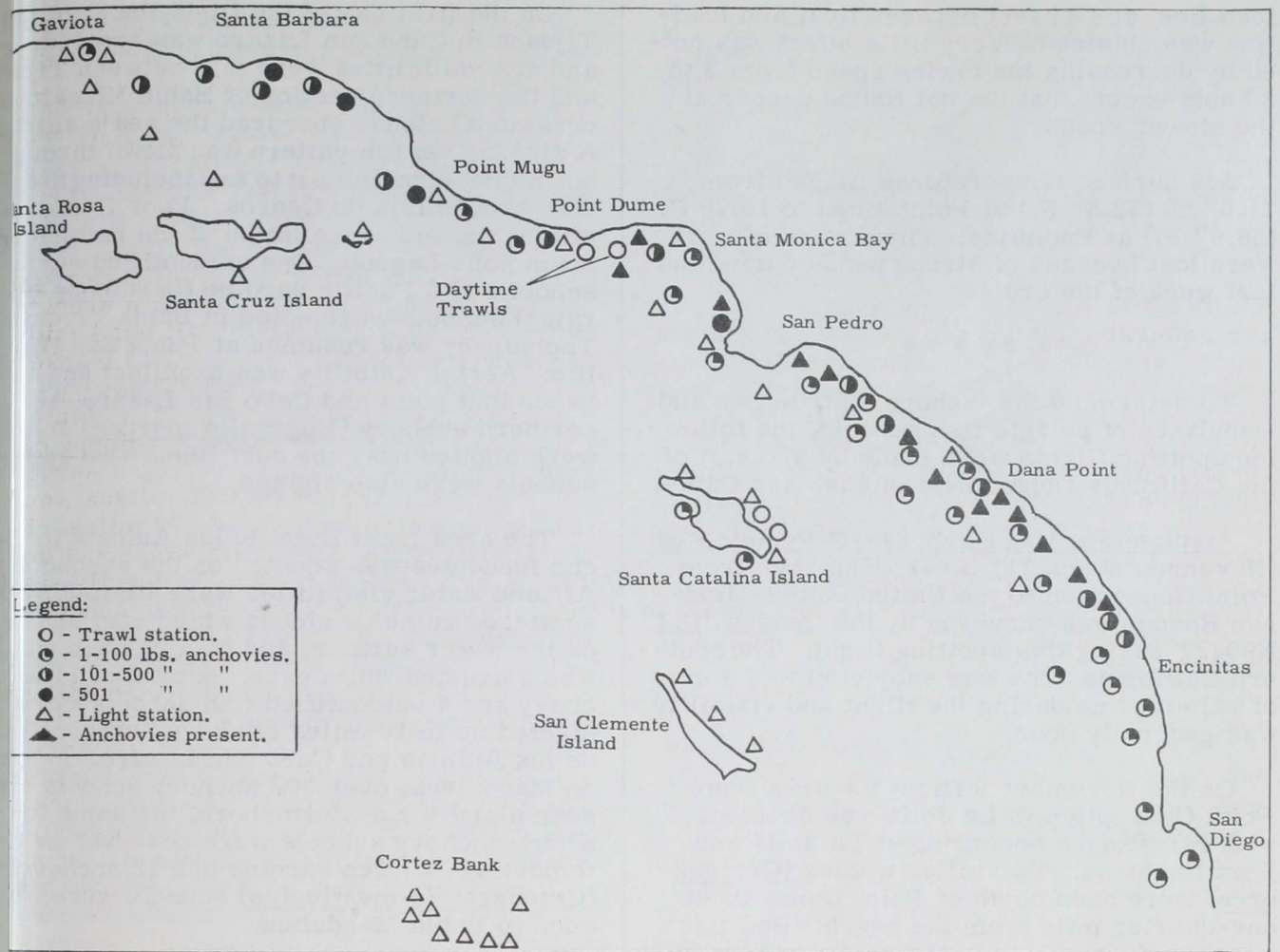
M/V "Alaska" Cruise 64-A8-Pelagic Fish (October 26-November 16, 1964): The purpose of this cruise by the California Department of Fish and Game research vessel Alaska in the coastal waters, islands, and banks of southern California from Gaviota to Cortez Bay was to: (1) survey the pelagic species to determine population densities and to ascertain age and size compositions; (2) assess sardine spawning success for the year 1964; and (3) make underwater measurements and observations of the midwater trawl using different nets, doors, and towing speeds.

The area covered was surveyed by occupying selected midwater trawl and blanket-net-nightlight stations. Both types of stations were occupied in the same general localities whenever practical. Almost all work was conducted at night. A total of 47 blanket-net and 46 midwater-trawl stations were occupied.

Northern anchovies (Engraulis mordax) as usual were by far the dominant species caught. They were taken in all but 4 midwater trawls and were present on 13 blanket-net stations. Jack mackerel (Trachurus symmetricus) were caught in 11 midwater trawls and Pacific sardines (Sardinops caeruleus) in 4. The blanketnet took 1 sardine and 3 jack mackerel samples. Visual scouting between stations totaled 373 miles. Bonito (Sarda chiliensis) surface schools consisting of 3 to 12 fish were frequently sighted north of San Pedro; no other fish schools were seen.

NORTHERN ANCHOVIES: Anchovies were distributed along the entire coastline from San Diego to Gaviota. All midwater trawls made after dark in that area were successful. The heaviest concentrations of fish were located from Santa Monica Bay northward, where substantial catches and dense echosounder traces were made. The best catches were made in water 10 to 35 fathoms deep and over submarine canyons near shore. The offshore islands and banks yielded only 1 anchovy in each of 2 catches. Small fish ranging in size from 60- to 110-millimeters (2.4 to 4.3 inches) body length were present close inshore south of Santa Monica Bay. A few samples of larger fish were caught farther offshore. From Santa Monica Bay northward a high percentage of the fish were over 125 millimeters (4.9 inches) long. The scattered schooling behavior observed on previous cruises was prevalent. No dense schools were seen visually, and no compact traces appeared on the echo-sounder.

During daylight hours, anchovy traces appeared as a thin fuzzy border along the bottom. As darkness approached they rose to form a bank 20 to 50 feet thick, in a depth range of 20 to 120 feet below the surface. The darker the night, the closer the fish approached the surface. Behavior beneath the nightlight in deep water was observed on the echo-sounder. The fish would remain 150 to 200 feet deep with the light at full brightness. When the light was dimmed to almost



Alaska Cruise 64-A8-Pelagic Fish (October 26-November 16-1964).

complete extinction the anchovies would rise to the surface briefly and then descend 50 to 100 feet.

Southern California waters appeared to have a considerably larger anchovy population in 1964 than Baja California, Mexico. The quantity of fish per tow was much higher than on any of the surveys made in Mexico and no-sounder traces were heavier and more extensive.

JACK MACKEREL: Catches of jack mackerel were small, usually consisting of a few juvenile specimens mixed with larger amounts of other species. Midwater trawling took 11 samples and the blanketnet 3. Nightlight stations on Cortez Bank failed to attract fish on the same night that over 300 tons were caught by the commercial fishing fleet. The fish were concentrated in a small area and could be seen only by aerial fish spotters.

PACIFIC SARDINES: Sardines were taken in 4 midwater trawls and on 1 nightlight station. All were large adults and were caught in minor quantities from San Pedro to San Diego. The 1964 sardine year-class appeared to be totally lacking in southern California.

OTHER SPECIES: No Pacific mackerel (*Scomber diego*) were caught or seen. Juvenile Pacific hake (*Merluccius productus*) ranging in length from 93 to 157 millimeters (3.7 to 6.2 inches) were caught mixed with anchovies south of San Pedro. They were taken in 6 midwater trawls in numbers ranging up to 440 fish. Extensive heavy concentrations of salps in offshore and island waters curtailed trawling because of severe net clogging.

Underwater measurements of the trawl mouth showed that the best net opening and shape was attained by using 4 hydrofoil doors and the standard net. An optimum opening 40 feet across the float line, 30 feet across the

lead line, and 43 feet between float and lead-line was obtained. Very little effect was noted by decreasing the towing speed from 3 to 2 knots except that the net fished deeper at the slower speed.

Sea surface temperatures ranged from 11.6° C. (52.8° F.) at Point Mugu to 18.7° C. (65.6° F.) at Encinitas. Three days of work were lost because of strong winds during the last week of the cruise.

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To determine the inshore distribution and abundance of pelagic fish schools, the following spotting flights were made by aircraft of the California Department of Fish and Game:

Airplane Spotting Flight 64-16-Pelagic Fish (November 9 and 11, 1964): The area from Point Conception to the United States-Mexican Border was surveyed by the Cessna "182" N9042T during this spotting flight. The southern California area was subjected to a series of rain storms during the flight and visibility was generally poor.

On the November 9 flight the area from Point Conception to La Jolla was scouted, with rainstorms occurring at La Jolla and Port Hueneme. Two killer whales (Orcinus orca) were seen north of Point Dume about one-quarter mile from the beach. Red tide was in evidence only in the southern part of Santa Monica Bay.

Weather conditions were very poor north of Santa Barbara during the November 11 flight when the area from Santa Barbara to the United States-Mexican Border was scouted. Two small fish schools were seen. The school seen at Newport Beach was not identified. The other was a school of Pacific bonito (Sarda chiliensis) in Santa Monica Bay. Red tide was noticed at La Jolla, Newport Beach, and Santa Monica Bay.

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Airplane Spotting Flight 64-17-Pelagic Fish (November 18-20, 1964): The area from Tijuana to Rancho Inocentes and La Paz to San Felipe, Baja California, was surveyed by the Beechcraft N5614D during this spotting flight. It was the last of four (quarterly) experimental survey flights along the coast of Baja California on the distribution and abundance of pelagic fish schools in that area.

On the first day of the flight the area from Tijuana to Cabo San Lazaro was scouted. Air and sea visibilities were fair between Tijuana and the northern section of Bahia Vizcaino but occasional clouds obscured the sea's surface. A zig-zag search pattern was flown throughout Bahia Vizcaino out to and including the waters around Isla de Cedros. Poor flying conditions caused cancellation of the pattern near Scammons Lagoon. One unidentified surface school and 6 Pacific sardine (Sardinops caeruleus) schools were noted in Bahia Vizcaino. The survey was resumed at Punta San Hipolito. Aerial visibility was excellent and between that point and Cabo San Lazaro, 101 northern anchovy (Engraulis mordax) schools were sighted near the surf line. Two sardine schools were also sighted.

The area from Boca de las Animas to Rancho Inocentes was scouted on the second day. Air and water visibilities were limited by scattered cumulus clouds which cast shadows on the water surface, and by a surface wind which created white caps. A total of 11 anchovy and 6 unidentified fish schools were sighted up to 10 miles offshore between Boca de las Animas and Cabo San Lazaro. In Bahia de Magdalena, over 300 anchovy schools were seen along the eastern shore, the same area where anchovy schools were observed in September 1964. Ten sardine and 12 anchoveta (Cetengraulis mysticetus) schools were also seen in Bahia Magdalena.

On the last day of scouting the entire gulf side of the peninsula was surveyed for the first time during this series of spotting flights. Water visibility was poor due to a steady north wind throughout the area surveyed, although 6 unidentified schools were seen close to shore in calm bays.

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Airplane Spotting Flight 64-18-Pelagic Fish (December 14 and 17, 1964): The area from Santa Monica to Santa Cruz Point was surveyed by the Cessna "182" N9042T during the December 14 flight. Visibility was excellent throughout the area flown. The ocean's surface was quite calm, especially north of Point Conception. A large northern anchovy (Engraulis mordax) school group was seen near the surf line at Santa Monica. Anchovy schools were also seen at Malibu, Port Hueneme, Es-tero Point, and Piedras Blancas. Four Pacific bonito (Sarda chiliensis) schools were

otted near Point Conception. Red tide was
red from Port Hueneme to Santa Barbara.

The area from Jalama Park to the United
States-Mexican Border was surveyed on De-
cember 17. Visibility was quite good. Two
identified fish schools were seen near San
Cofre and several small school groups of
chovies were again found in the Santa Mon-
ta and Port Hueneme areas.

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SURVEY OF CRAB AND SHRIMP RESOURCES IN COASTAL WATERS CONTINUED:

M/V "N. B. Scofield" Cruise 64-S-7-Crab
and Shrimp (November 4-25, 1964): The ob-
jectives of this cruise by the California De-
partment of Fish and Game research vessel
N.B. Scofield in coastal waters from Avila to
Crescent City were to: (1) determine pre-
season abundance and condition of legal and
sublegal crab (*Cancer magister*) in the Eureka-
Crescent City area for prediction of the
1964-65 season; (2) collect gravid shrimp
(*Penaeus jordani*) from beds off Avila, Bode-
ga Bay, Fort Bragg, and Redding Rock for
fecundity studies; (3) collect hake (*Merluccius*
productus) and arrowtooth halibut (*Atheresthes*
stomias) stomachs for juvenile shrimp abun-
dance studies; and (4) tag sublegal male crab
for growth studies.

During the cruise, 10 commercial crab
traps were fished overnight at 35 randomly
selected stations, 10 traps were fished 5 days
and nights at 5 random stations, and 9 traps
were fished overnight at one random station
in productive crab areas between Crescent
City and the mouth of the Eel River, Calif.
Carcass widths of crab were recorded for the
entire catch taken on the cruise and shell con-
dition determinations were made for all male
crab.

A total of 12 shrimp net tows lasting 10
minutes each was made off Eureka, Fort Bragg,
Bodega Bay, and Avila to catch gravid female
shrimp.

