

TRENDS AND DEVELOPMENTS

Alaska

PROMOTIONAL CAMPAIGN FOR CANNED SALMON PROPOSED:

Salmon canning company representatives have suggested to the State Legislature that Alaska join with the industry in a campaign to promote the sale of canned salmon. As of February, it was reported that one million cases of pinks, 300,000 cases of reds, and 300,000 cases of chums of last year's salmon pack remained in warehouses unsold. That supply represents the packs of the smaller firms. Packs of the major brand labels have been marketed. The representatives stated that the primary reason the off-brand packs of salmon were not selling is that "canned salmon is losing shelf-space in the retail grocery stores."

The proposed advertising campaign would cost \$1.5 million a year with the State furnishing \$1.0 million and the packers \$0.5 million. It was suggested that the State could obtain approximately \$0.5 million by increasing the tax on unprocessed salmon which now runs about 3 percent of the value of the canned product. The proposal is currently under study by the State.

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SALMON FORECASTS FOR 1963:

Bristol Bay: The expected total run of red salmon to Bristol Bay during 1963 is 15.6 million fish. This is based on an estimated return of 8.5 million "2-ocean" red salmon plus 7.1 million "3-ocean." The total estimate is about 2.8 million fish more than the actual return in 1962, which was a relatively poor year. Besides the usual inaccuracies inherent in the forecasts was added the inadequacy of information on the Japanese high-seas catch. Because of the difficulty in estimating the Japanese catch and the disparity of the estimates obtained by the different methods, the forecasters were unable to predict the distribution of the 15.6 million fish to the various fishing districts of Bristol Bay.

Prince William Sound: The run of pinks will be at least intermediate in size and there are some indications that it might be of large size, approaching the maxims of past years of more than 8 million fish. The run is expected early with fair fishing in some localities by July 1 and with heavy fishing during the last two weeks of July. A sharp decline in catches is expected in early August.

The chum salmon run may also be of fair size since frequently good runs of chums are associated with good runs of pinks. There was little basis for forecast of any run of red salmon in Prince William Sound.

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JOINT ROE-HERRING FISHERY PLANNED:

A joint Japanese-Alaskan roe-herring fishery may be initiated this year in Prince William Sound. Japanese interests have been negotiating with a packing company to supply about 3,000 tons of roe-herring from the Prince William Sound area for landing aboard a Japanese mothership inside Alaska territorial waters. The roe would be brine-cured and the herring frozen. During the first year of operation, Japanese labor would process the fish aboard ship. United States vessels would supply the roe-herring at a price of \$40 a ton. The landings would be subject to the State raw fish tax of 4 percent. The arrangement appears agreeable with the Cordova Marketing Association and with certain State and Federal officials. Approval is required of the U. S. Department of Labor for use of Japanese nationals for the processing of fish in territorial waters. If the first year's operation was approved and a second were feasible, it appeared that the State would require use of Alaska labor for processing during the second and any subsequent years.

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LATEST ADDITION TO KING CRAB FLEET HEADS NORTH:

The latest vessel to be converted exclusively for king crab fishing is the Shishaldin,

which has been chartered by a king crab fishing and processing firm. The 159' x 24' steel vessel will fish among the Shumagin and Aleutian Islands, and land her catches at Sand Point. The vessel is a former LCI (Landing Craft Infantry) and has a capacity of about 5,000 crabs in two forward tanks.

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1963 KING CRAB PACK PROMISING:

The Laboratory Director of the Ketchikan Technological Research Laboratory visited shrimp and king crab processing plants in south central Alaska during February. He



The crab-fishing boat Irene G moved alongside a processing vessel, Alaska Trader, in bottle-necked Finger Bay at Adak, in the Aleutians.

reported that the king crab fishery was near its yearly peak of production, and that all ten plants visited were operating near capacity. Reports from Lazy Bay on Kodiak Island, and from Adak in the Aleutian Chain indicated record seasons for king crab in those areas.

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NEW SHRIMP-PROCESSING PLANT:

A new shrimp plant in Kodiak began operating in mid-January. The plant has three peeling machines and packs both canned shrimp and frozen shrimp logs. The shrimp logs are similar to those manufactured at a plant in Seward and are being sold to a New Orleans firm for slicing, breading and marketing.



Alaska Fisheries Investigations

EARLY PLANKTON BUILD-UP INDICATED:

The following is a report of February 1963 activities and studies by the U. S. Bureau of Commercial Fisheries Biological Laboratory Auke Bay, Alaska:

The standing crop of surface zooplankton in Auke Bay is on the increase after the December-January low. This was determined on a schedule of night and day sampling cruises by the oceanography power barge Murre II. Among the plankton were organisms not observed before in Auke Bay, including one copepod, two amphipods, and an isopod. Procedures have been perfected for best use of the Miller high-speed plankton sampler and the in situ electrical salinometer and thermometer with the result that plankton and water data sampling is now accomplished very efficiently from the Murre II. Average temperature in the Auke Bay area for 23 stations was 3.8°C. (38.8° F.), while the average surface salinity was 29.7‰ (parts per thousand) and the average bottom salinity was 31.1‰.

A cooperative cruise with University of Alaska Marine Sciences Institute scientists at Douglas was also made with the Murre II in Taku Inlet. Samples were taken from the face of the glacier down channel through the long intermixing areas. A surprisingly high pH of 9.2 was recorded in the glacier flow. Both Auke Bay and Taku Inlet will show considerable increase in fish abundance with the end of winter.

These marine sampling cruises by the Murre II provide environmental background data for determining the factors which affect occurrence and abundance of fish such as young and adult salmon, herring, and smelt in the inshore areas of Alaska.

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ACTIVE KING CRAB FISHERY PRODUCES TAGS:

A larger volume of tag return data was received during February from the Alaska Department of Fish and Game Kodiak Research Center and processed at the Auke Bay Laboratory than in all previous months since the Alaska Peninsula king crab tagging study was initiated in July 1962. This was probably the result of intensified commercial fishing pressure coupled with the normal spawning migration habits of king crabs. A total of 319 recaptured tagged crabs was reported

during February. Two tags were recovered from those which had been released in 1957 by the U. S. Bureau of Commercial Fisheries Montlake Biological Research Laboratory. Fifty-four of the tags had been released a year ago by the International Pacific Halibut Commission incidental to a trawl survey. The Bureau staff aboard the vessels Yaquina and Paragon, under charter to the Alaska Region of the Bureau, released tagged crabs last summer also in the Kodiak-Alaska Peninsula areas, and 238 of these were recaptured in February. These recoveries are from a total release last year of 8,719 tagged crabs.

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INITIAL SHRIMP SAMPLING SUCCESSFUL:

The new shrimp studies started in the summer of 1962 by the Auke Bay Biological Laboratory have had good success with initial trials of its sampling gear in the surrounding waters of the Kasitsna Bay Shellfish Station near Homer in Cook Inlet. The 10-foot try net has been working out well for sampling adult shrimp in Tutka Bay and Sadie Cove. Drags of 20 minutes in 45 to 50 fathoms have produced 75 pounds of shrimp. Most of the commercial species were taken in the trawl. Experimental shrimp pots in 20 fathoms of water in Tutka Bay were taking commercial species of shrimp on both rocky and mud bottoms, although there was some difference in occurrence of species noted. The samples are part of intensive life history studies of the commercially important shrimp to determine growth and reproductive and mortality rates as a basis for management of the resource.

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FISHERMEN'S COURSE AT KETCHIKAN:

The staff of the U. S. Bureau of Commercial Fisheries Technological Research Laboratory at Ketchikan cooperated with the University of Alaska in presenting a Fisheries Short Course in Ketchikan during February. An associate professor of fisheries biology in the Department of Wildlife Management at the University, supervised the course. It included 18 hours of instruction in basic oceanography, fishery biology, navigation, electronic aids, and handling, processing, and marketing of fishery products.