Poor weather did not permit completion of
the random stations chosen and prevented re-
trieval of the first set for 5 days. The catch-
per-unit-of-effort for those 50 traps was cor-
rected to one day's catch. No traps were lost.
A total of 7,019 crabs was caught in the 409
trap sets. The catch consisted of 4,735 legal
crabs (7 inches or over in breadth), 2,250

sublegal males, and 33 females. The aver-
age catch-per-trap of legal males was 11.6
and for sublegal males 5.5. The average was
7.7 legal males per trap at 25 stations between
Crescent City and Patrick's Point, and 17.6
legal males per trap at 16 stations between
Trinidad and the mouth of the Eel River. The
highest station catch was recorded southwest
of Trinidad Head where 27.0 legal males per
trap were caught.

The legal crab caught were in good condi-
tion between Crescent City and Patrick's
Point where only 2.6 percent were soft. An
average of 9.6 percent of the legal crab in
the area from Trinidad to the mouth of the
Eel River were soft.

Based on the survey made so far in 1964
and the 1963 total catch and preseason sur-
vey, the total catch for northern California
should range between 3.7 and 5.8 million
pounds.

A total of 34.0 percent and 1.1 percent of
the sublegal and legal males, respectively,
had mating marks. Only 45.5 percent of the
females were gravid. Sublegal males tagged
and released off Humboldt Bay totaled 299.
The crab were tagged with a suture tag de-
signed to be retained when molting occurs.
The tagging is part of a study of growth rates
for male crab from 100-millimeter (3.9 inch-
es) shoulder width to legal size. Nine sub-
legal males with experimental suture tags
were placed in a local commercial aquarium
for observation.

Two shrimp tows each in Areas A (Eureka)
and B-1 (Fort Bragg) yielded 500 egg-bearing
females. Another 150 gravid female shrimp
were taken in Area B-2 (Bodega Bay) in 4
tows. The shrimp were not plentiful in that
area but some females had spawned. The 4
tows in Area C (Avila) did not yield adult
shrimp in good quantity in all areas.

Hake and arrowtooth halibut stomachs
from 120 fish were collected for studies of
the abundance of juvenile shrimp in the food
of those species.

In cooperation with the International Shark
Tagging Program, 7 dogfish (*Squalus acan-*
thius) and 3 brown smoothhound (*Rhinotria-*
cis henlei) were tagged and released.

Note: See Commercial Fisheries Review, March 1965 p. 23.

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SAN FRANCISCO BAY INVESTIGATIONS CONTINUED:

M/V "Nautilus" Cruises 64-3f-g-h-i-j S. F. Bay Study (August 12-16, September 8-11, 14-15, October 8-9, 13-16, November 5-6, 9-13, December 8-11, 14-15, 1964): Studies in San Francisco Bay were resumed with these cruises by the research vessel *Nautilus* of the California Department of Fish and Game. Objectives were to: (1) collect fish species and invertebrates routinely at six stations, (2) determine distribution and relative abundance under prevailing environmental conditions, (3) define ecological zones of the Bay, and (4) determine the food organisms of the principal species and their availability.

The six stations worked in the Bay study area had an average depth ranging from 15 to 50 feet.

During the cruise a square-mouthed mid-water trawl 25 feet on a side was towed for 20 minutes at the surface. Each station was also sampled by a 20-minute bottom tow with a 15-foot otter trawl having 1-inch mesh. Plankton tows of 20 minutes were also made at each station with a one-half meter net having 32 meshes per inch.

A total of 64 different fish species have been taken since the study began in February 1963, 20 of them from south of Dumbarton Bridge.

Four days of this cruise were spent assisting the regional Water Pollution Control Board and cooperating agencies in sampling the Bay waters south of Dumbarton Bridge. Two days were used collecting bottom samples from the same area for a wild fowl food study being made by the Department of Fish and Game. Information and material was collected for a study being made at the University of California on the papillomas which appear on English sole that inhabit sewage contaminated areas.

Water temperatures during this cruise were neither as high nor as low as in 1963 but remained in the range of 11° to 20° C. (51.8° to 68.0° F.). The range in 1963 was 9° to 21° C. (48.2° to 69.8° F.). Salinity was much more stable than in 1963.

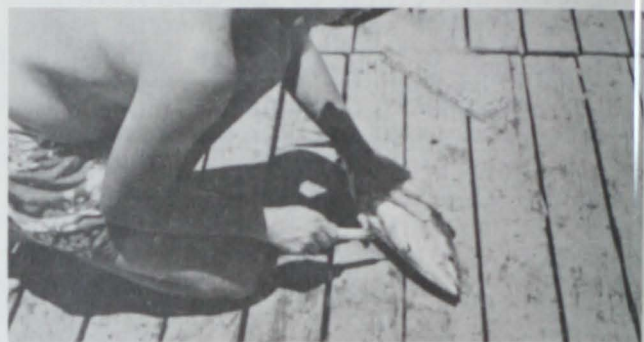
Note: See *Commercial Fisheries Review*, November 1964 p. 21.



Central Pacific Fisheries Investigations

ADVANCES MADE IN TUNA BLOOD GROUP STUDIES:

Long-term basic studies of blood groups in tuna have been made for several years by the Subpopulations Program of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii. The aim of the studies is to facilitate identification of isolated breeding subpopulations of tunas through the use of blood groups, which serve as genetic markers that are not affected by environment. Provided with such a tool, fishery research biologists will be able to make much more precise analyses of local fishery management problems and worldwide fishery resources as well.



Taking a blood sample from a skipjack tuna.

Two recent technological advances have made possible striking advances in the field of blood group research and its application to the identification of subpopulations. The first breakthrough came with the development of improved techniques for preserving tuna bloods for extended periods by freezing them in a glycerol solution. Those techniques now make it possible not only for the Bureau's Laboratory to preserve specimens over long periods, for use in standardization of reagent, but also presents the possibility of establishing a blood bank of particular blood types for each species of tuna. From such a bank, samples can be sent to other researchers in this field for use in comparison and standardization.

The second major advance has been the recognition of a new blood group system in skipjack tuna. This new system has been temporarily named the YS blood group system and consists of three blood groups -- Y, YS, and S -- which are detected by the interaction of two reagents, anti-Y and anti-S. The reactions that distinguish those blood groups are shown in the table. The plus sign (+) in

YS Blood Group System

Blood types	Reagents	
	Anti-Y	Anti-S
Y	+	-
YS	+	+
S	-	+

dates the presence of a particular blood factor, and the minus sign (-) indicates its absence.

The significant feature of the new blood group system is that the genetic relationships responsible for those blood types can be established directly from the Hardy-Weinberg formula. This fact also makes it possible to perform statistical analysis of skipjack population samples and determine whether these samples were taken from a pure isolated breeding population or from a mixed group.

With the use of the two new discoveries a vigorous pursuit of the present basic program, it is hoped that in the near future knowledge of the population structure of all tuna in the Pacific area will be greatly increased. Such information concerning the skipjack would be most significant, since at present the potential of that tuna species is not fully realized.

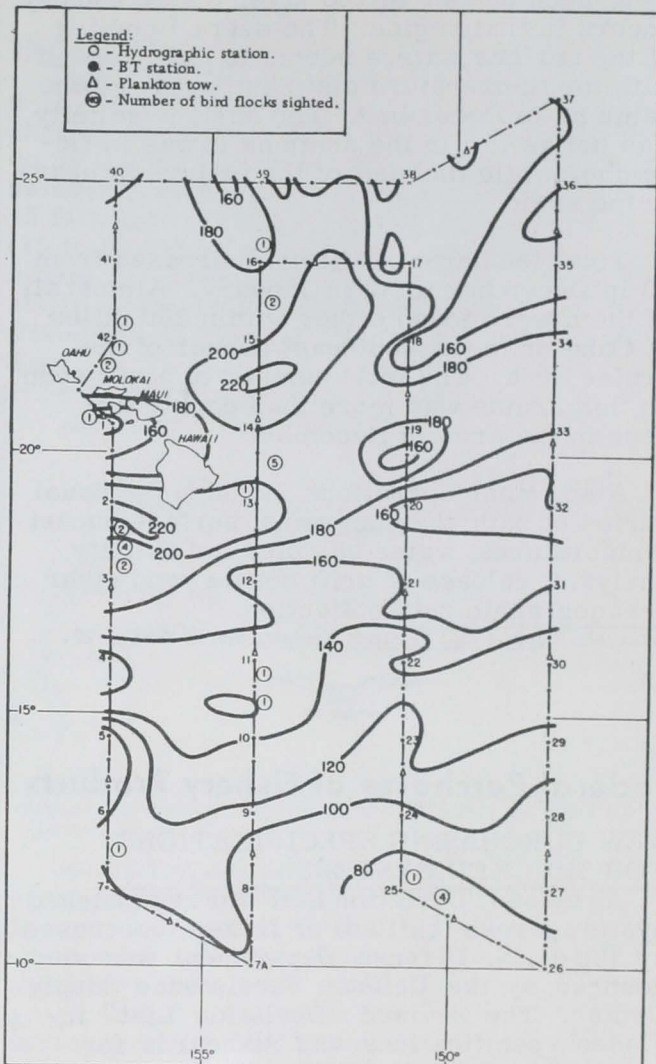
See Commercial Fisheries Review, November 1964 p. 26.

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**TRADE WIND ZONE
OCEANOGRAPHIC STUDIES CONTINUED:**

M/V "Townsend Cromwell Cruise 12 (January 5-24, 1965): This was the eleventh in a series of oceanographic cruises by the research vessel Townsend Cromwell to collect data on rates of change in the distribution of properties in the trade wind zone of the central North Pacific Ocean. The research vessel is operated by the Biological Laboratory of the U. S. Bureau of Commercial Fisheries, Honolulu, Hawaii, which on this cruise operated and collected data in an area of the central North Pacific bounded by latitudes 10° N. and 25° N. and longitudes 148° W., 158° W.

A total of 43 oceanographic stations was occupied along the cruise track. At each station, temperatures and samples for salinity analysis were obtained at 20 depths to 1,500 meters (4,921 feet). Deep casts to 4,000 meters (13,123 feet) were taken at stations 13, 18, and a cast to 3,000 meters (9,842 feet) was taken at station 21.



Track chart of M/V Townsend Cromwell Cruise 12 (January 5-24, 1965) showing depth contours of the 20° C. isotherm depth in meters.

Oceanographic conditions in January 1965 appeared to be nearly the same as for December, although some changes had occurred. Over the entire cruise area, the depth of the 20° isotherm was nearly 20 meters (66 feet) greater than in the previous month of December. It was even greater in the southern portion which indicates further relaxation of the westerly flow. The flow pattern, however, was nearly the same as in December. In the north, there was a new set of well-formed eddies, with maximum depths of the 20° isotherm greater than appeared in December. The distribution of those eddies was different than seen before with one exception. The clockwise eddy centered near 18° N. and 157° W., which first appeared in October 1964, has remained and now covers a larger area. This is reflected in the temperature section

by a much deeper mixed layer than normally occurs in that region. The overall cooling of the surface waters seems to have ceased with the temperature distribution nearly the same as in December. The surface salinity was not as low in the south as it was in December while the rest of the pattern is nearly the same.

Total feeding-bird flocks increased from 20 in December to 30 in January. Almost all of them were found either within 200 miles of Oahu or in the southeast corner of the cruise area. The total number of birds seen on this cruise was more than double that seen in the area in December.

Also, other operations included the usual series of bathythermograms, surface bucket temperatures, water samples for salinity analysis, release of drift bottles, and other oceanographic data collection.

Note: See Commercial Fisheries Review, March 1965 p. 27.



Federal Purchases of Fishery Products

NEW PURCHASING SPECIFICATIONS FOR SHUCKED OYSTERS:

A revised "Deviation List" for raw shucked oysters, fresh (chilled) or frozen, purchased by the U. S. Defense Department was announced by the Defense Subsistence Supply Center. The revised "Deviation List" includes specifications and standards for shucked oysters. It will be effective with purchase contracts awarded on and after March 1, 1965.



Florida

NEW MARINE LABORATORY FOR UNIVERSITY OF MIAMI:

Construction has begun on a new million-dollar laboratory building at the Institute of Marine Science, University of Miami. Construction costs in the amount of \$1,040,000 will be paid by the National Science Foundation. The new building will house the Institute's Division of Physical Sciences, which investigates ocean currents, waves, tides, the sea floor and underlying layers, and other factors in the marine world. Such research includes studies of underwater sound and

light, the chemistry of sea water and deep-sea sediments, and the distribution of radioactive elements in sea water. With the construction of the new building, to be completed by early fall of 1965, many of the activities of those various research programs will be concentrated in a single location.

The new 3-story laboratory building will have more than 40,000 square feet of working space. The ground floor will contain model basins and pressure tanks and will include space for a rotating tank and a soundproof chamber. The tanks will simulate certain conditions of the open sea for experimental purposes. Second and third floors will house offices and laboratories, as well as classrooms, a computer room, chartroom, draft-room, and a communications center for maintaining radio contact with the Institute's fleet of vessels. The Institute owns and maintains more than 20 research vessels and small craft, including two ocean-going vessels, Pillsbury and Gerda, which frequently range thousands of miles from their home port, working in both eastern and western Atlantic waters.

Established in 1943, the Institute of Marine Science now occupies a 5½-acre tract on Virginia Key near Miami, Fla., and employs more than 300 scientists, technicians, and administrative employees. Next fall the entire Virginia Key campus will be officially dedicated, with ceremonies featuring educators, oceanographers, and government leaders from all over the world. (University of Miami, January 27, 1965.)



Frozen Food

PACKERS CONVENTION HELD IN SAN FRANCISCO:

The 24th Annual Convention of the National Association of Frozen Food Packers was held in San Francisco, Calif., February 28 to March 3, 1965. All sections of the frozen food industry were represented at the convention including brokers, distributors, retailers, warehousemen, transportation people from both the rail and trucking industries, suppliers, and packers.

The theme was "Zero-in on Tomorrow." The program of the convention emphasized specific ways to increase sales in both the retail and institutional markets.

Time magazine sponsored one of the general sessions at the convention. Representatives from Time conducted the audience through a unique slide show to demonstrate ten distinct types of consumer markets for frozen foods. The presentation included an up-to-the-minute look at what consumers are buying, based on a survey made in 1965 just before the convention. Other general sessions heard retail and institutional specialists discuss ways of improving sales.

Technical sessions of the convention included discussions of new research developments such as: (1) freeze-drying and (2) liquid nitrogen processing for frozen foods. Technical sessions also brought together transportation executives and frozen food packers to discuss current problems and future needs for transportation of frozen foods.

An interesting feature of the convention was a display of the latest in equipment, services, and supplies available to frozen food packers. Leading United States manufacturers displayed their products at the exposition.



Great Lakes

MON STOCKING WORK CONTINUES:

Another 500,000 fertilized silver or coho salmon eggs were flown to Michigan in February 1965, stepping up the Michigan conservation Department's opening efforts to add western species to the Great Lakes. The February shipment of eggs was donated by the State of Washington. It matches a January 1965 shipment of 500,000 coho eggs from Oregon.

Survivors from the total batch of 1 million salmon eggs will be released next fall or in the spring of 1966 as "seed" stock in northwestern tributaries of the Great Lakes where chances of spawning are expected to be good.

Other introductory plantings are scheduled for each of the following 2 years in hopes that the hard-fighting game fish will take hold and develop spawning runs from which Michigan can get its own source of coho eggs for future releases. (Michigan Department of Conservation, February 4, 1965.)

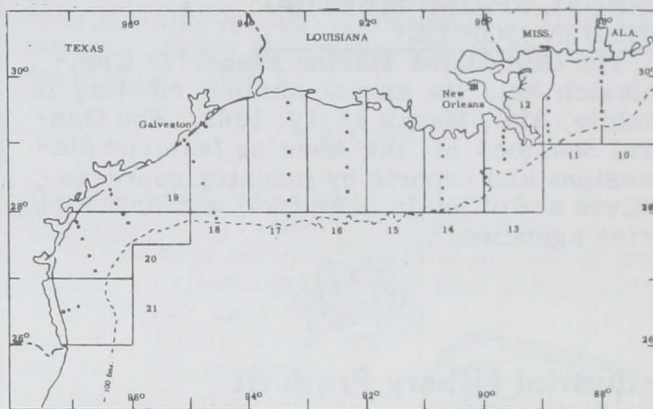
See Commercial Fisheries Review, March 1965 p. 33.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-25 (January 6-18, 1965): Trawling operations during this shrimp sampling cruise in the Gulf of Mexico by the chartered research vessel Gus III sampled only the white shrimp fishery (4 to 15 fathoms) and the brown shrimp fishery (15 to 25 fathoms). This cruise was one of a series in a continuing shrimp distribution study by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Galveston, Tex.



Station pattern for shrimp distribution studies by M/V Gus III, Cruise GUS-25.

Six statistical areas off the Louisiana coast to Texas were covered and standard 3-hour tows with a 45-foot Gulf shrimp trawl were made. A total of 18 flat-trawl and 90 plankton tows were made, 62 bathythermograph and 167 water (Nansen bottle) samples taken, and 167 drift bottles were cast at 27 stations.

Fair catches of small brown shrimp (41-50 count) were made in the 10-20 fathom depth range of area 18. The over 20-fathom depth in area 20 yielded 19 pounds of 21-25 count brown shrimp, and 7 pounds were taken from the 10-20 fathom depth of the same area. The largest white shrimp catch of the cruise (30 pounds of 51-67 count) was from the tow in the up to 10-fathom depth of the same area.

Area 13 yielded 47 pounds of small white shrimp counting from 51 to 68 shrimp to the pound--22 pounds from the up to 10-fathom depth and 27 pounds from the 10-20 fathom depth range. A total of 9,000 white shrimp (51-67 count) was caught in areas 13 and 20.

The up to 10-fathom depth of areas 17, 18, and 19 yielded only fair catches of small

white shrimp ranging from 8 to 9 pounds per tow.

- Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.
(2) See Commercial Fisheries Review, March 1965 p. 35.



Gulf States Marine Fisheries Commission

ANNUAL SPRING MEETING HELD IN MOBILE:

The Gulf States Marine Fisheries Commission held its annual shrimp meeting in Mobile, Ala., March 18-19, 1965. The General Sessions of the Meeting featured discussions and reports by industry representatives and officials of Federal and State Fisheries agencies.



Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, 1963-64: Based on domestic production and imports, the United States available supply of fish meal for 1964 amounted to 648,079 short tons--15,851

Item	1/1964	1963
	... (Short Tons) ...	
Fish Meal and Scrap:		
Domestic production:		
Menhaden	151,991	184,205
Tuna and mackerel	26,324	26,957
Herring, Alaska	9,372	7,537
Other	21,279	37,208
Total production	208,966	255,907
Imports:		
Canada	54,739	50,985
Peru	348,025	285,414
Chile	12,942	23,567
Norway	-	1,819
So. Africa Republic	18,581	12,296
Other countries	4,826	2,240
Total imports	439,113	376,321
Available fish meal supply	648,079	632,228
Fish Solubles:		
Domestic production 2/		
	82,934	3/107,402
Imports:		
Canada	1,553	2,233
Iceland	-	160
So. Africa Republic	987	511
Other countries	1,965	4,208
Total imports	4,505	7,112
Available fish solubles supply	87,439	114,514

1/Preliminary.

2/50-percent solids.

3/Includes production of homogenized condensed fish.

tons (or 2.5 percent) more than during 1963. Domestic production was 46,941 tons (or 18.3 percent) less, but imports were 62,792 tons (or 16.7 percent) higher than in 1963. Peru continued to lead other countries with shipments of 348,025 tons.

The United States supply of fish solubles during 1964 amounted to 87,439 tons--a decrease of 23.6 percent as compared with 1963. Domestic production dropped 22.8 percent and imports of fish solubles decreased 36.7 percent.

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

Production, December 1964: During December 1964, a total of about 5.8 million pounds of marine animal oils and 7,287 tons of fish meal was produced in the United States. Compared with December 1963 this was a decrease of 609,000 pounds of marine-animal oils and 2,668 tons of fish meal and scrap. Fish solubles production amounted to 2,595 tons--a decrease of 931 tons as compared with December 1963.

Menhaden oil production amounted to 5.3 million pounds--a decrease of 49,000 pounds. Menhaden fish meal and scrap production in December 1964 amounted to 4,957 tons--a decrease of 1,290 tons as compared with the same month of 1963.

Product	Dec.		Nov.		Jan.-Dec.	
	1/1964	1963	1/1964	1963	1/1964	1963
 (Short Tons)					
Fish Meal and Scrap:						
Herring	2/	29	295	16	9,372	7,537
Menhaden 3/	4,057	6,247	5,387	8,778	151,991	184,205
Tuna and mackerel	1,687	3,143	2,026	3,745	26,324	26,957
Unclassified	643	536	1,214	777	21,279	37,208
Total	7,287	9,955	8,922	13,316	208,966	241,114
Shellfish, marine-animal meal and scrap						
	4/	4/	4/	4/	4/	14,793
Grand total meal and scrap	4/	4/	4/	4/	4/	255,907
Fish Solubles:						
Menhaden	1,692	2,223	1,838	3,324	64,307	74,831
Other	903	1,303	1,013	1,562	18,627	25,347
Total	2,595	3,526	2,851	4,886	82,934	100,178
Homogenized condensed fish						
	-	-	-	-	-	7,224
 (1,000 Pounds)					
Oil body:						
Herring	2/	294	-	279	9,986	5,709
Menhaden	5,293	5,342	6,077	9,195	148,813	167,835
Tuna and mackerel	240	523	490	439	5,642	5,903
Other (including whale)	252	235	211	176	6,207	6,580
Total oil	5,785	6,394	6,778	10,089	170,648	185,827

1/Preliminary data.

2/Included in "unclassified."

3/Includes a small quantity of thread herring.

4/Not available on a monthly basis.

Production by Areas, January 1965: Preliminary data on U. S. production of fish meal,

and solubles for January 1965 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.

	Meal	Oil	Solubles
	Short Tons	1,000 Pounds	Short Tons
January 1965:			
Gulf Coasts	725	313	63
West Coast 2/	1,680	223	1,051
Total	2,405	536	1,114
January 1964 Total	1,895	709	1,290

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

Major Indicators for U. S. Supply, December 1964: United States production of fish meal in December 1964 was lower by 26.8 percent as compared with December 1963. Production of fish oil was down by 9.5 percent and production of fish solubles decreased 26.4 percent.

Brand Period	1/1964	1963	1962	1961	1960
	(Short Tons)				
Fish Meal:					
Production:					
December 2/	7,287	9,955	2,683	12,763	9,178
Year 3/	208,966	255,907	312,259	311,265	290,137
Exports:					
December	37,793	29,729	18,977	23,268	15,564
Year	439,113	376,321	252,307	217,845	131,561
Solubles:					
Production: 4/					
December 2/	2,595	3,526	1,838	4,936	2,897
Year 3/	82,934	107,402	124,649	112,254	98,929
Exports:					
December	277	3,160	387	472	60
Year	4,505	7,112	6,308	6,739	3,174
	(1,000 Lbs.)				
Oils:					
Production:					
December 2/	5,785	6,394	690	11,191	7,737
Year	107,648	185,822	250,075	258,118	209,143
Exports:					
December	11,120	33,262	172	10,484	15,807
Year	151,469	262,342	123,050	122,486	143,659

1. Preliminary.
2. 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. All amounts (10,000 to 25,000 pounds) of shellfish and marine animal meal and soap not reported monthly are included in annual totals.
4. Includes homogenized fish prior to 1964--none produced in 1964.



Inventions

FISHERMAN'S PORTABLE LIGHT PATENTED:

The inventor of a portable lantern for fishermen claims it can be carried on a shoulder harness without hampering normal movements. The lantern can be positioned so that the wearer avoids direct glare from the light. It is said to be of lightweight construction, easy to put on and fasten securely, and also easy to remove. (U. S. Patent No. 3,106,350 issued Charles F. Wiltse, 325 N. Center St., Sebawaing, Mich.)



MARINE PROPELLER WITH PROTECTIVE CASING PATENTED:

A recently patented marine propeller includes a cylindrical shroud-like casing which is welded or cast integral with the 2- or 3-blade propeller. The inventor claims the device protects the blades from impact with submerged objects. The inventor also says that the shroud, which tapers rearward, increases water flow past the propeller and eliminates cavitation. (U. S. Patent No. 3,148,736 issued Joseph Skopyk, 3911 Bloor Street West, Islington, Toronto, Canada.)



Maine Sardines

CANNED STOCKS, JANUARY 1, 1965:

Canners' stocks of Maine sardines on January 1, 1965, were down sharply from those of the same date in 1964 and 1963, but 394,000 cases above stocks on hand 3 years ago on January 1, 1962 (the pack for the 1961 season was exceptionally small).

Carryover stocks at the canners' level amounted to about 622,000 cases on April 15, 1964, which is the traditional opening date of the Maine sardine packing season. Carryover stocks amounted to 660,000 cases on April 15, 1963, but only 33,000 cases on April 15, 1962, following the short-pack year.

Canned Maine Sardines--Wholesale Distributors' and Cannery Stocks, January 1, 1965, with Comparisons 1/

Type	Unit	1964/65 season		1963/64 Season					1962/63 Season				
		1/1/65	11/1/64	7/1/64	6/1/64	4/1/64	1/1/64	11/1/63	7/1/63	6/1/63	4/1/63	1/1/63	11/1/62
Distributors	1,000 actual cases	238	291	234	254	291	261	308	217	215	264	271	230
Cannery	1,000 std. cases 2/	538	629	514	499	658	1,063	1,255	643	536	699	1,092	1,348

1/ Table represents marketing season from November 1–October 31.
 2/ 100 3 3/4 -oz. cans equal one standard case.

Note: Beginning with the Canned Food Report of April 1, 1963, U.S. Bureau of the Census estimates of distributors' stocks were based on a revised sample of merchant wholesalers and warehouses of retail multiunit organizations. The revised sample resulted in better coverage. The January 1, 1963, survey was conducted with both samples to provide an approximate measure of the difference in the two samples. That survey showed that the estimate of distributors' stocks of canned Maine sardines from the revised sample was 13 percent above that given by the old sample.

Source: U.S. Bureau of the Census, Canned Food Report, January 1, 1965.

The 1964 Maine sardine pack at the close of the season on December 1, 1964, totaled about 875,000 standard cases, according to the Maine Sardine Council. That was much less than the 1,585,000 cases packed during 1963, but more than the 679,000 cases packed during the regular season in 1961 when fishing was extremely poor.

According to the Maine Sardine Council, neither cannery, fishermen, nor scientists could offer any clear-cut explanation for the scarcity of fish during 1964. The consensus appears to be that it was probably a temporary combination of natural conditions that frequently occur in all populations of marine life. They see no evidence that the condition will continue to exist during the 1965 packing season which starts next spring.

Note: See Commercial Fisheries Review, Feb. 1965 p. 27.



Marketing

EDIBLE FISHERY PRODUCTS, 1964 AND OUTLOOK FOR 1965:

The 1964 United States catch of edible fish and shellfish dropped from the previous year. There were sharp declines in landings of Maine herring, shrimp, ocean perch, tuna, jack mackerel, halibut, whiting, cod, and scallops. Landings were heavier than in 1963 for only a few of the major species. Total supplies in 1964 were up, however, because larger frozen stocks were available as the year began and imports exceeded those of 1963. The rise in supplies of edible fishery products paralleled the rise in population, so per capita consumption in 1964 held about steady at 10.6 pounds. Retail prices for fishery products averaged a little lower in 1964 than the year earlier. But prices of several shellfish and some finfish items strengthened as supplies fell short of market needs toward the end of the year. Prices for shrimp, scal-



The so-called "Old Shed" area of New York City's Fulton Fish Market with East River Drive overpass in foreground.

lops, and spiny lobster tails advanced markedly during the year.