California

FISH PLANTED BY AIR FOR SPORTSMEN:

A total of 4,939,510 fingerling trout and salmon were air-dropped in 789 remote lakes in 1962, by the California Department of Fish and Game. In the previous year, 3,729,877 fish were planted by air in 804 lakes.

A breakdown of the various kinds of fish planted in 1962 shows air-planting of 1,708,495 rainbow trout, 1,278,290 eastern brook trout, 1,259,995 kokanee salmon, 371,700 cutthroat trout, 165,440 kamloops trout, and 155,500 golden trout.

California has found that fish planting by air saves time and is more economical than stocking remote areas by pack train or vehicle. (Outdoor California, February 1963.)

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FISHERY PROJECTS CONSIDERED UNDER ACCELERATED PUBLIC WORKS PROGRAM

Accelerated Public Works construction proposals submitted to the California Wildlife Conservation Board for consideration at a meeting on March 21, 1963, included the following fishery projects:

Hayfork Falls Fish Ladder Cost (\$49,800)
The project would provide passage over a natural barrier which now prevents fish migration up Hayfork Creek, tributary to the South Fork of the Trinity River, Trinity County.

The California Department of Fish and Game estimates that the fishway would open up 19.8 miles of spawning and nursery area, primarily for steelhead, and would add about 3,000 steelhead to the Trinity River run.

Caspar Creek Fish Counting Weir Cost (\$50,000): The project would be located on Caspar Creek near Fort Bragg, Mendocino County. The weir, which would be operated by the Department of Fish and Game, would be used in the 12 to 15 year study on fishery stocks now being conducted by California Resource Agencies and the U. S. Forest Service with the assistance of the University of California. (California Department of Fish and Game, March 16, 1963.)

Note: Under the Accelerated Public Works program, the Federal Government provides assistance for State projects in certain areas on a matching funds basis.

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PELAGIC FISH POPULATION

SURVEY CONTINUED:

Airplane Spotting Flight 63-2-Pelagic Fish (February 11 and 15, 1963): To determine the distribution and abundance of pelagic schools, the inshore area from the United States-Mexican Border to Point Conception was surveyed from the air by the California Department of Fish and Game's Cessna "182" 42T.

The first day's survey covered the area from the Los Angeles-Long Beach Harbor to Point Conception. Dense concentrations of red tide were observed in the harbor and extended northward as Point Dume. The inshore waters were quite turbid throughout the entire area, and visibility was good.

On February 15, the area from the Los Angeles-Long Beach Harbor to the United States-Mexican border was surveyed in the morning. Red tide was visible from the Harbor southward to Solano Beach and, for the most part, extended to 1½ miles offshore. In most areas, the red tide was so dense that fish schools, if present, would not have been observed. Visibility was restricted by haze and some clouds. In the afternoon, the coastline from San Diego to Point Conception was overflown. Visibility was improved and two unidentified fish schools were noted off Del Mar in an area free of red tide. Red tide was seen as far north as Santa Barbara.

Adverse weather limited flying time to only 2 of the 5 days scheduled.

Airplane Spotting Flight 63-3-Pelagic Fish: The area between Point Reyes and the United States-Mexican Border was covered by an air survey conducted on March 12 and 13, 1963. Weather conditions for scouting were ideal both days. Visibility exceeded 15 miles at all times, wind velocities were low, and few clouds were encountered.

On March 12, the area from the United States-Mexican Border to Point Conception was surveyed. Nineteen anchovy schools were seen--7 off Point Mugu and 12 in the Goleta area. A total of 26 gray whales were seen moving north.

The red tide observed was even more extensive than in the previous month. Discolored water was noted from below the Border to Santa Barbara, mostly in a band extending from just outside the surf line to about three miles offshore. In places, it spread as far

as five miles offshore. The fish schools noted at Point Mugu were in comparatively clear waters, although red tide was extensive in that area. The Goleta schools were in clear water. No fish schools were sighted between Point Reyes and Point Sal when the area was surveyed on March 13. Thirty-four gray whales were observed during the day. The water was clear except in the local area north of Santa Cruz where the inshore waters were discolored by river drainage.

Note: See Commercial Fisheries Review, February 1963 p. 20.

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RESEARCH GRANT FOR STUDY OF SQUID AND OCTOPUS:

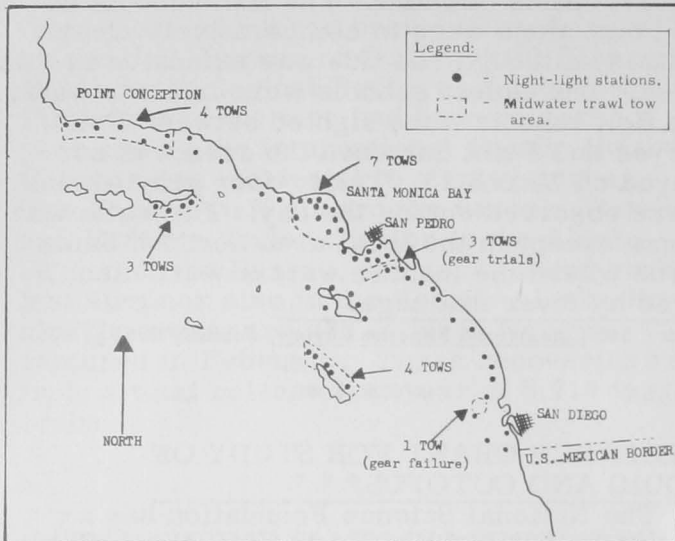
The National Science Foundation has awarded a \$29,000 research grant to the California Department of Fish and Game for a two-year study of squid and octopus. The study is expected to aid marine researchers by providing basic information on the part those cephalopods play in the food chains of many important ocean fisheries. A shellfish biologist of Redlands, Calif., who has made a lifelong study of squid and octopus, will be engaged to carry out the research project and to bring together present knowledge of squid and octopus. (California Department of Fish and Game, February 23, 1963.)

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POPULATION DENSITY, DISTRIBUTION, AND AGE COMPOSITION OF SARDINES AND OTHER PELAGIC FISH SURVEYED:

M/V "Alaska" Cruise 62-A-7 (November 21-December 7, 1962): The coastal waters of southern California including those around the Channel Islands between Point Conception and the United States and Mexican border were surveyed by the California Fish and Game research vessel to determine the strength of the 1962 sardine year-class. Other objectives of the cruise were: (1) to determine the population density and distribution of the adult sardines; (2) to survey other pelagic species for distribution, abundance, and age composition; and (3) to continue testing a midwater trawl as a sampling device for pelagic species.

On the 62 night-light stations occupied, not one sardine (young or old) was sampled or observed. This cruise was, in number of pelagic fish species attracted to the light, one of the least successful surveys in this area during the past decade. Jack mackerel were sampled on 3 stations, anchovies on 3, and bonito on 2.



M/V Alaska Cruise 62-A-7 Pelagic Fish (November 21-December 7, 1962).

During 344 miles of night scouting, 88 fish schools were observed. Poor visibility hampered scouting in one-third of the area surveyed. Schools sighted were: anchovy 34; bonito 39; jack mackerel 5; and unidentified 10. In addition to the 39 bonito schools sighted, many small clusters (20 fish or less) were observed.

Although night-light stations were made in areas where anchovy schools were sighted, they tended to avoid the light. On three stations, anchovies were observed displaying a negative phototactic response. Some minutes after the vessel was on station with the light on, a fish school was detected on the fathometer trace. With subsequent dimming and brightening of the light, the school moved vertically through the water in response to manipulations. The brighter the light, the deeper the school moved and as the light was dimmed, the school approached the surface. When the light was extinguished, anchovies were observed "flipping" on the surface.

Although 21 tows were made, only 18 were used for comparing catches of the midwater trawl with those of the night-light blanket net method.

A parted bridle cable curtailed 1 tow and 3 tows were made to indoctrinate laboratory personnel in the midwater trawl's use. The 18 trawl tows were made in 5 widely separated areas in which 21 night light stations were occupied. Only small amounts of squid and saury were attracted on 5 of the 21 light

stations. Catches by midwater trawl were predominately anchovy (about 10,000 pounds) plus 500-1,000 pounds each of jack mackerel, bonito, and squid. Only one sardine was captured in the 18 midwater trawl tows.

Although testing the midwater trawl as a device for sampling pelagic species is not yet complete, it is believed that it will prove to be an important adjunct to pelagic fish surveys.

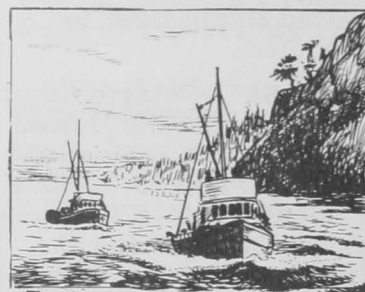
SALMON SPORT CATCH, 1962:

California sport fishermen took about 125,000 salmon in 1962 for their best year since 1956 when 176,000 were caught.



In 1962, sportsmen were aided by a regulation which allowed them to include 1 salmon under 22 inches in their 3 fish limit. About one-third of the salmon landed were under 22 inches in length.

Salmon were also in areas where skiffs and party boats could reach them in 1962. The range of those boats is limited and sport landings may fall substantially below the 100,000 mark even when fish are plentiful. This happened in 1961 when sportsmen landed only about 60,000 salmon, while commercial troll salmon fishermen were having their third best year in history.



Trollers on their way to fishing grounds.

22 inches but not less than 20 inches in length (Outdoor California, February 1963.)

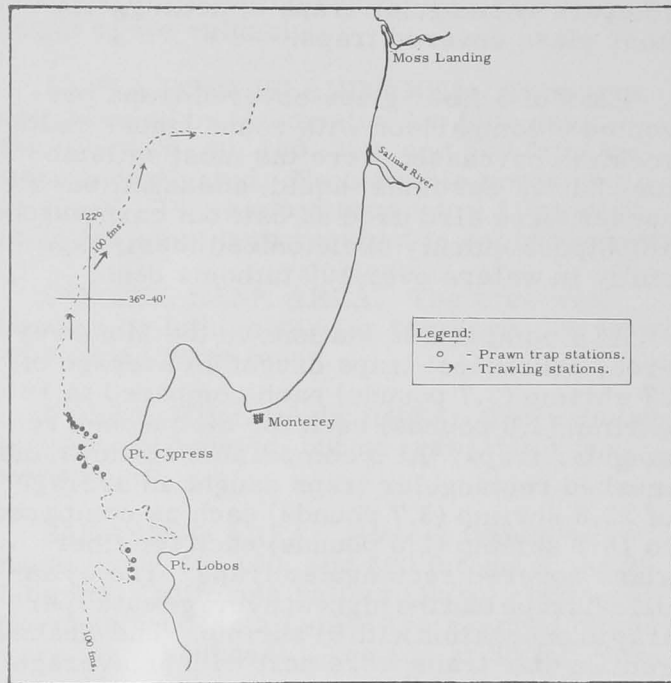
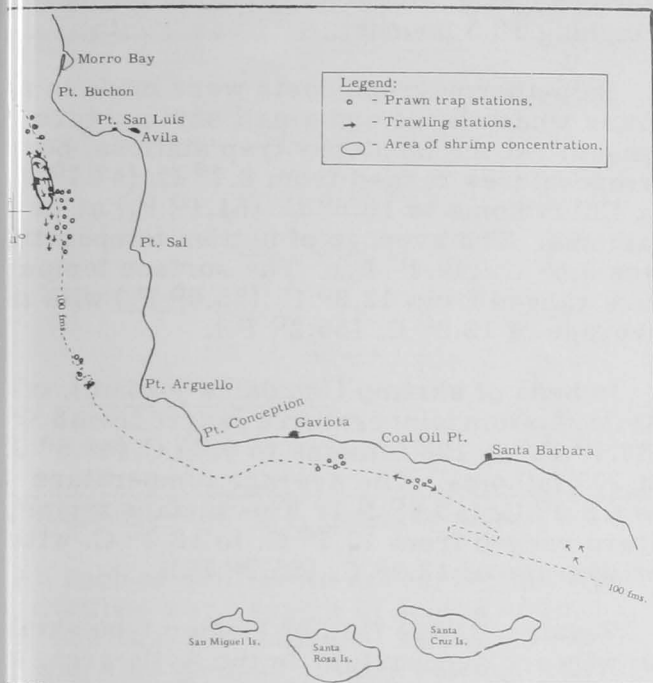
SHRIMP RESOURCES IN SOUTHERN AND CENTRAL COASTAL WATERS SURVEYED:

M/V "Alaska" Cruise 63-A-1 (January 17-February 7, 1963): The objectives of this cruise by the California Department of Fish and Game research vessel Alaska off southern and central California from about Santa Barbara to Monterey were: (1) to conduct ex-

laboratory fishing for spot shrimp (Pandalus atyceros); (2) determine size, sex, and weight of shrimp from different areas; (3) use three different size and shape traps to determine fishing efficiency; (4) identify, count, and weigh all incidental species caught in traps; (5) make bathythermograph casts to obtain bottom temperatures at trap stations; and (6) run a series of gear trials with the gulf shrimp trawl and doors.

The shrimp taken in the Santa Barbara and Avila areas were placed in the live tank immediately after sexing and measuring. They were later transferred to the Menlo Park Laboratory for observation.

Samples of the shrimp taken in the Monterey area were sexed, measured, and weighed to determine heads-on count per pound. The catch was composed of almost equal



Area of operations of M/V Alaska during Cruise 63-A-1.

Shrimp traps were set in series¹ of 10 each 10 stations off Coal Oil Point and Gaviota in the Santa Barbara area in 65 to 120 fathoms of water. Nineteen shrimp were caught in the 100 traps.

In the Avila area, traps were set off Point Arguello, Point Sal, and Point Buchon in 70 to 120 fathoms of water. Twenty-four trap stations yielded 16 shrimp. Seventeen tows with the Gulf shrimp trawl produced 106 shrimp.

In the Monterey area off Point Cypress and Point Lobos, shrimp were much more plentiful. Sixteen trap stations (156 traps) yielded 3,117 shrimp (heads-on); weighing 23 pounds; an average of 9.7 shrimp to the pound. Four tows with the Gulf trawl in Monterey Bay at 70 to 100 fathoms produced only three small shrimp.

numbers of males, transitionals, and females.

Heads-on counts ranged from 7.2 to 13.4 per pound. The mean carapace lengths for males, transitionals, and females were 37.0, 41.8 and 47.9 millimeters (1.46, 1.65, and 1.89 inches), respectively. Size, sex, and weight determinations were made for 100 shrimp. Practically all females were carrying eggs.

Three types of traps were used to determine fishing ability. The first was cylindrical and measured 3½ feet long by 22 inches across. The second was rectangular, measuring 15 by 15 by 30 inches. Both of these were covered with 21 thread, 1½-inch mesh netting. The third trap type, a rectangular one having the same measurements as above, was covered by .026 gauge fiberglass. The fykes on all traps were constructed of the same mesh net and had two openings of 3¼ inches.

Fishing was started with 50 traps--30 of the cylindrical design, 10 rectangular with mesh netting, and 10 rectangular with fiber glass covering. For comparing their fishing ability, they were fished alternately on a 10-trap string at each station. For example, to compare rectangular traps of netting with cylindrical traps, 5 of each were used and these were alternately snapped on the long-line. The same fishing design was used to compare rectangular traps of netting with fiber glass covered traps.