Fishery products supplies are expected to be lighter in early 1965 than in 1964. The supply of shellfish likely will be much below consumer needs. Frozen stocks of edible fish and shellfish held in cold-storage at the beginning of 1965 were down about 13 percent from a year earlier. The 1964 canned pack of fishery products was about the same as in 1963. Distributors are expected to draw heavily on cold-storage holdings and canned inventories until fishery landings increase seasonally starting in the spring.

On the average, prices may edge up and be slightly higher early in 1965 than they were a year earlier. United States imports of edible fish and shellfish will likely continue an upward trend. No change is foreseen in the per capita consumption rate of fishery products in 1965.

Note: This analysis was prepared by the Bureau of Commercial Fisheries, U.S. Department of the Interior, and published in the U.S. Department of Agriculture's February 1965 issue of the "National Food Situation" (NFS-111).



Maryland

STANDARDS FOR OUT-OF-STATE SHELLFISH ARRIVALS:

A Maryland law which became effective on July 1, 1964, prohibits the importation into this State of all food products containing shellfish unless the shellfish is from sources which have been certified by the U. S. Public Health Service for interstate shipment. The law further states that all processors of food products containing imported shellfish must keep on file proof that the shellfish is from sources certified through the U. S. Public Health Service and shall forward to the Maryland State Department of Health such proof, and when it is requested by the Department.

COMMISSION PROPOSED ON INCREASING FISHERIES OUTPUT:

In February 1965, the Maryland State Government was asked to set up a commission to study ways of increasing Maryland's fisheries production, particularly in the Chesapeake Bay area. The commission would be required to submit its findings to the Maryland State Legislature in 1966.

A State Senator supporting the proposed commission said, "We need recommendations on modern methods that can revitalize our seafood output, and it has to be done as quickly as possible. We are losing our oyster market to parts of Florida, Texas, and Louisiana, and even some of our seafood processing plants are closing. Not only must we be brought up to date on latest methods for increasing production, but also on ways to better protect the clean waters and seafood areas we now have."

The Senator said the commission membership should include Maryland watermen, as well as representatives of State agencies responsible for protecting Maryland waters. Other members should include marketing experts and economists, he added.

He pointed out that results of the study would fit into a long-range economic development program for southern Maryland formulated by State legislators from St. Marys, Charles, and Calvert Counties. (Washington Evening Star, February 7, 1965.)

NEW RESEARCH VESSEL FOR UNIVERSITY OF MARYLAND:

The 52-foot research vessel *Orion* was scheduled to sail in February 1965 from a boatyard in New Orleans, La., to the Chesapeake Biological Laboratory of the University of Maryland Natural Resources Institute. The *Orion* replaces the *Cobia*, which was retired in 1964. The steel-hulled, shallow-draft *Orion* is well suited to the choppy and sometimes ice-covered waters of Chesapeake Bay. Special gear on the vessel will enable University of Maryland scientists to trawl for fish and plankton specimens; gather oyster and crab samples; and make bottom and hydrographic surveys. Powered by two 300-horsepower diesel engines, the new vessel is expected to help scientists sample large areas of Chesapeake Bay under fast-changing tide, weather, and biological conditions.



North Atlantic

FOREIGN FISHING ACTIVITIES OFF COAST, FEBRUARY 1965:

In order to observe foreign fishing activities in the North Atlantic, the staff of the Fisheries Resource Management Office, U. S. Bureau of Commercial Fisheries, Gloucester, Mass., has been conducting weekly reconnaissance flights cooperatively with the U. S. Coast Guard.



Fig. 1 - Aerial view of Soviet refrigerated fish transport *Aleksei Venetsianov* with factory stern trawler alongside. South Block Island (Block Canyon), January 1965.

Soviet fishing vessel activity in the North Atlantic increased substantially from January to February 1965. In February a total of

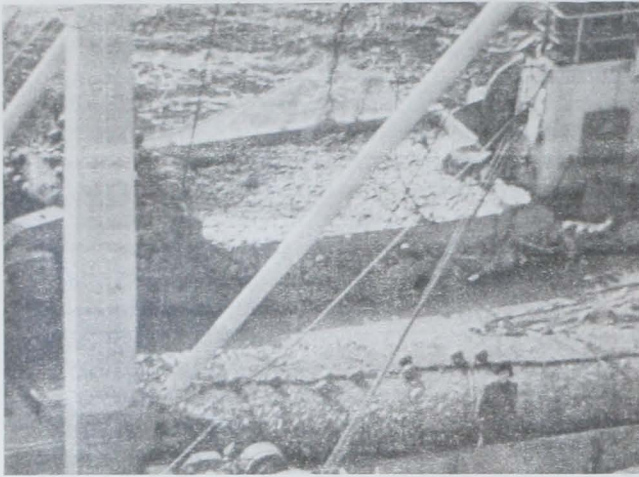


Fig. 2 - Aerial view. Cod end on deck of Soviet factory stern trawler with estimated catch of 40,000 pounds of whiting and red hake. Also note substantial amounts in open storage. South of Nantucket Lightship (Veatch Canyon), January 1965.

42 vessels were sighted and identified as 29 fish-factory stern trawlers, 7 refrigerated side trawlers (Pioneer class), 4 refrigerated and processing transports, 1 fuel and water tanker, and 1 tug. This compares with 26 vessels sighted during January, and with only 10 stern trawlers reported on Georges Bank at the same time a year earlier.



Fig. 3 - Aerial view. Large quantities of red hake awaiting to be processed on board Soviet factory stern trawler. South of Nantucket Lightship (Veatch Canyon), January 1965.

Soviet fishing operations during the month generally ranged from south of Montauk Point (Hudson Canyon) eastward along the 100-fathom curve of the Continental Shelf southeast of the Nantucket lightship (Hydrographer Canyon). Each vessel was actively engaged in fishing and had substantial quantities of fish on deck--predominately whiting and red hake.

Their dehydration plants were continually working, indicating that a portion of their catch was being used for fish meal.

The Soviet's apparent success in this present fishery is demonstrated by the increased number of stern trawlers, and more recently, the addition of large refrigerated side trawlers. The refrigerated side trawlers have never been known to fish areas that far south, and a guess is that their presence was caused by lagging fish production in other areas. The processing and refrigerated transport vessels observed during February were not previously seen and are believed to be new vessels put in operation within the past 12 months.

Fishing vessels operating out of New York City reported seeing Soviet vessels fishing in an area 70 to 80 miles southeast of Cape May, N. J. Indications were that 6 to 8 stern trawlers and several side trawlers were present in that area. Landings by the New York vessels during February were primarily scup. It was assumed the Soviets were also fishing for scup.

Note: See Commercial Fisheries Review, March 1965 p. 43.



North Atlantic Fisheries Explorations and Gear Development

OFF-BOTTOM TRAWLING EXPERIMENTS CONTINUED:

M/V "Delaware" Cruise 64-12 (November 30-December 11, 1964): To catch ocean perch (Sebastes marinus) found small distances above the rough bottom along the Nova Scotia coast from Liverpool east to Halifax was the objective of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The bottom in the area covered, in depths of 80 to 120 fathoms, is relatively rough although it is fished by commercial vessels on a limited scale during certain seasons.

The cruise was made as a continuation of studies initiated in September 1964 (M/V Delaware Cruise 64-8) for testing trawls rigged to fish at closely regulated heights above the bottom. If the slope was steep enough, the footrope of the net made contact with the peak (F) and stayed in contact until the doors again reached level bottom. This situation caused considerable damage to the lightly constructed net. Another factor con-

tribing to the net damage was the use of long ground cables and bridles necessary to allow the net to rise behind the doors. On several occasions the top wings and headrope section of the net were damaged, suggesting that the long bridles and legs are subject to being smacked by obstructions, pulling the headrope down. Erratic height fluctuations of the net are also believed to be caused by this factor.

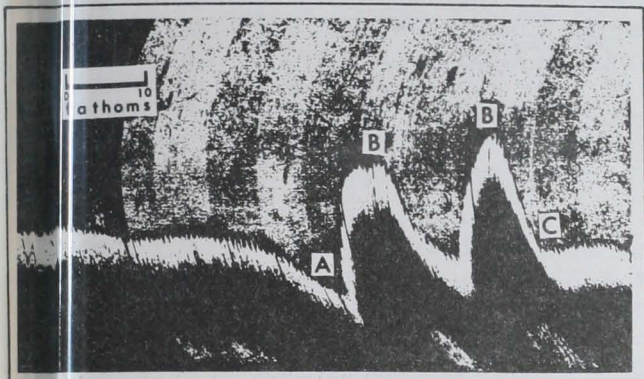


Fig. - Shows bottom profile from vessel's transducer--Net below rough bottom, M/V Delaware Cruise 64-12.

During the second phase of the cruise a roller rigged number 41 manila trawl attached to the doors by 5-fathom legs and 20-fathom ground cables was tested. The doors were the same as used in the first phase (4 ft. x 8 ft., 1,200 lbs.). The headrope was suspended by 8-inch aluminum floats and 6 floats were attached to the gore in the belly sections to keep the after portions clear of the bottom. Dropper chains, 3 fathoms long and weighing 55 pounds each, were fastened to the wing ends (as in the first phase) to help stabilize the net. When rigged, maintained a footrope height off about one-half fathom above the bottom when fished on smooth bottom. But on rough bottom the same problems experienced with the headwater trawl were encountered and the net was damaged frequently.

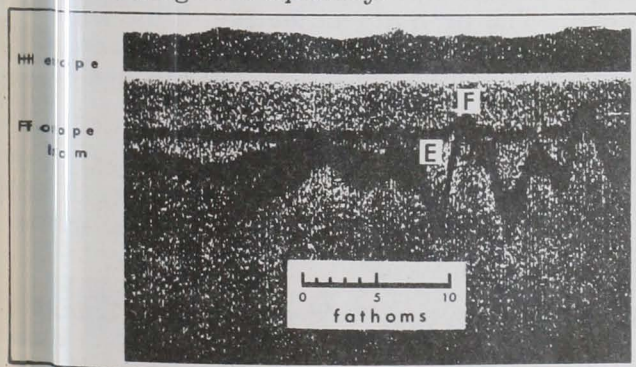
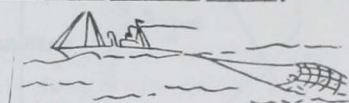


Fig. - Shows footrope and bottom tracing from headrope transducer, M/V Delaware Cruise 64-12.

Only limited quantities of fish were located during the cruise; the best catch made during a 1-hour tow was 2,500 pounds of ocean perch. Although the nets can be rigged to maintain a constant height above smooth bottom and catch fish beyond the reach of nets now commonly used on the East Coast, the feasibility of using these methods to fish regularly untrawlable bottom is questionable in view of the damage sustained during these operations.

Note: See Commercial Fisheries Review, December 1964 p. 50.



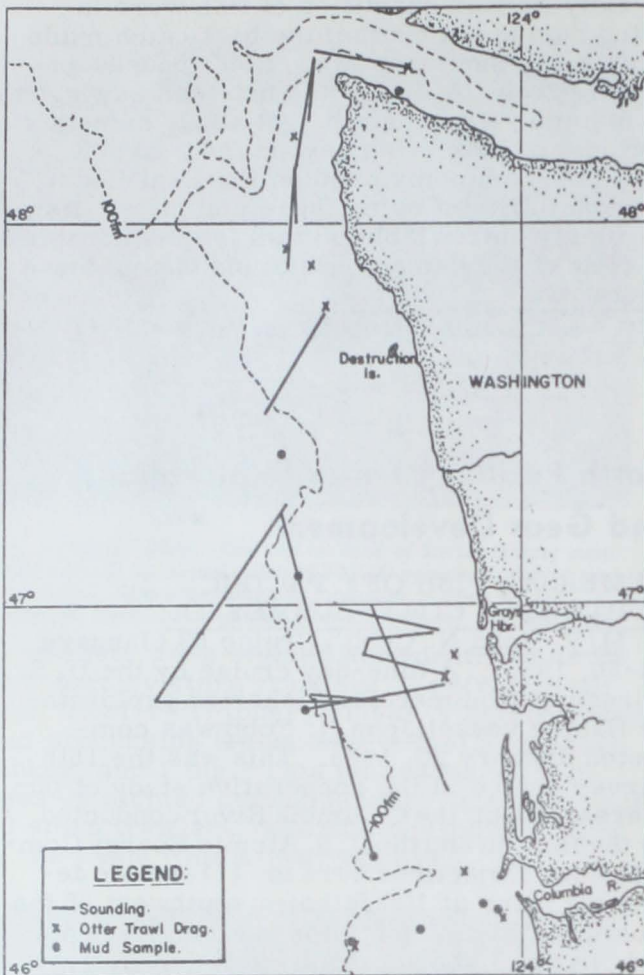
North Pacific Fisheries Explorations and Gear Development

DEMERSAL FISH OFF PACIFIC NORTHWEST COAST SURVEYED:

M/V "John N. Cobb" Cruise 69 (January 12-20, 1965): A nine-day cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb was completed January 20, 1965. This was the 16th survey cruise in the cooperative study of demersal fish off the Columbia River conducted by the Bureau and the U. S. Atomic Energy Commission. Objectives were to: (1) sample demersal fauna at 100 fathoms southwest of the Columbia River mouth for radiological analysis by the Laboratory of Radiation Biology at the University of Washington; (2) run echosounding transects along the Washington coast to detect any hake concentrations and to fish on "strong signs" with a bottom trawl when they occurred near bottom; (3) establish and monitor a series of standard stations off the northern Washington coast; and (4) collect samples of fish, shellfish, and mud for Clostridium botulinum analysis by the Bureau's Technological Laboratory at Seattle, Wash. Unusually good weather throughout the cruise permitted all objectives to be realized.