Loss of 5 fiber glass covered traps prevented a comparison with round traps. Salted rockfish carcasses were the most satisfactory baits. Sardines, squid, and unsalted carcasses were also used as bait but carnivorous amphipods quickly skeletonized them, especially in waters over 100 fathoms deep.

At 4 comparable stations in the Monterey area, cylindrical traps caught an average of 37 shrimp (3.7 pounds) each compared to 19 shrimp (2.0 pounds) each for the meshed rectangular traps. At 3 comparable stations, the meshed rectangular traps caught an average of 29.8 shrimp (3.7 pounds) each as compared to 14.7 shrimp (1.5 pounds) each for fiber glass covered rectangular traps. The cylindrical traps had the highest average catch per trap at one station with 81 shrimp. The meshed rectangular traps were next with an average catch of 55 shrimp per trap at another station. The best catch for the fiber glass covered traps was an average of 20.4 shrimp per trap at one station.

It appears the cylindrical traps fished the best. However, had the rectangular meshed traps been of equivalent size they may have fished as well. Trap size may be an important factor in fishing success.

In the Monterey area, traps were fished across contours of the canyons. The traps were first hooked on a 100-fathom mainline at 10-fathom intervals.

One hundred fathoms of additional line was played out to shallow water where a 100-pound anchor chain was set. The traps were generally set in 110 to 75 fathoms of water and the anchor at 50 to 60 fathoms. Number 12 solid braid polypropylene line was used for the mainline and buoy line.

In general, where shrimp fishing was the best, very few incidental species were en-

countered. Sablefish (*Anoplopoma fimbria*) was the most frequently caught in the traps in all areas. Off Point Lobos, in 34 traps, 38 sablefish weighing 58 pounds were caught. Individual sablefish measuring up to 23 inches and 2.5 pounds in weight were caught. Other fish included juvenile rockfish, sand dabs, and hagfish. Invertebrates included box crabs, decorator crabs, red crabs, starfish, whelks, sea hares, and octopi. Octopi were caught in all areas, with the largest weighing 16.5 pounds.

Bathythermograph casts were made in all areas where large and small shrimp were caught. At the Monterey trap stations, bottom temperatures ranged from 8.7° C. (47.7° F.) at 130 fathoms to 10.6° C. (51.1° F.) at 70 fathoms. The average of bottom temperature was 9.6° C. (49.3° F.). The surface temperature ranged from 12.8° C. (55.0° F.) with an average of 12.9° C. (55.2° F.).

In beds of shrimp (*Pandalus jordani*), off Avila, bottom temperatures ranged from 8.0° C. (46.4° F.) at 128 fathoms to 9.7° C. (49.5° F.) at 105 fathoms. The average temperature was 8.9° C. (49.8° F.). The surface temperature ranged from 12.7° C. to 13.2° C. with an average of 12.9° C. (55.2° F.).

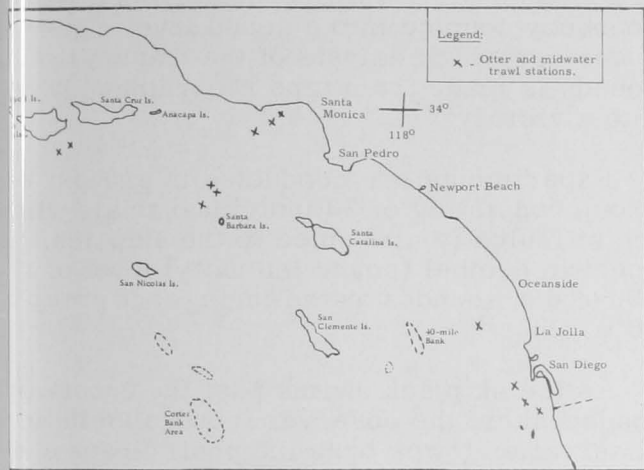
Trials with the Gulf of Mexico type shrimp trawl were successful. In the Avila area, exploratory tows were conducted for pink shrimp (*Pandalus jordani*). The gear consisted of a 41-foot head rope, 18-thread, 1¼-inch nylon mesh net, with 2½ by 5 foot doors (160 pounds each), and a 25-fathom bridle. Towing was done by a single cable. A shrimp concentration was found off Point San Luis in 105 to 110 fathoms of water. The school measured approximately 7.5 miles long with an average width of 1.1 miles. Seven tows within the perimeter of this school produced an average of 165 pounds per 20-minute tow, a catch rate of 495 pounds per hour. Two tows yielded catches at the rate of 819 and 810 pounds per hour. Samples from each tow were sexed, measured and weighed.

Their age composition was 11 percent 10 months old, 29 percent 22 months old, and 60 percent 34 months old. The latter group was composed almost entirely of females carrying eggs. Heads-on counts ranged from 43 to 108 per pound with an average of 57.

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TRAWLING GROUNDS SOUGHT IN OFFSHORE WATERS:

M/V "N. B. Scofield" Cruise 63-S-1 (February 11-25, 1963): The objectives of this cruise by the California Department of Fish and Game research vessel N. B. Scofield in coastal waters off southern California between the Channel Islands and the United States Mexican border were: (1) to explore offshore areas for trawling grounds, and (2) to make biological surveys of representative areas.



Map of operations of M/V N. B. Scofield during Cruise 63-S-1.

In each of 6 different areas, bottom trawl stations were sought in depths of 20, 50, 100, 250, and 500 fathoms. Midwater trawling was also planned at each station. All tows were for 30 minutes. During the cruise, fish and invertebrates were identified, enumerated, and measured. Samples of unidentified or unusual specimens were saved for scientists.

SANTA MONICA BAY AREA: Stations were occupied in 100, 250, and 440 fathoms. Gear difficulties limited the catch of bottom fish. English sole (Parophrys vetulus) predominated at 100 fathoms. Shortspined channel rockfish (Sebastes alascanus), splitnose rockfish (Sebastes diploproa), Dover sole (Microstomus pacificus), and sablefish (Anoplopoma fimbria) were taken in the 250-fathom bottom tow. No fish were caught in the 440-fathom bottom tow.

Good catches of lanternfish (family Myxotolema) and lightfishes (family Sternoptychidae) were taken in 2 of 4 midwater tows.

SANTA BARBARA ISLAND AREA: Stations were established in 80, 100, and 250 fathoms. All 500-fathom areas scouted by fathometer were rocky. Curlfin turbot (Pleuronichthys decurrens) was the main species produced by bottom tows at 80 and 100 fathoms. Shortspined channel rockfish, splitnose rockfish and blackgill rockfish (Sebastes melanostomus) were most abundant in the deeper bottom tow. The deepest (125 fathom) midwater tow yielded a good catch of lanternfish.

Although no commercially significant catches were made in the area, much of it is suitable for trawling and further exploration might prove valuable.

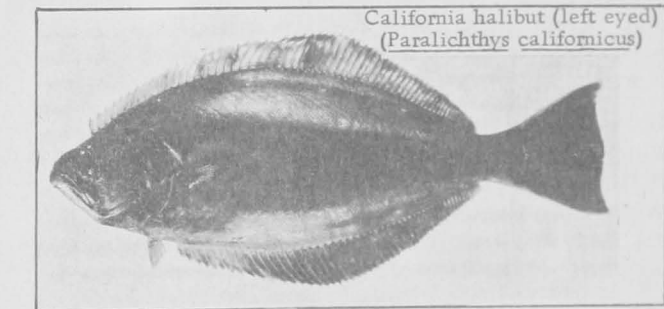
SANTA ROSA ISLAND AREA: This area was scouted by fathometer for four days. Depths of 20, 50, 100, 250, and 500 fathoms were investigated. No trawable areas could be found. Two bottom tows were attempted at 50 fathoms; both resulted in badly torn nets.