Since the majority of drags during the cruise were made between 20 and 50 fathoms, the catches were dominated by sand sole (Psettichthys melanostictus), English sole (Parophrys vetulus), sand dab (Citharichthys sordidus), Bellingham sole (Isopsetta isolepis), and skate (Raja binoculata). Five large white sturgeon (Acipenser transmontanus) were caught in 37 to 49 fathoms off the northern Washington coast.

Samples of Dover sole (Microstomus pacificus), rex sole (Glyptocephalus zachirus),



M/V John N. Cobb Cruise 69 (January 12-20, 1965).

sablefish (Anoplopoma fimbria), and 3 different species of rockfish (Sebastes elengatus, flavidus, and pinniger) were collected and frozen for the Laboratory of Radiation Biology. Additional samples of rex sole plus petrale sole (Eopsetta jordani) and Dungeness crab (Cancer magister) were earmarked for botulism studies.

With a six-foot gravity corer and/or a Dietz-LaFond bottom sampler, 11 substrate samples were obtained at depths from 18 to 660 fathoms. Those samples were to be cultured by the Bureau's Seattle Technological Laboratory to determine the presence or absence of Clostridium botulinum.

Hake reconnaissance, using a high-resolution low-frequency echo-sounder, was conducted along 16 transects which varied in length from $2\frac{1}{2}$ to 57 miles. Major emphasis was given to the area off Willapa Bay and Grays Harbor with one transect extending 55 miles off the coast. With the exception of a

few isolated schools of what appeared to be anchovies, and a slight "show" at depths between 25 and 35 fathoms below the surface in 1,060 fathoms of water (55 miles west of Grays Harbor), no recognizable midwater concentrations of fish were encountered.

The John N. Cobb was scheduled to leave Seattle on February 1 for a six-week exploratory hake fishing survey (Cruise No. 70) of Pacific Coast waters from Puget Sound to northern Mexico. In southern California waters, hake explorations will be coordinated with the Bureau's research vessel Black Douglas, and with personnel of the Bureau's Biological Laboratory, La Jolla, Calif.

The area of operations during this cruise will be in northern Puget Sound, off the coasts of Washington, Oregon, California, and northern Mexico.

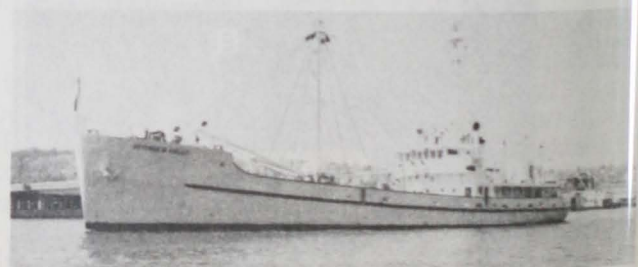
The primary purpose of Cruise 70 will be to determine the availability of hake (Merluccius productus) in Pacific Coast waters during late winter and early spring months which corresponds to the hake's spawning period. Core samples of the substrate will be taken south of the Columbia River for the Bureau's Seattle Technological Laboratory for use in studies on Clostridium botulinum.

Note: See Commercial Fisheries Review, November 1964 p. 46.

North Pacific Fishery Investigations

WINTER DISTRIBUTION OF SALMON IN NORTHWESTERN PACIFIC STUDIED:

The research vessel George B. Kelez, operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory, Seattle, Wash., was scheduled to begin, on or about February 1, 1965, a two-month salmon research cruise in the northwestern Pacific Ocean. The primary objective of the winter cruise was to determine the distribution and abundance centers of salmon in the western



Research vessel George B. Kelez of the U.S. Bureau of Commercial Fisheries.

Alutians, in areas previously fished during the months of September and October.

During the summer, the majority of immature salmon in the Aleutian area move seaward along the south side of the island chain and in September-October have been found in concentrations between Attu and the Kamandorsky Islands. Using surface gill nets as the primary sampling gear, the vessel was to attempt to determine whether the fish remain to the west in winter, move into the Bering Sea, or travel south and east back to the central North Pacific. For fish concentrations, long lines were to be used to capture live salmon for tagging so as to determine the area of origin of those fish. Salmon samples were to be brought back to the Bureau's laboratory for use on investigations of racial origin, age, growth, and other biological studies. This salmon research cruise was scheduled for completion by the end of March 1965.

See Commercial Fisheries Review, July 1964 p. 30.



Oceanography

BLAC LINK IN MARINE FOOD CHAIN DISCOVERED:

Three United States scientists have recently discovered what they believe to be a previously unsuspected food supply for marine life.

This previously unknown link in the marine food chain, they believe, consists of non-living organic particles constantly being caught on air bubbles in the sea. These bits of brown matter are eaten by the tiniest sea animals, called zooplankton, which in turn are the basic food supply for higher marine life.

For the past 100 years, scientists believed that the tiny sea animals ate only tiny sea plants, and that these plants absorbed the inorganic matter that came from decomposed fish and other sea creatures. In other words, they believed that the cycle of life was fed only by life or remains of life.

Now, scientists understand that the zooplankton eat accumulated particles of organic living material.

This explains the former mystery of how the tiny sea animals could live during the winter months when the food supply furnished

by tiny plants (photoplankton) was depleted and how they could live in the deep dark water beyond the depth of the tiny plants which need sunlight for their life processes.

Long aware of large quantities of both dissolved and clumped organic matter in the oceans, scientists have estimated the total nonliving organic content of sea water to be at least 50 times larger than the living portion.

Joint discoveries of this vast source of food in the sea were made by a scientist at Yale University and two scientists at the Woods Hole (Mass.) Oceanographic Institution. Their research was conducted under grants from the National Science Foundation.

"We don't exactly yet know what these brown particles are," one of the scientists said. "But we do know they are mixtures of such things as fatty acids, proteins, carbohydrates, and polypeptides." These organic particles, all essential parts of the building blocks of life, are formed when dissolved organic matter in the sea sticks onto air bubbles. The scientists discovered this process in the laboratory and found that continued bubbling resulted in the buildup of larger clumps of particles.

One of the scientists said that, in the ocean, the process works something like this: As waves break across the ocean and form white caps, they drop foaming water twice as deep into the sea as the wave is high. Churning air bubbles provide a surface upon which the dissolved substances of the sea adhere to form larger particles.

As the air bubbles rise to the surface of the ocean, the wind blows the foam into long lines or windrows of spume and brings the particles together in a film which might be a molecule thick. This film is pushed around by the wind and the waves and becomes wrinkled, piled up, and folded over to form aggregates of particles which are large enough for tiny sea animals to eat.

Some of these particles begin to sink slowly through the ocean, and as they drop, more dissolved matter adheres to them. All this forms part of the "marine snow" which has been often reported but never until now understood. The Yale University scientist who took part in the original discovery is continuing his studies of organic particulate

matter with emphasis on deep-sea studies. Many of the processes involved in the formation of organic aggregates and their relation to the marine community as a whole are not yet well understood. Further research should better illuminate these processes and their significance.

A further sidelight of research into the nature of organic particulate matter and its formation in the sea is a theory proposed by another marine biologist at Yale University. By bubbling a mixture of artificial sea water containing inorganic and organic compounds in solution, he found that the organic compounds could be concentrated on bubbles. Further bubbling may cause these compounds to form more complex organic molecules, he said.

He believes that this mechanism of adsorption by bubbling may have been an important step in the long process of evolution from inorganic chemicals to life in the sea. "Even if life did not trace its ancestry back to air bubbles in the sea," he said, "it seems certain that if a stable marine food supply created from a vast reservoir of dissolved organic matter did not exist, there would be less life today and fewer stable forms. Probably most deep-sea life would be nonexistent since organic particulate matter appears to be their basic food source." (National Science Foundation, October 5, 1964, and Science News Letter, October 17, 1964.)

* * * * *

COAST AND GEODETIC SURVEY VESSELS CHART AND SURVEY THE OCEAN:

Fifteen vessels of the U. S. Coast and Geodetic Survey will travel more than 130,000 miles in the Atlantic, Pacific, and Gulf of Mexico during the 1965 marine survey season extending from February to October. The vessels range in size from the 66-foot Wainwright and Hilgard to the 303-foot Oceanographer.

The Hydrographer, Bowie, and smaller vessels like the Marmer will nose their way up and down such bodies of water as Long Island Sound, the Straits of Florida, and Puget Sound. The two small wire-drag vessels, the Wainwright and Hilgard, which work together, will probe the waters off Florida and the Gulf Coast for undersea hazards to navigation, such as sunken wrecks and jutting rocks. The larger ocean survey vessels, such as the Pio-

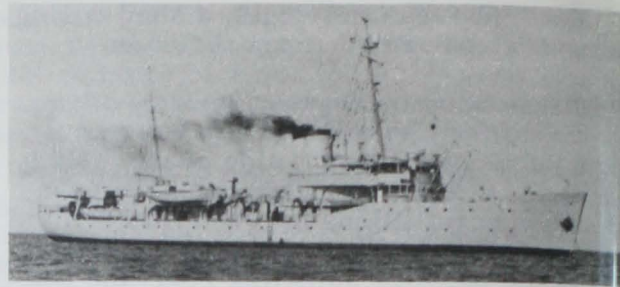


Fig. 1 - The Pathfinder, one of the larger ocean survey vessels. The Pathfinder, Surveyor, and Oceanographer, will work the deep ocean.

Other vessels in the fleet include the Explorer, Hodgson, Lester Jones, Patton, Peiper, and Whiting. The vessels depart from Seattle, Wash.; Oakland, Calif.; St. Petersburg, Fla.; Savannah, Ga.; and Norfolk, Va.

Twelve of the vessels have the exacting task of revising or updating coastal chart information. In order to find the safest route for mariners, the vessels will determine changes in charted land features and the shoreline, shifting of sand bars and shoals, and changes in depth and currents in navigable channels.

On a broader scale, the remaining vessels will explore offshore waters and collect systematic oceanographic data. From such information, scientists hope to develop basic maps of the topography of the ocean floor; the gravitational and magnetic fields; the temperature, salinity, and chemical properties of the water; the movement of ocean currents; and the ocean's surface conditions and weather. Such information is necessary for the further development of the ocean's resources.

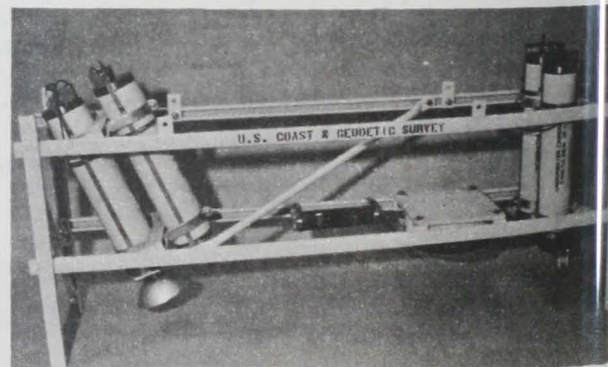


Fig 2 - "Stereo" deep-sea camera used by U.S. Coast and Geodetic Survey to photograph in color sea life at 2,000 feet and bottom formations at more than 7,000 feet.

The Coast and Geodetic Survey is the Government's chief civilian oceanographic agency. It also oversees the operation of a worldwide network of seismographs which, when completed, will include 125 stations in 63 countries and may some day provide the basis for an advance earthquake warning system. It operates the Pacific Seismic Sea Wave Warning System, a network of some 60 tide stations which alerts people along the Pacific when destructive seismic waves may strike. The agency also provides geodetic, geophysical, photogrammetric, and cartographic data for charting and scientific purposes and for defense needs. It produces and distributes approximately 30 million aeronautical and nautical charts each year and does extensive work in research and development. (U. S. Coast and Geodetic Survey, February 21, 1965.)

* * * * *

IMMEDIATE CONFERENCE ON RESEARCH VESSELS:

A conference on research vessels and their operation was held February 9-11, 1965, at the Institute of Marine Science, University of Miami. It was attended by representatives of leading oceanographic institutions.

During the meetings, oceanographers and vessel operators discussed such matters as the development of new designs for research vessels, pending legislation in Congress involving the operation of research vessels, and problems of labor and recruitment. An engineering symposium was also held.

Institutions represented at the conference included the Woods Hole Oceanographic Institution, Scripps Institution of Oceanography, Lamont Geological Observatory of Columbia University, University of Oregon, University of Washington, University of Hawaii, Duke University, Hopkins Marine Station of Stanford University, University of Alaska, University of Rhode Island, Texas A & M University, University of Michigan, Chesapeake Institute of Johns Hopkins University, and the University of Miami. Representatives were also present from U. S. Office of Marine Research and the Navy's Bureau of Oceanography. (University of Miami, February 12, 1965.)

* * * * *

NEW STUDY ON SURFACE CURRENTS OFF ATLANTIC COAST:

A new study of surface currents in the waters off the Atlantic coasts of the United States and Canada will help shed more light on such problems as the disposal of atomic waste materials, shore pollution, and the migration of fish, according to the American Geographical Society.

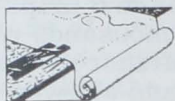
In a series of minutely detailed charts, the study describes and maps the paths presumably taken by thousands of "drift bottles" dropped into the offshore waters over the Continental Shelf and allowed to float ashore. More than 156,000 drift bottles have been released by various American and Canadian research groups during the 14 years between 1948 and 1962. They were dropped from research vessels, ferries, aircraft, and "Texas Towers," along the coasts from Newfoundland to Florida. Ten percent of the bottles released were found on the North American seaboard, although many more might have drifted ashore without being discovered. Two percent of the total, swept along by the Gulf Stream and its branches, were found overseas.

Each of the drift bottles contained a self-addressed return postcard asking the finder to note on it the date and location in return for a small reward. The Woods Hole Oceanographic Institution, which has maintained a log of all bottles released and recovered by its own as well as by cooperating investigators, coordinated the drift-bottle data.