CORTEZ BANK AREA: The area was scouted by fathometer for two days. No trawable areas were found.

FORTY-MILE BANK AREA: The area was intensively scouted, but no trawable areas were found.

SAN DIEGO AREA: Bottom trawls were made in 25, 50, 100, and 400 fathoms. At 25 fathoms, California halibut (Paralichthys californicus) and fantail sole (Xystreurys liolepis) were most abundant. The tow at 50 fathoms

included 185 pounds of English sole, 56 pounds of Pacific sand dabs (Cithanchthys sordidus), 59 pounds of California pompano (Palometa simillima), and 105 pounds of pink seaperch (Zalembrus rosaceus). In the 100-fathom bottom tow, greenspotted rockfish (Sebastes chlorostictus) predominated. No fish were taken at 405 fathoms.



A significant catch was made in 1 of the 3 midwater tows. The productive tow was made at approximately 235 fathoms in 405 fathoms of water off La Jolla, Calif. It yielded a fine collection of bathypelagic fishes, including

lanternfishes, lightfishes, and deep-sea smelts (family Bathylagidae). Seventeen rare cephalopods, probably *Vampyroteuthis infernalis* were also taken in the tow.



Cans--Shipments for Fishery Products, January 1963

A total of 188,652 base boxes of steel and aluminum was consumed to make cans shipped to fish and shellfish canning plants in January 1963, an increase of 3.2 percent from the 182,767 base boxes consumed during the same month in 1962.



Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" size. Tonnage figures for steel (timplat) cans are derived by use of the factor 21.8 base boxes per short ton of steel. The use of aluminum cans for packing fishery products is small.



Central Pacific Fisheries Investigations

SKIPJACK TUNA RESPOND TO UNDERWATER SOUND:

Experiments to determine the range and threshold of underwater sounds that skipjack tuna can perceive, and also to determine their ability to discriminate between various underwater sounds are being conducted by the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu.

Experiments using 500-cycle-per-second (c.p.s.) underwater sound as a conditioning stimulus have demonstrated that skipjack (*Euthynnus pelamis*) perceive underwater sound. A skipjack has been trained to respond to the 500-c.p.s. sound by swimming directly to a feeding area in its home tank after it has been given the sound stimulus in another part of the tank. It swims to the feeding area about three times faster after the stimulus is presented than it does under control conditions (no sound stimulus).

The skipjack, which weighs about 5 pounds, is held in a circular swimming pool 23 feet

in diameter and 4-feet deep. The pool has aluminum sides and is lined with a thin vinyl plastic sheet. An underwater loudspeaker is concealed at the end of a 10-foot long corridor through which the skipjack swims. A curtain of minnow netting suspended in the water forms the corridor. The 500 c.p.s. sound is produced by an audio signal generator, passed through a band pass filter to eliminate harmonics, and further amplified in an amplifier before being transmitted by the loudspeaker. Intensities are measured by a hydrophone from a Navy sonobuoy coupled into a sound level meter. Spectrographic analysis of the transmitted sounds is made from tape recordings played into a vibralyzer.

Experiments are conducted in groups, each group consisting of 20 individual trials when the stimulus is presented to the skipjack. On a specific decibel (sound intensity) level of the 500-c.p.s. sound is tested during each group of 20 trials.

As the skipjack swims past the underwater loudspeaker, the observer (concealed in an observation tower over the pool) closes a key, activating the speaker. The time required for the skipjack to reach the feeding area is then recorded. Each trial is preceded by a control, this being the time required for the skipjack to reach the feeding area from the position opposite the loudspeaker when no sound stimulus is presented. When it reaches the feeding area after responding to the stimulus, the skipjack is rewarded with a piece of food. It is not fed during controls. The time between sound stimuli is randomly selected and is from 1 to 3 minutes. Upon perceiving the sound, the skipjack makes a hard left turn and doubles back along the outside of the corridor to the feeding area. During controls the skipjack makes a more leisurely circuit around the tank's perimeter until it enters the feeding area.

The table shows some of the typical response times recorded for groups of trials at 500 c. p. s.

| Average Time From Speaker To Feeding Area (Seconds) | |
|---|----------|
| Sound Off | Sound On |
| 9.5 | 2.8 |
| 9.1 | 2.8 |
| 10.4 | 2.9 |
| 8.5 | 3.1 |

Experiments thus far have shown that skipjack perceive underwater sound and that it will be possible to determine the range and threshold of underwater sound perception for skipjack and other related species with the techniques described and relatively inexpensive facilities.

* * * * *

**SKIPJACK TUNA SOUGHT
BOUNDARY OF HAWAII:**

**T/V "Charles H. Gilbert: Cruise 63--
Boundary I (January 10-March 2, 1963):** No skipjack schools were located during this cruise. The U. S. Bureau of Commercial Fisheries Honolulu-based research vessel Charles H. Gilbert. The "boundary" for which the cruise was named is the division between two important water types of the central Pacific, the California Current Extension, and the North Pacific Central water. Studies carried out around the Hawaiian Islands during the summer fishing season have indicated that skipjack tuna (aku) schools are numerous in this boundary. This cruise was aimed at discovering whether this was also true in winter, when the boundary lies in the vicinity of 150° W. longitude, about 450 miles east of the Islands.

Another purpose of the cruise was to collect specimens of blood for typing. Examination of the blood types could reveal whether skipjack tuna found along the boundary in winter are members of the population which supports the Hawaiian summer fishery.

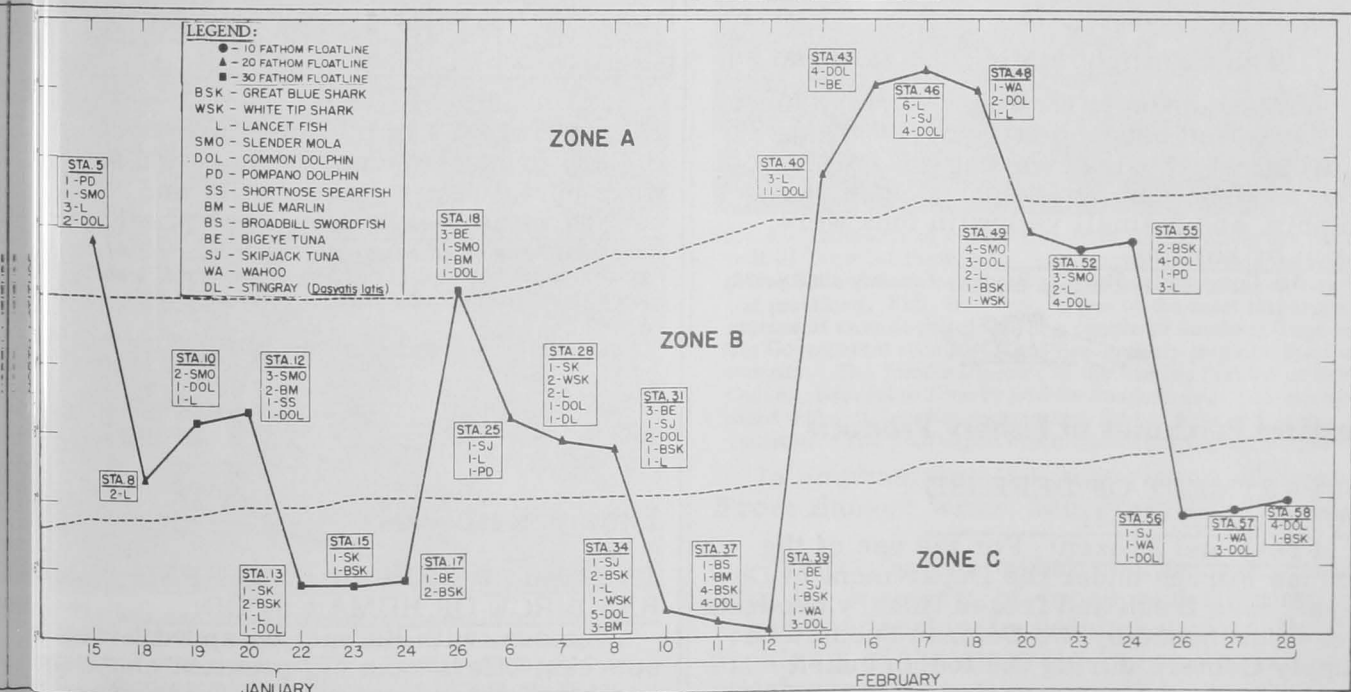
Fishing for skipjack tuna is generally done with pole-and-line and live-bait. However, because the area surveyed was so far from Hawaii and because of the duration of the cruise (almost 2 months), it was necessary to fish skipjack with tuna long lines.

Long-line stations were located north of, south of, and in the boundary between the California Current Extension and the North Pacific Central water. The boundary was identified from surface salinity tests and isotherm plots made during the cruise. Three complete sections of temperature and surface salinity observations (at 30-mile intervals) were made across the study area. Several shorter sections were also made.

The spatial distribution of stations and catch composition are shown in the figure. The overall catch of selected species is given in table. Sixty baskets of 21-hook gear (1.5-fathom droppers, 1.0-fathom leaders, 4/0 hooks) were fished at all stations. Zone A stations were located north of the boundary, zone B stations in the boundary, and zone C stations south of the boundary. A total of 9 stations were occupied in both zone B and zone C, but only 6 long-line stations could be fished in zone A due to heavy seas. Some experimenting was done with float line length as indicated in figure.

Only nine skipjack tuna were caught in the study area. No bird flocks or schools of other tuna species were observed. Blood samples were taken from skipjack. All fish were measured. Gonads and stomachs were preserved from many of the fish.

Dolphin were quite common at all stations in the study area. Pompano dolphin (Coryphaena equiselis) were observed at stations



Diagrammatic diagram of long-line station location with station numbers and date occupied. Float line depth and catch are indicated for each station. All stations are in proximity to 150° W. longitude. Lines separating zones are diagrammatic.

Number of Selected Species Taken at Longline Stations in Zones A, B, and C. Catches are Based on 6 Sets in Zone A, 9 in B, and 9 in C.

| Zone | Whitetip Shark | Great Blue Shark | Lancetfish | Slender Mola | Common Dolphin | Blue Marlin | Bigeye Tuna | Skipjack Tuna |
|------|----------------|------------------|------------|--------------|----------------|-------------|-------------|---------------|
| A | 0 | 0 | 13 | 2 | 24 | 1 | 4 | 1 |
| B | 3 | 4 | 14 | 12 | 16 | 2 | 3 | 3 |
| C | 1 | 13 | 2 | 0 | 21 | 4 | 2 | 5 |

in zones A and B, but not in zone C. Pompano dolphin was easily differentiated from common dolphin (*Coryphaena hippurus*) while in the water by the former's lack of a yellow-pigmented caudal fin. Meristic counts were made on 90 common dolphin for comparison with 60 pompano dolphin which were taken with aku pole-and-line and subsequently preserved.

Other details of the cruise were:

1. Twenty-four 30-minute surface plankton tows were made.

2. A continuous record of surface temperature was maintained with the thermograph.

3. Canvas rafts which were attached to the end of the long-lines became waterlogged and sank after a few days.

4. Long-line depth was estimated with sounding tubes.

5. Blind chumming was performed on several occasions with no results.

6. Drift bottles and cards were released in the study area.

7. Ten nightlight stations were occupied.

8. In addition to trolling 2 surface lures at high speed between stations, 90 hours of approximately 5-knot trolling was performed. A total of 13 common dolphin, 1 pompano dolphin, and 2 small yellowfin tuna were taken by trolling.

Note: See *Commercial Fisheries Review*, February 1963 p. 23.



Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, 1962:

Fresh and Frozen: For the use of the Armed Forces under the Department of Defense, less fresh and frozen fishery products were purchased by the Defense Subsistence Supply Centers during the fourth quarter of 1962 than in the same period of 1961. The decline was 21.0 percent in quantity and 17.1

percent in value. For the year 1962, purchases were down 0.4 percent in quantity, but up 15.4 percent in value from those in the previous year. The increase in value was due to the purchase of higher-priced fishery products and an increase in the price of most fishery products in 1962.

Table 1 - Fresh and Frozen Fishery Products Purchased by Defense Subsistence Supply Centers, October-December 1962 with Comparisons

| QUANTITY | | | | VALUE | | | |
|--------------------|-------|------------------|--------|------------------|-------|------------------|--------|
| Oct. - Dec. 1962 | | Jan. - Dec. 1961 | | Oct. - Dec. 1962 | | Jan. - Dec. 1961 | |
| 5,422 | 6,863 | 23,356 | 23,450 | 3,413 | 4,115 | 14,388 | 12,471 |
| (1,000 lbs.) | | | | (\$1,000) | | | |

Canned: Purchases of canned fishery products for the use of the Armed Forces in the fourth quarter of 1962 were much greater than in the same period of 1961. In the year

Table 2 - Canned Fishery Products Purchased by Defense Subsistence Supply Centers, October-December 1962 with Comparisons

| Product | QUANTITY | | | | VALUE | | | |
|--------------------|------------------|-------|------------------|-----------------|------------------|-------|------------------|-------|
| | Oct. - Dec. 1962 | | Jan. - Dec. 1961 | | Oct. - Dec. 1962 | | Jan. - Dec. 1961 | |
| Tuna | 1,899 | 2,688 | 5,607 | 7,081 | 881 | 1,375 | 2,943 | 3,311 |
| Salmon | 2,279 | - | 3,295 | 1,403 | 1,160 | - | 1,798 | 877 |
| Sardines | 57 | 10 | 122 | 131 | 23 | 6 | 54 | 61 |
| (1,000 lbs.) | | | | (\$1,000) | | | | |

1962, purchases of the three principal canned fishery products (tuna, salmon, and sardines) were up 4.7 percent in quantity and 12.3 percent in value from those in the previous year.

Notes: (1) Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated because local purchases are not obtainable.

(2) See *Commercial Fisheries Review*, April 1963 p. 1.



Fishery Resources

THE SEA IS A GREAT UNTAPPED RESOURCE OF HUMAN FOOD:

The sea, with its vast untapped living resources, offers man his greatest challenge and his greatest opportunity in the quest to free the world from hunger, Secretary Stewart

Udall, U. S. Department of the Interior, on March 21, 1963, in connection with Freedom From Hunger Week proclaimed by President Kennedy.

National Freedom From Hunger Week, March 17-23, was especially appropriate be-

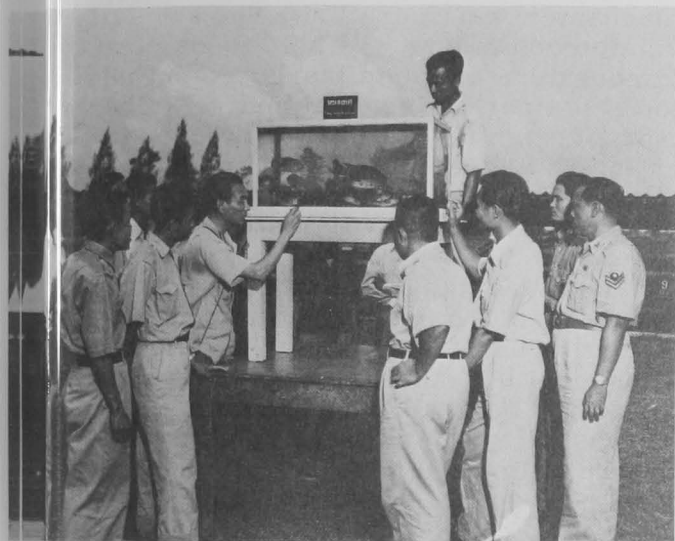


Fig. 2 - Characteristics of tilapia fish shown to Thai fisheries representatives meeting at Bangkok Experiment Station. Visiting expert Dr. S. Ling (center) is briefing provincial fisheries officers and village chiefs on distribution of fingerlings to Thai farmers, and the steps in fish pond culture projects being advised by technical assistance experts of FAO.