The study is said to be the most comprehensive of its kind ever made and is the work of two oceanographers--one a Senior Scientist at the Woods Hole Oceanographic Institution and the other a scientist of the Fisheries Research Board of Canada. Published as Folio 7 of the American Geographical Society's "Serial Atlas of the Marine Environment," the study includes 12 charts, one for each month of the year. The charts show where drift bottles were released, the percentage washed ashore and recovered, and the direction and speed in miles per day, of the surface drift. Four other maps show the circulation pattern by seasons.

The American Geographical Society, New York, N. Y., began publication of the Serial Atlas in 1962, specifically as a research tool by means of which important oceanographic data could be made generally available.

Another purpose was to speed interdisciplinary communication. Each folio of the Atlas studies some aspect of the marine environment--biological, geological, physical, or chemical. Maps are printed on translucent paper, in both bound- and loose-leaf editions. The loose-leaf form permits any one of the separate map plates to be placed on a light-table in register with plates on the same scale in other folios so that comparative studies can be made more easily.



Oregon

LARGE-SCALE SALMON PLANTING IN THE WILLAMETTE RIVER:

A big effort is under way to set up a fall chinook salmon run in the Willamette River in Oregon. Plans call for Federal and State hatcheries to release about 11 million young fall chinook salmon in the Willamette during early 1965.

A key factor in the project is the proposed modern fishway at Willamette Falls. The Willamette River apparently has never had many fall chinook salmon because their upstream migration occurs when low water makes Willamette Falls all but impassable. The old fish ladder there has been of little value. The proposed new ladder would let adult salmon get over the falls at all but extremely high river flows. Subject to the availability of Federal funds, the new fishway is tentatively scheduled for completion in the summer of 1966.

The planting of fall chinook salmon in the Willamette is being carried out under the Columbia River Fishery Development Program of the U. S. Fish and Wildlife Service in cooperation with State fish and game agencies of Oregon and Washington.

The Washington State hatchery at Skamania is rearing and will release 2.5 million young chinook in the Willamette system. The Oregon State hatchery on Gnat Creek is rearing and will release about 1 million. Eagle Creek National Fish Hatchery in Oregon will put 1.5 million young chinook into the Willamette's tributaries and Spring Creek National Fish Hatchery in Washington will contribute 2 million.

In addition, the Oregon Fish Commission will release about 4 million young fall chinook fingerlings above Willamette Falls. Those fingerlings are surplus stock from hatcheries which were filled to capacity by the millions of eggs taken from the Columbia River salmon run in 1964.

The Willamette River system offers a great untapped area in the Columbia Basin for the development of a fall chinook salmon run.



Oysters

NEW METHOD OF PREPARING FOR SHUCKING:

A firm in New Orleans, La., has developed a new method of preparing oysters for shucking. The new method causes the oysters to gape, allowing easy removal from the shell. It also results in a thorough cleaning of the shellstock, a factor which has impressed health officials who have observed the operation.



Rhode Island

ONE-DAY FISHERMEN'S FORUM HELD:

The University of Rhode Island held a one-day Fishermen's Forum on its campus on March 6, 1965, to provide working fishermen with information on new types of trawls, electronic fish-finding equipment, refrigerated sea-water storage, and experimental government fishing efforts.

Sponsored by the Marine Resources Program of the University of Rhode Island in cooperation with the Pt. Judith (R. I.) Fishermen's Cooperative, the activities were planned by the University's faculty members with the help of a five-member committee of fishing vessel captains and crew members. "They actually told us what topics they were interested in having tackled at that Forum. Most of the agenda is an outcome of meetings and discussions with them," an associate professor of food and resource economics explained. In addition to a series of speakers, the agenda included films, slides, and question-and-answer periods.

The fourth in a series that began in 1961, the Forum was open to the public. A staff member of the Vessel and Gear Section, Industrial Development Service, Canadian Department of Fisheries, discussed the "Newfoundland Trawl." The assistant chief of the Branch of Exploratory Fishing, U. S. Bureau of Commercial Fisheries showed a film about the "Midwater Trawl," which was used successfully at varying depths off the bottom in European waters and experimentally on the United States west coast. (Species such as hake, whiting, and butterfish--frequently found in midwater depths--may not be caught by fishermen relying on the otter trawl which is dragged along the bottom.) The director of the Bureau's Technological Laboratory, Gloucester, Mass., discussed the technical aspects of "Refrigerated Sea Water Storage" aboard fishing vessels. (This method of preserving fish--as opposed to ice--holds promise of cutting down on fish damage and of increasing the ease of handling and unloading.)

The morning and afternoon sessions concluded with one-hour discussion periods. The speakers rotated through each conference room to answer questions. The afternoon program had as its theme: "New Developments in Fish-Finding Equipment." An electronic technician from the Bureau's Biological Laboratory, Woods Hole, Mass., outlined general developments in the last few years in the electronics field. The captain of the Bureau's research vessel *Albatross IV*, which is based at Woods Hole, illustrated his talk "The Experience with *Albatross IV* as Seen from the Fisherman's Point of View," with a film. (Press Release of University of Rhode Island.)



Salmon

U. S. PACIFIC COAST CANNED STOCKS, FEBRUARY 1, 1965:

On February 1, 1965, canners' stocks in the United States of Pacific canned salmon totaled 2,477,961 standard cases (48 1-lb. cans), 371,893 cases less than on January 1, 1965, when the pack was 290,200 cases less than on December 1, 1964.

On the basis of a total of 2,936,600 actual cases (consisting of cans of 1/4-lb., 1/2-lb., 1-lb., and 1 1/2-lb.), pink salmon make up 52.8 percent (1,550,541 cases, mostly 1-lb. talls) of the to-



Cases of canned salmon on pallets are transported from Alaska vessel into Seattle warehouse for forklift trucks. Palletization is speeding up the transportation of canned salmon.

tal canners' stocks on February 1, 1965. Next came chum (648,041 cases, mostly 1-lb. talls), followed by red (511,299 cases). The remainder of about 7.7 percent was coho (silver) and king salmon. About 80 percent of the pink salmon stocks on hand was packed in 48 1-lb. cans, and the balance mostly in 48 1/2-lb. cans.

Table 1 - Total Canners' Stocks of Pacific Salmon, February 1, 1965, with Comparisons

Species	Feb. 1, 1965	Jan. 1, 1965	Dec. 1, 1964
. (No. of Actual Cases)			
King	79,834	91,675	94,648
Red	511,299	607,913	674,711
Coho	146,885	176,504	222,095
Pink	1,550,541	1,795,619	1,977,112
Chum	648,041	726,063	782,844
Total	2,936,600	3,397,774	3,751,410

From January 1 to February 1, 1965, pink salmon stocks were lower by 245,078 actual cases (1-lb. talls lower by 189,519 cases), reds were down 96,614 cases, and chums were down 78,022 cases.

Carryover stocks at the canners' level totaled 1,175,588 standard cases on July 1, 1964, the approximate opening date of the Pacific salmon packing season. Adding the new sea-

Table 2 - Total Cannery Stocks on Hand February 1, 1965 (Sold and Unsold), By Species and Can Size

Case & Can Size	King	Red	Coho	Pink	Chum	Total
..... (Actual Cases)						
48 1/4-lb.	7,453	89,748	44,585	5,155	1,150	148,091
48 1/2-lb.	65,590	256,487	24,803	266,361	81,900	695,141
48 1-lb.	6,689	164,917	68,483	1,251,034	546,190	2,037,313
12 4-lb.	102	147	9,014	27,991	18,801	56,055
Total	79,834	511,299	146,885	1,550,541	648,041	2,936,600

Table 3 - Cannery Shipments from July 1, 1964, to February 1, 1965, By Species and Can Size

Case & Can Size	King	Red	Coho	Pink	Chum	Total
..... (Actual Cases)						
48 1/4-lb.	16,794	338,184	78,107	6,526	294	439,905
48 1/2-lb.	71,252	430,607	29,572	337,107	76,191	944,729
48 1-lb.	15,432	333,137	100,026	1,146,890	332,417	1,927,902
12 4-lb.	314	4,803	12,476	71,406	20,741	109,740
Total	103,792	1,106,731	220,181	1,561,929	429,643	3,422,276

son pack of 3,922,356 standard cases brought the total available supply for the 1964/54 season to 5,097,944 standard cases.

Shipments at the cannery level from July 1, 1964, to February 1, 1965, totaled 3,422,276 actual cases (equal to 2,619,983 standard cases). Shipments during January 1965 totaled 371,893 standard cases of which 189,519 cases were pink salmon in 1-lb. talls.

Data on canned salmon stocks are based on reports from U. S. Pacific Coast canners who packed over 97 percent of the 1964 salmon pack. (Division of Statistics and Economics, National Cannery Association, February 25, 1965.)



Shark

TAGGING PROJECT IN EASTERN PACIFIC RELATED TO SHARK CONTROL WORK:

In late 1964, some 560 sharks were tagged along the Pacific coast of Mexico by biologists of the U. S. Bureau of Commercial Fisheries Tuna Resources Laboratory, La Jolla, Calif. Concern over shark damage to tuna purse-seine nets is the main reason for the Bureau's interest in shark. The tagging was done to learn more about their growth and migration. Such knowledge can aid efforts to control the "net-eating" shark which plague tuna fishermen.

The shark-tagging work off Mexico was done from the chartered vessel Red Rooster during a 60-day cruise which ended December 30, 1964. During cruise, 35 tagged shark

were recaptured including 3 previously tagged in June 1964 and 1 tagged in August 1962. The cruise was sponsored by the Shark Research Panel of the American Institute of Biological Sciences and the U. S. Office of Naval Research, who also want to learn more about the life history of sharks, of which so little is known. Including previous tagging conducted from the purse-seine vessels Royal Pacific and West Point in 1962, a total of about 1,000 tagged shark have been released in the eastern tropical Pacific. The areas of tagging are shown in figure 1 (see page 35).

It is essential that more of the tagged shark be recaptured in order to gain information about their movements. Fishermen can greatly aid this work by reporting all tagged shark recaptured in the Pacific.

Four different types of tags, pictured in figure 2, have been used. Recovered tags, along with information on date and place of capture, should be forwarded to the U. S. Bureau of Commercial Fisheries, La Jolla, Calif., or turned over to representatives of any fishery research agency in San Pedro

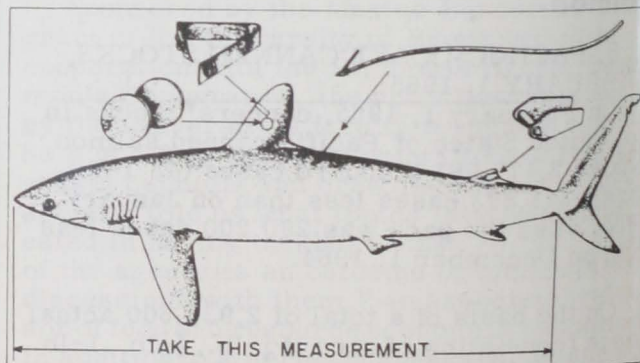


Fig. 2 - Types of shark tags. Tags are, left to right: Petersen disc, cattle, dart, and sheep.



Fig. 1 - Tagging areas. Shaded areas show where tagged sharks have been released.

San Diego, Calif. A nominal reward of \$1 will be paid to those returning tags. It would be helpful, additionally, if the tagged shark were measured (from tip of snout to base of tail), or if the entire shark were frozen and brought to port for pick-up by the Bureau of Commercial Fisheries.

ways of controlling shark attacks on fishermen are being sought. Chemical "repellents" have not proved to be effective. Another approach to shark control is to reduce the number. The histories of the now-defunct soupfin shark fishery in California and the present shark fishery in Australia have shown that populations of shark can be reduced significantly in a surprisingly short period of time. In fact, both California and Australia had to resort to protective meas-

ures in order to maintain their shark fisheries. In Hawaii, a year-long shark eradication program conducted in 1959-1960 resulted in a fast decline of coastal shark. Just how quickly shark populations can be reduced in particular areas by fishing depends on how widespread their movements are. Learning more about such movements is a major objective of the present shark-tagging program.

The Mexican shark fishery has recently undergone rapid growth. Shark fishing centers are now located from Guaymas to Salina Cruz. The fishery is coastal, and for the most part depends on shark that are not associated with tuna schools. However, the increasing growth of the fishery will probably lead to an expansion of the fishery to include shark in offshore waters. The fishery at Las

Tres Marias, for example, has expanded from coastal gill-netting to high-seas long-lining. The most abundant shark in that fishery is the "net-eater" which is responsible for most of the attacks on purse seines. The continuing expansion of the Mexican shark fishery may prove to be beneficial to U. S. tuna fishermen.

In Mexico, shark meat is eaten fresh or as "bacalao" (salted and dried fillet). The liver and waste products are also used, the latter for fertilizer. Hides are exported to the United States where high-grade leather is made from them. Fins are shipped to the Orient. In the United States, the market for shark meat is restricted to only a few species. However, the Bureau of Commercial Fisheries has received inquiries requesting names of suppliers of dried shark fins for export to Hong Kong. The price offered is about \$1 a pound for dried fins of acceptable quality. One buyer reportedly can handle 10,000 to 20,000 pounds of shark fins per month. Interested fishermen are invited to contact the Director, Tuna Resources Laboratory, U. S. Bureau of Commercial Fisheries, P. O. Box 271, La Jolla, Calif., for further information.

Note: See *Commercial Fisheries Review*, Aug. 1964 p. 78, July 1964 p. 61, Dec. 1962 p. 50.



Shellfish

7TH ANNUAL SHELLFISH MORTALITY CONFERENCE HELD:

The 7th Annual Shellfish Mortality Conference, sponsored by the Virginia Institute of Marine Science, was held at Gloucester Point, Va., January 25-26, 1965. About 50 scientists from Atlantic and Gulf Coastal States and from Canada attended the Conference to discuss problems relating to shellfish mortalities and to report progress made. The subjects presented ranged from the composition of oyster blood through the various forms of MSX to the progress made in breeding oysters resistant to disease.