Fig. 1 - The best way of overcoming the general lack of protein in the diets of the Far Eastern population is by increasing the production and consumption of fish. To that end the FAO organized a fisheries seminar in Djakarta in 1952 to which 18 countries of the region participated. This photograph shows breeders of carp being put into baskets to be transferred to breeding ponds at the Tjinindi fish-breeding farm, Java, Indonesia.

cause as part of the Freedom From Hunger Campaign the United States will be host to the World Food Congress in Washington, D. C., June 14-18, 1963. The United States, as a member of the Food and Agriculture Organization (FAO) of the United Nations, is participating with nearly 100 other countries in the FAO international drive against hunger. About 1,200 people will participate in the June conference.

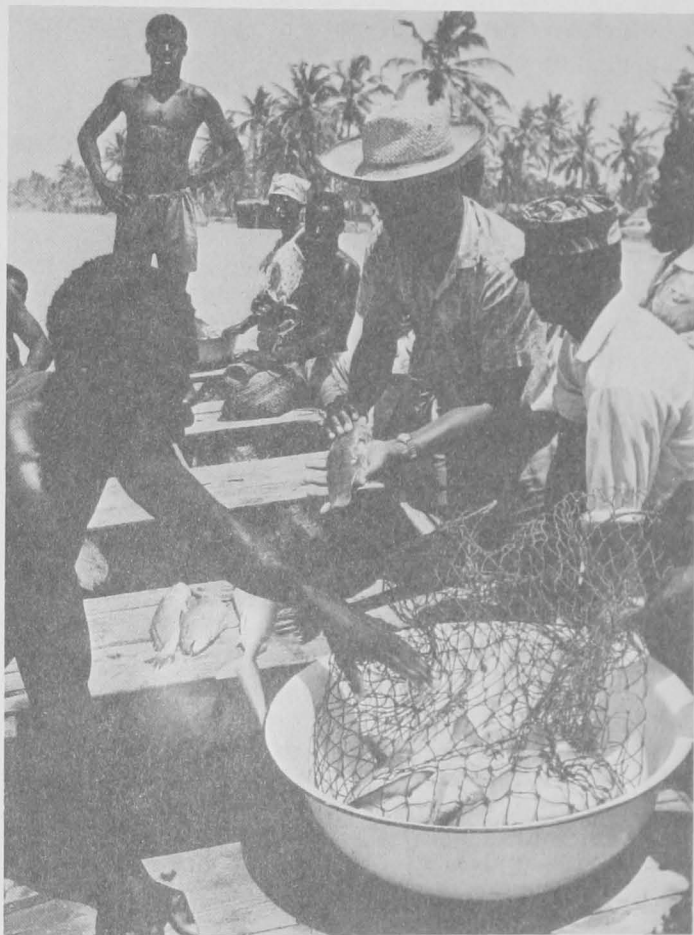


Fig. 3 - Thousands of people live from fishing along the coastal belt of Togo but their boats, equipment, and fishing methods are primitive and their catch is small. No mechanized fishing is yet practiced. Fish, however, is one of the most important sources of animal protein for the people of Southern Togo and the Government recently asked FAO to help improve the fishing industry. The former Director of the Fishing Service of British Guiana, was sent to Togo by FAO for this purpose. Fish are usually dried without cleaning and gutting, which reduces keeping qualities. The FAO expert demonstrates gutting to the fishermen.

In emphasizing the importance of Freedom From Hunger Week, Secretary Udall said:

"The United States has been uniquely blessed with its bounty of foods and it must exert world leadership in helping solve the food problems of the starving and malnourished peoples.

"While fishing for food has been one of man's means of existence since before the dawn of recorded history, we know little about the sea and its resources. We are approaching an era when man will harvest his food from the sea instead of hunting for it as he does now. Just as man moved from the land economy of hunting ages ago, and turned to a pasture and farm economy, so is he moving from an ocean economy based upon hunting for his food to a more productive and more certain way of obtaining food by managing the vast pastures of the sea."

The Secretary also quoted the President, who in a March 1961 message to the Congress, stated:

"The seas offer a wealth of nutritional resources. They already are a principal source of protein. They can provide many times the current food supply if we but learn how to garner and husband this self-renewing larder. To meet the vast needs of an expanding population, the bounty of the sea must be made more available. Within two decades our own Nation will require over a million more tons of seafood than we now harvest."

The Secretary said that fish protein concentrate (FPC) can contribute valuably to this program and emphasized the high priority the Department of the Interior is giving to developing this low-cost, high-protein fishery product. This has particular significance because one of the major items on the World Food Congress agenda is the role of fisheries in improving the nutritive diets of poorly fed people.



Frozen Foods

NEW LARGE SHIPPING CONTAINER DEVELOPED:

Two large United States companies have combined their abilities to give the frozen food industry a new, safer, and less expensive system for transporting foods that require regulated temperatures.

One of the firms has announced that it is ready to market a new, large, insulated shipping container that will protect frozen and other foods for long periods of time from outside temperatures. At the same time, the second firm said it is planning to offer

different size trucks and tractor-trailers equipped with the new food containers to food handlers on a lease basis.

The system permits unitized shipment of frozen and other temperature-sensitive foods aboard flatbed trucks and trailers without mechanical refrigeration. The specially-insulated containers will hold foods near the temperature at which they were put inside the container for several hours. In recent tests, frozen foods were put into the container at -5° F. and after 24 hours in summer heat it was found the foods had undergone a temperature rise of only five degrees.

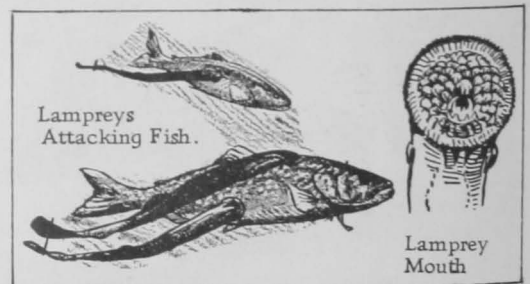
The system consists of a metal-covered box 95 inches long, 48 inches wide, and 85 inches high. Box-within-a-box construction is used with $3\frac{1}{2}$ inches of polyurethane plastic insulation between the aluminum inner and outer shell. Ten units (holding up to 5,800 pounds) fit on a large flatbed semi-trailer truck. (Refrigeration Service and Contracting January 1963.)



Great Lakes Fishery Investigations

RESEARCH VESSEL "SISCOWET" PROGRAM FOR 1963:

Assessing the abundance and distribution of young lake trout in Lake Superior will be the primary mission of the U. S. Bureau of Commercial Fisheries research vessel Siscowet in 1963. Quantitative measurements of hatchery-reared and native stocks become increasingly necessary during the early stages of sea lamprey control and lake trout rehabilitation. It is particularly important to determine when natural reproduction is re-established.