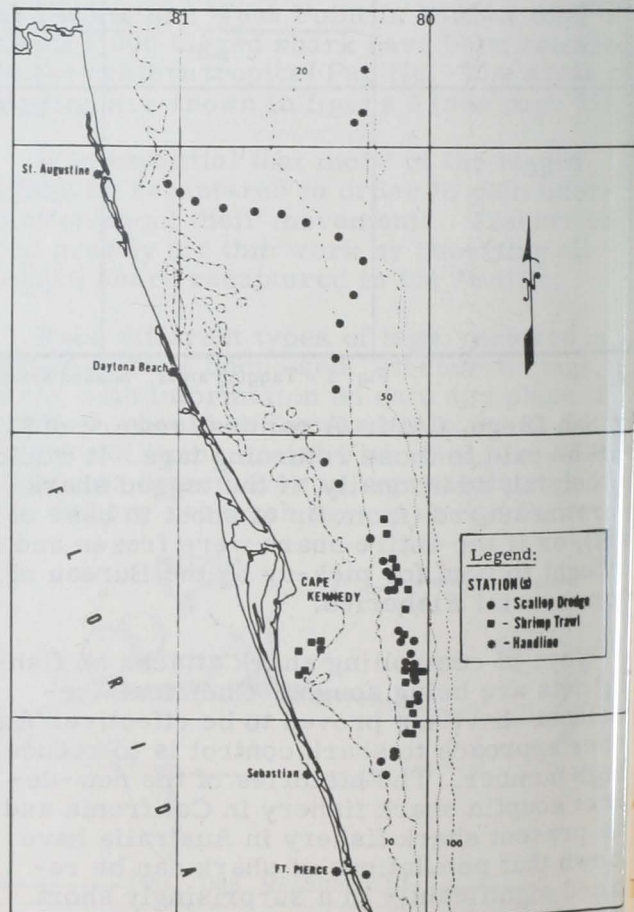
Research done at universities and state and Federal-conducted laboratories will eventually result in growing oysters and other bivalves scientifically. This will lead to less dependence on wild oysters and their fluctuations in abundance, which is a major problem of shellfish producers. (Virginia Institute of Marine Science, Gloucester Point, Va.)



South Atlantic Fisheries Explorations and Gear Development

CALICO SCALLOP PROCESSING EQUIPMENT TESTED ABOARD VESSEL AT SEA:

M/V "Oregon" Cruise 97 (January 11-22, 1965): Cooperative Bureau-industry tests of recently developed calico scallop (*Pecten gibbus*) processing machinery were undertaken aboard the Bureau of Commercial Fisheries exploratory fishing vessel *Oregon* during recent shellfish explorations in order to evaluate the feasibility of processing this species at sea. During the cruise, the vessel operated off the Florida east coast on scallop grounds located during earlier Bureau work. The more important aspects of the tests centered around modifications to and the operation of scallop-eviscerating equipment employing a completely new principle. Observations showed that the eviscerator functioned well, and the developers of the equipment indicate they hope to have it ready for commercial application in the near future.



Area investigated off Florida's east coast during Cruise 97 of M/V *Oregon* (January 11-22, 1965).

Forty-six 30-minute drags with 6- and 8-tumbler dredges yielded catches of scallops ranging from 0 to 20 bushels per drag. Most were medium scallops (45-50 millimeters or 1.8 to 2.0 inches in width) which yielded 112 to 142 meats per pint (one pound). Commercial concentrations of scallops were located in 28 fathoms off Cape Ken-

Large brown shrimp (*Penaeus aztecus*) were located off the Florida east coast in a depth of 30 to 32 fathoms. Although trawling was limited to 24 drags, bottom conditions suitable for shrimp trawling were found in depths ranging from 26 to 43 fathoms between Beal Shoal and Cape Kennedy (27° 57' to 28° 42' north latitude). Shrimp catches ranged from 0 to 25 pounds (heads-on) of 16-20 count brown shrimp per hour with a 40-foot flat trawl fished on 6-foot chain doors. Fish catches in the area ranged from 30 to 832 pounds per drag, mostly croaker (*Micropogon undulatus*), spot (*Leiostomus xanthurus*), pinfish (*Lythys lineatus*), filefish (*Stephanolepis hispidus*), and kingfish (*Menticirrhus* sp.).

Hand lines, fished at three stations, yielded catches of mixed bottom and near-bottom fish species. Specimens collected from trawls, dredges, and nekton and plankton nets were preserved for cooperative studies with other U.S. Bureau of Commercial Fisheries laboratories.

See Commercial Fisheries Review, June 1964 p. 27.



State Legislation

ACTIONS AFFECTING FISHERIES:

Following is a list of proposed State Legislative actions affecting fisheries. The bills listed are those introduced during the current session of the various State Legislatures.

Information Letter, National Cannery Association, February 20, 1965.)

Alaska: H. 76 would create a division of fisheries and research within the Alaska Department of Economic Development.

H. 109 relates to the payment of debts incurred by fish and marine products buyers.

H. 119 would require the processor or fish buyer to furnish information concerning per-

sons from whom he purchased fish; would be retroactive to January 1, 1965.

S. 1 would require that a primary buyer "shall purchase raw fish by the pound."

S. 33 specifies that in arriving at a wholesale price relative to fisheries taxes, the discount allowed for cash would be increased from 1½ to 2 percent.

S. 34 would levy an annual license tax on crab bought or obtained for processing by any method, of 2 percent of the value of the raw crab.

Oregon: S. 235 relates to the control of commercial fishing. It would provide for the licensing and bonding of commercial fishing and canning operations.

Maine: H. 94 relates to a license for sardine packers.

H. 95 would repeal the law regulating the canning of herring.

S. 293 would repeal the Fish Packing Wage Board law.

H. 898 relates to the merchandising of Maine sardines.

H. 848 relates to the repeal of the sardine tax on exports.

Massachusetts: H. 2170 would provide for a study to determine the need for licensing the importation of certain lobsters.

H. 1006 relates to the importation of shellfish for consumption as food.

H. 249 relates to a study of certain marine matters and the financing of a fisheries fund through certain industries such as processing plants.

H. 391 relates to the sale of certain cooked lobsters.

H. 410 would authorize the Massachusetts Department of Public Health to make rules and regulations for the packaging of food.

H. 30 would further regulate the identity and quantity of commodities in packaged form.

H. 3048 would further define the laws relative to the licensing of dealers in fish and shellfish.

H. 3207 would regulate the unloading of fish for human consumption.

H. 253 relates to permits and certificates issued by the Massachusetts Division of Marine Fisheries.

H. 1402 would provide for annual examinations of certain persons engaged in the business of handling food.

S. 444 would remove restrictions on the sale of scallops not in the shell or of soaked scallops.

S. 447 would further regulate the sale, transportation, and possession of lobster meat.

S. 448 pertains to the legal length of lobsters.

S. 111 would establish a wholesale market authority.

S. 450 relates to the development of the commercial fishing industry.

New York: A 1243 relates to labeling. The bill says that no manufacturer, processor, canner, bottler, packer, wholesaler, retailer, or other distributor shall sell or offer sale for consumption in the state, any container having canned, bottled, dehydrated, frozen, or processed food articles unless the containers are labeled indicating the grade or quality of articles and certain other information.

Maryland: H. 32 would require the licensing of oyster buyers and certain oyster bay boats, vessels, and vehicles.

Arkansas: S. 32 would require all fresh, chilled, packaged, processed, or frozen meats which are produced in foreign countries and imported into this country to be labeled as foreign goods with the exception of seafoods.

Minnesota: H. 602 would permit regulations including standards of net weight, measure, or count and prohibit packages made, formed, or filled so as to deliberately and intentionally deceive the purchaser as to the quantity of contents of the package.



United States Fisheries

VALUE OF COMMERCIAL FISHERY LANDINGS HIGHER IN 1964:

United States landings of fish and shellfish dropped sharply in 1964, but because of higher prices for several species and increased landings of some higher-priced species, commercial fishermen received slightly more than in 1963.

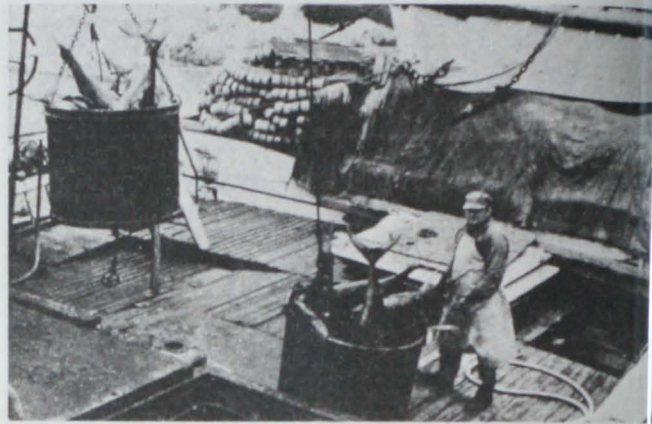


Fig. 1 - Unloading frozen tuna from a California purse-seiner.

Preliminary data show that the 1964 landings of 4.4 billion pounds were about 9 percent below landings of a year earlier, or down about 447 million pounds.

During the past 5 years, United States fishermen have received about \$367 million annually for their catch. Imported fishery products during the same period had an average annual value of some \$420 million. Consumers spend about \$2 billion annually for fishery products, 60 percent of that amount being spent for fishery products of domestic origin.

For the second consecutive year, the United States imported more than 60 percent of the fishery products used. Major imports were fish meal, tuna, frozen fillets, shrimp, sardines, and lobsters.

The 1964 landings of industrial fish, principally menhaden, accounted for about 336 million pounds of the decrease, with heavier losses in menhaden occurring in the Middle Atlantic fishery. The total 1964 catch of food fish was down about 100 million pounds, according to preliminary data.

The most important increase in the 1964 landings was in the estimated salmon catch.



Fig. 2 - Gill-net boat in Alaska with a load of red salmon.

in Alaska of about 312 million pounds--an increase of 89 million pounds, or 40 percent more than in 1963. The Alaska catch was up for all salmon species, with red, pink, and chin salmon accounting for most of the gain. But the salmon catch in the State of Washington was down nearly 34 million pounds--mostly pink salmon. The decrease is not considered unusual because few pink salmon enter Puget Sound waters in even-numbered years. Pink salmon there have a 2-year reproduction cycle and so far all attempts to change that cycle have failed. There also was a drop of several million pounds in the red salmon catch in Puget Sound waters.

Landings of other species which increased in 1964 included Alaskan king crab and Alaskan herring, as well as haddock from the New England fishery. The Maine herring fishery had the largest decline in the United States for fish catch. Only 61 million pounds were caught in 1964--a drop of 93 million pounds or 35 percent lower compared with 1963. Sharp landings along the South Atlantic and Gulf States in 1964 were down about 26 million pounds or 11 percent below the 1963 landings.

The United States continued to rank fifth among leading fishing countries of the world-- trailing Peru, Japan, Communist China, and the Soviet Union in that order. Peru replaced Japan as world leader in total fishery landings in 1962 with a spectacular increase in the catch of industrial fish (anchoveta) used primarily for fish meal. Peru's total fishery landings in 1964 were more than 200

United States Commercial Fishery Landings of Principal Species, 1964 and 1963		
Species	1/1964	1963
	.. (1,000 Lbs.) ..	
Fish:		
cod	41,800	48,546
flounders	173,200	176,798
haddock	133,200	123,972
hake, white	6,700	6,249
halibut	35,300	45,841
herring, sea:		
Atlantic	61,400	154,770
Pacific	53,900	38,834
mackerel, Calif.:		
jack	88,900	95,442
Pacific	24,900	40,243
menhaden	1,480,000	1,815,798
ocean perch, Atl.	88,000	108,292
pollock	13,700	14,607
salmon	350,300	294,177
sardine, Pacific	10,500	7,131
tuna:		
albacore	41,100	60,802
bluefin	30,300	41,313
little	60	72
skipjack	77,100	108,997
yellowfin	149,900	110,424
unclassified	-	11
Total tuna	298,460	321,619
Shellfish:		
clams	66,000	63,669
crabs	256,600	252,334
lobster, northern	29,800	30,274
oysters	58,100	58,444
scallops, sea	16,600	19,939
shrimp	214,600	240,473
Total all above items	3,501,960	3,957,452
Other	898,040	889,923
Grand total	4,400,000	4,847,375

1/Preliminary.

times what they were in 1947, and more than 47 times the landings of 10 years ago.

Note: See Commercial Fisheries Review, February 1965 p. 41, May 1964 p. 34.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED:

October 1964: During October 1964, a total of 36 vessels of 5 net tons and over was issued first documents as fishing craft, the same as in October 1963. There were 39 documents cancelled for fishing vessels in October 1964, as compared with 28 in October 1963.

Table 1 - U. S. Fishing Vessels 1/--Documentations Issued and Cancelled, by Areas, October 1964 with Comparisons

Area (Home Port)	October		Jan.-Oct.		Total 1963
	1964	1963	1964	1963	
	(Number)				
Issued first documents 2/:					
New England	3	2	29	20	23
Middle Atlantic	1	-	9	16	18
Chesapeake	9	9	36	54	66
South Atlantic	3	6	39	65	77
Gulf	11	15	194	209	239
Pacific	7	4	130	150	160
Great Lakes	1	-	2	4	5
Hawaii	-	-	1	-	-
Puerto Rico	1	-	2	2	2
Total	36	36	442	520	590
Removed from documentation 3/:					
New England	7	3	36	41	48
Middle Atlantic	5	-	19	42	47
Chesapeake	4	3	19	19	25
South Atlantic	12	2	39	47	53
Gulf	6	13	62	100	118
Pacific	5	7	112	75	87
Great Lakes	-	-	9	13	15
Hawaii	-	-	-	3	3
Total	39	28	296	340	396

Note: For explanation of footnotes, see table 4.

Table 4 - U. S. Fishing Vessels--Documents Issued by Vessel Horsepower and Area, October 1964 2/

Horsepower	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Great Lakes	Puerto Rico	Total
	(Number)								
60	-	-	-	-	1	-	-	-	1
85	-	-	-	-	-	1	-	-	1
100-109	1	-	1	-	-	1	-	-	3
120-129	-	-	1	-	1	-	-	-	2
130	-	-	-	-	1	1	-	-	2
145	-	-	1	-	-	-	-	-	1
160-169	-	-	1	2	-	-	-	-	3
170	-	-	-	-	1	-	1	-	2
200	-	-	-	-	-	-	-	1	1
210	-	-	3	-	-	-	-	-	3
220	-	-	-	-	2	2	-	-	4
230	-	-	-	-	1	-	-	-	1
250	-	-	-	-	1	-	-	-	1
300	-	-	1	1	3	-	-	-	5
390	-	1	-	-	-	-	-	-	1
457	1	-	-	-	-	-	-	-	1
510	1	-	-	-	-	-	-	-	1
600	-	-	-	-	-	-	1	-	1
1530	-	-	1	-	-	-	-	-	1
1800	-	-	-	-	-	1	-	-	1
Total	3	1	9	3	11	7	1	1	36

1/Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
 2/There was 1 undocumented vessel in October 1964 previously removed from the records. Vessels listed first include as fishing craft were built: 25 in 1964; 1 in 1962; 1 in 1958; 1 in 1955; and 8 prior to 1949.
 3/Includes vessels reported lost, abandoned, forfeited, sold afloat, etc.
 Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.



U. S. Foreign Trade

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

United States imports of tuna canned in brine during January 1-30, 1965, amounted to 3,540,035 pounds (about 168,573 standard cases), according to preliminary data compiled by the U. S. Bureau of Customs.

The quantity of tuna canned in brine which can be imported into the United States during the calendar year 1965 at the 12½-percent rate of duty has not been announced; however, in 1964 the quota was 60,911,870 pounds (or about 2,900,565 standard cases of 48 7-oz. cans). Imports in excess of the quota were dutiable at 25 percent ad valorem, but total imports were below the quota in 1964.

Note: See Commercial Fisheries Review, March 1964 p. 55.

AIRBORNE IMPORTS OF FISHERY PRODUCTS, NOVEMBER 1964:

Airborne fishery imports into the United States in November 1964 consisted mainly of shrimp from Venezuela and Panama. Shipments were about the same as in the previous month.

Airborne shrimp imports in November 1964 totaled 700,900 pounds, the bulk of which was fresh and frozen raw headless shrimp. Al-

Table 2 - U. S. Fishing Vessels--Documents Issued by Vessel Length and Area, October 1964 2/

Length in feet	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Great Lakes	Puerto Rico	Total
	(Number)								
27	-	-	-	-	-	-	1	-	1
28	-	-	-	-	1	-	-	-	1
29	-	-	-	-	-	1	-	-	1
31	-	-	1	-	-	1	-	-	2
32	-	-	-	-	1	-	-	-	1
33	-	-	-	-	-	1	-	-	1
36	-	-	-	-	1	-	-	-	1
37	-	-	3	-	1	-	-	-	4
38	-	-	2	-	-	-	-	-	2
39	-	-	1	-	-	-	-	-	1
40	1	-	1	-	-	-	-	-	2
49	-	-	-	-	-	1	-	-	1
50	-	-	-	-	-	1	-	-	1
53	-	-	-	1	-	-	-	-	1
55	-	-	-	-	1	-	-	-	1
56	-	-	-	-	1	-	-	-	1
61	-	-	-	1	1	-	-	1	3
64	-	-	-	-	1	-	-	-	1
65	-	-	-	-	1	-	-	-	1
66	-	-	-	1	1	-	-	-	2
68	-	-	-	-	1	-	-	-	1
72	1	-	-	-	-	-	-	-	1
73	1	-	-	-	-	-	-	-	1
74	-	1	-	-	-	-	-	-	1
148	-	-	-	-	-	1	-	-	1
152	-	-	1	-	-	1	-	-	2
Total	3	1	9	3	11	7	1	1	36

Note: For explanation of footnotes, see table 4.

Table 3 - U. S. Fishing Vessels--Documents Issued by Tonnage and Area, October 1964 2/

Gross Tonnage	New England	Middle Atlantic	Chesapeake	South Atlantic	Gulf	Pacific	Great Lakes	Puerto Rico	Total
	(Number)								
5-9	-	-	8	-	1	1	-	-	10
10-19	1	-	-	-	3	2	1	-	7
30-39	-	-	-	-	-	1	-	-	1
40-49	-	-	-	2	-	-	-	1	3
50-59	-	-	-	-	2	1	-	-	3
70-79	-	1	-	-	2	-	-	-	3
80-89	-	-	-	1	2	-	-	-	3
100-109	1	-	-	-	1	-	-	-	2
110-119	1	-	-	-	-	-	-	-	1
360-369	-	-	-	-	-	1	-	-	1
450-459	-	-	1	-	-	-	-	-	1
490-499	-	-	-	-	-	1	-	-	1
Total	3	1	9	3	11	7	1	1	36

Note: For explanation of footnotes, see table 4.

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

Product and Origin 2/	1964		1964		1963	
	November		Jan.-Nov.		Jan.-Nov.	
	Qty.3/	Value4/	Qty.3/	Value4/	Qty.3/	Value4/
	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000	1,000 Lbs.	US\$ 1,000
Mexico	-	-	320.5	64.7	264.8	70.0
Canada	-	-	14.8	4.8	-	-
Other countries	51.9	23.2	82.7	60.9	108.0	120.1
Total fish	51.9	23.2	418.0	130.4	372.8	190.1
Shrimp:						
Guatemala	-	-	-	-	141.6	74.0
El Salvador	11.1	6.0	170.2	102.8	297.7	190.2
Honduras	-	-	10.3	3.8	99.8	52.3
Paraguay	9.7	5.5	97.5	55.8	505.0	174.6
Costa Rica	-	-	310.2	166.8	598.3	284.3
Guatemala	120.3	79.0	1,070.4	665.4	1,541.3	831.5
Venezuela	559.8	294.6	5,805.7	2,799.5	4,500.5	2,096.8
Guatemala	-	-	-	-	111.6	39.4
France	-	-	-	-	2.6	0.9
British Guiana	-	-	10.5	5.2	-	-
Mexico	-	-	2.1	1.4	13.2	6.9
Other countries	-	-	13.1	6.9	7.9	8.6
Total shrimp	700.9	385.1	7,490.0	3,807.6	7,819.5	3,759.5
Fish other than shrimp:						
Canada	2.8	1.3	315.7	174.7	213.3	109.2
Mexico	-	-	14.4	9.9	101.1	60.8
British Honduras	48.9	54.2	302.6	258.1	344.5	281.8
Honduras	-	-	80.3	82.6	17.0	7.0
Paraguay	-	-	50.5	40.0	164.5	100.0
Costa Rica	-	-	19.1	14.7	73.8	60.1
Guatemala	-	-	63.3	63.2	66.5	50.2
Other countries	50.1	56.4	108.6	82.2	117.3	103.9
Total	101.8	111.9	954.5	725.4	1,098.0	773.0
Grand total	854.6	520.2	8,862.5	4,663.4	9,290.3	4,722.6

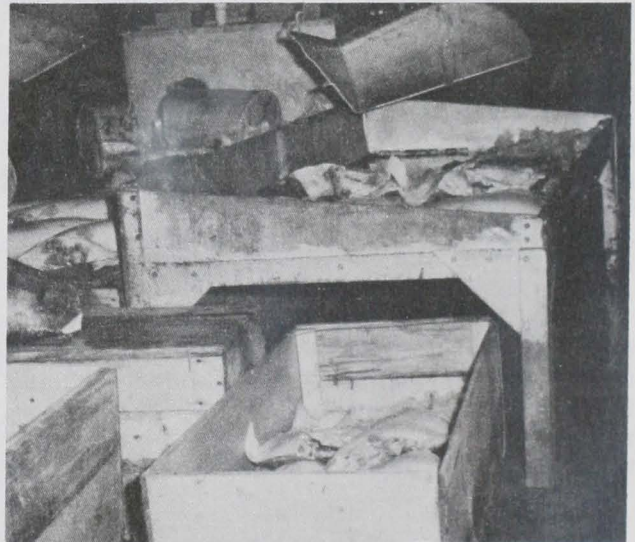
Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and territories between United States possessions are not included.
 2/ The country of origin is not known, the country of shipment is shown.
 3/ The weight of shipments, including the weight of containers, wrappings, crates, and moisture content.
 4/ The point of shipment. Does not include U.S. import duties, air freight, or insurance.
 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.
 U.S. Airborne General Imports of Merchandise, FT 380, November 1964, U.S. Department of the Census.

Wholesale Prices

EDIBLE FISH AND SHELLFISH, FEBRUARY 1965:

Prices for fresh and frozen fishery products in February 1965 were down 2.2 percent from the previous month. At 109.7 percent of the 1957-59 average, the February wholesale price index for edible fish and shellfish (fresh, frozen, canned) was higher by 0.6 percent as compared with the same month a year earlier.

The subgroup index for drawn, dressed, or whole finfish dropped 5.5 percent from January to February. A sharp drop in prices at Boston for ex-vessel large haddock (down 25.6 percent) was largely responsible. Also prices in February were slightly lower for frozen western dressed halibut and salmon, but higher for Great Lakes fresh fish. As compared with the same month in 1964, prices this February were sharply lower for haddock (down 38.1 percent) because of better supplies. As a result, the subgroup index this February was down 4.7 percent from a year earlier. But prices this February were substantially higher for halibut (up 30.0 percent) due to smaller stocks in cold storage as a result of the drop in the 1964 North Pacific halibut catch. Prices this February for other items in the subgroup also were up from those in the same month of 1964.



Fresh halibut on display at one of the stands, Fulton Fish Market, New York City.

From January to February, prices for fresh small haddock fillets at Boston dropped 21.7 percent and prices for shucked standard oys-

...all of the airborne shrimp imports in November 1964 entered through the Customs District of Florida.

...spiny lobsters from British Honduras were ...main shellfish item other than shrimp imported by air in November 1964.

...total airborne fishery imports in January-November 1964 were down 5 percent in quantity but only 1 percent in value from the same period of 1963. Airborne shipments of shrimp were down from most Central and South American countries, with the exception of Venezuela.

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



Wholesale Average Prices and Indexes for Edible Fish and Shellfish, February 1965 with Comparisons								
Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1957-59=100)			
			Feb. 1965	Jan. 1965	Feb. 1965	Jan. 1965	Dec. 1964	Feb. 1964
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					109.7	112.1	109.5	109.0
Fresh & Frozen Fishery Products:					114.5	118.3	113.8	113.2
Drawn, Dressed, or Whole Finfish:					115.1	121.8	111.2	120.8
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.13	.17	99.2	133.3	99.5	160.2
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.40	.40	117.3	118.3	118.3	90.2
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.85	.85	118.8	119.1	115.6	116.0
Whitefish, L., Superior, drawn, fresh.	Chicago	lb.	.65	.61	96.3	90.3	76.1	85.8
Yellow pike, L., Michigan & Huron, rnd., fresh	New York	lb.	.80	.75	131.0	122.8	114.6	101.6
Processed, Fresh (Fish & Shellfish):					115.1	116.0	111.9	114.0
Fillets, haddock, sml., skins on, 20-lb. tins . . .	Boston	lb.	.44	.56	105.6	134.8	109.3	140.8
Shrimp, lge. (26-30 count), headless, fresh . . .	New York	lb.	.97	.94	113.7	109.6	105.5	106.6
Oysters, shucked, standards	Norfolk	gal.	7.00	7.13	118.0	120.1	120.1	118.0
Processed, Frozen (Fish & Shellfish):					108.6	111.8	112.8	100.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.35	.37	88.7	92.5	92.5	98.9
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.39	.40	114.3	115.8	115.8	115.8
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.31	.31	108.7	106.9	105.2	114.0
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	.91	.95	107.9	112.1	113.8	91.3
Canned Fishery Products:					101.8	101.8	102.2	102.0
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. . . .	Seattle	cs.	21.00	21.00	91.5	91.5	92.6	94.8
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.56	11.56	102.6	102.6	102.6	103.3
Mackerel, jack, Calif., No.1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	6.25	6.25	105.9	105.9	105.9	103.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	10.00	10.00	128.3	128.3	128.3	116.5

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

ters were slightly lower. But those lower prices were partly cancelled out by higher prices (up 3.7 percent) at New York City for South Atlantic fresh shrimp. The subgroup index for processed fresh fish and shellfish dropped only 0.8 percent from January to February. As compared with February 1964, the subgroup index this February was up 1.0 percent because of increased shrimp prices (up 6.7 percent) which practically offset (by 25 percent) lower prices for fresh haddock fillets.

From January to February 1965, prices were lower for most items in the processed frozen fish and shellfish subgroup and that index was down 2.9 percent. Although February prices at Chicago for frozen shrimp were down 3.7 percent from the previous

month, they were 18.2 percent higher than in February 1964. Prices also were down from the previous month for flounder and haddock fillets, but for ocean perch fillets they were higher. The February 1965 subgroup index at 108.6 percent of the 1957-59 average was 7.8 percent higher than in the same month of 1964 solely because of higher (18.2 percent) frozen shrimp prices.

Prices for all canned fishery products were unchanged from January to February 1965. Compared with the same month a year earlier the index this February was down 0.2 percent. Prices this February for canned pink salmon were 3.5 percent lower and those for canned tuna were slightly lower than in February 1964. But prices for canned Maine sardines were 10.1 percent higher due to a drop in the 1964 season pack.