The tentative cruise schedule of the Siscowet in 1963 is as follows:

Tentative Cruise Schedule of Siscowet in 1963

| Period | Subject of study |
|------------------------|-------------------------|
| May 6-17 | Lake trout (gill nets) |
| June 3-14 | Lake trout (trawl nets) |
| June 24-July 3 | Environmental survey |
| July 15-26 | Lake trout (trawl nets) |
| July 29-August 9 | Lake trout (gill nets) |
| August 19-30 | Environmental survey |
| September 9-20 | Isle Royale survey |
| September 23-October 4 | Keweenaw Bay survey |
| October 14-25 | Lake trout (trawl nets) |
| November 11-22 | Lake trout (gill nets) |
| | Environmental survey |
| | Lake trout spawning |
| | Whitefish spawning |

Studies of the abundance and distribution of juvenile lake trout will be made from catches of experimental gill nets (cruises I, II, and VIII) and trawl nets (cruises III, IV, V, VI, VII) fished at various depths and locations in western Lake Superior. The gill nets and trawls will be systematically fished to provide information on the relative abundance of certain year classes and the seasonal distribution of the various size groups. Cruise IX will be devoted to the annual assessment of spawning populations of lake trout in the Apostle Islands region.

Environmental studies at three preselected biological stations will also be made during cruises II, IV, and VIII. Special inquiry will be made into environmental factors which influence the seasonal depth and areal distribution of lake trout.

Cruises V (to Isle Royale) and VI (to Keweenaw Bay) will deal with the contribution of hatchery-reared lake trout to the native population and the relative abundance of all lake trout as compared to previous years. Some time will be spent in the Laughlin Fish Point area investigating juvenile lake trout. Earlier work (1952-53) found that native lake trout most abundant in that region. Experimental fishing for chubs during cruise V may yield additional information on the identities of the various species.

The annual assessment of spawning populations of lake whitefish will be continued during cruise X. Spawning fish will be tagged and released on the spawning grounds to learn more of their homing instincts.

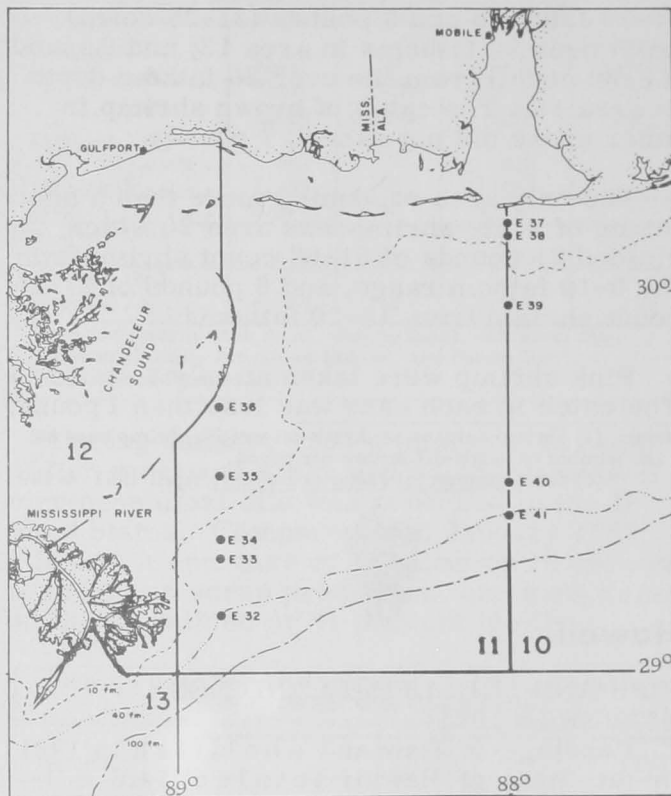
The dates and activities of certain cruises during 1963 may be altered to meet changing conditions.



Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Gus III" Cruise GUS-2 (February 19-March 11, 1963): Catches were generally poor during this cruise off the coast of Texas, Louisiana, and Mississippi by the chartered research vessel Gus III. The vessel (operated



New areas investigated during Cruise Gus-2 of the M/V Gus III (February 19-March 11, 1963).

by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries) was engaged in a continuing study of the distribution of shrimp in the Gulf of Mexico. The cruise extended the investigation into a new area east of the Mississippi River Delta.

Ten statistical areas (10, 11, 13, 14, 16, 17, 18, 19, 20, and 21) were covered. Because of poor weather, fishing was difficult at times. However, one 3-hour tow with a 45-foot shrimp trawl was made in depths of 0-10 fathoms, 10-20 fathoms, and over 20 fathoms in each of the areas. Hydrographic observations were made as scheduled.

East of the Mississippi Delta, catches were extremely light. Not more than 2 pounds of shrimp were taken in any 3-hour tow in statistical areas 10 and 11.

West of the Mississippi Delta, the best single catch per 3-hour tow was 39 pounds of 15-20 count brown shrimp from 10-20 fathoms in area 14. The same area yielded 7 pounds of 15-20 count brown shrimp from the over 20 fathom depth. Other areas yielded light catches of brown shrimp as follows: 16 pounds (31-40 count) from the 10-20 fathom range in area 19; 9 pounds (31-40 count) from 10-20 fathoms and 9 pounds (21-25 count) from over 20 fathoms in area 13; and 9 pounds (15-20 count) from the over 20 fathom depth in area 16. The catch of brown shrimp in other areas did not exceed 7 pounds.

The only area producing more than a scattering of white shrimp was area 20 which yielded 21 pounds of 51-67 count shrimp from the 0-10 fathom range, and 6 pounds of 21-25 count shrimp from 10-20 fathoms.

Pink shrimp were taken at only 4 stations. The catch in each case was less than 1 pound.

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

(2) See *Commercial Fisheries Review*, April 1963 p. 18.

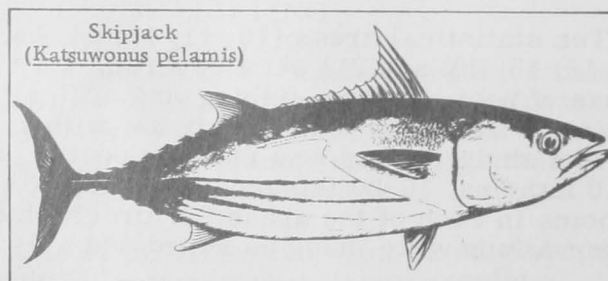


Hawaii

FISH AND SHELLFISH LANDINGS HIGHER IN 1961:

Landings of fish and shellfish in 1961 in the State of Hawaii totaled 14.5 million pounds with an ex-vessel value of nearly \$3 million according to the U. S. Bureau of Commercial Fisheries. This was a gain of 3.4 million pounds (30 percent) in volume and \$193,000 (7 percent) in value as compared with 1960.

Increased landings of skipjack tuna accounted for most of the increase. The gain



Skipjack
(*Katsuwonus pelamis*)

fulfilled predictions made by the Bureau biologists of a better than average year for skipjack landings. In 1961, the catch of skip-

jack averaged 6,000 pounds per trip, the four highest average catch per trip since 1952.

The Island of Oahu ranked first with a catch of 11 million pounds (76 percent). The Island of Hawaii was in second place with 1.9 million pounds, followed by Maui (1.3 million pounds). The remainder of the catch was landed at ports on the Islands of Kauai, Molokai, and Lanai. Tuna landings accounted for 86 percent of the quantity and 69 percent of the value of all fishery products landed in Hawaii.

The 1961 catch was taken by 589 fishing craft operated during the year including 65 vessels of 5 net tons and over, 18 motor boats, and 20 other boats.



Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January 1963: Based on domestic production and imports, the United States available supply of fish meal for January 1963 amounted to 20,780 short tons--7,379 tons (or 26.2 percent) less than during January 1962. Domestic production was 447 tons (or 16.4 percent) less and imports were 6,932 tons (or 27.3 percent) lower than in January 1962. Peru continued to lead other countries with shipments of 12,672 tons during January 1963.

| U. S. Supply of Fish Meal and Solubles, January 1963 with Comparisons | | | |
|--|---------|--------|---------------|
| Item | January | | Total 1963 |
| | 1/1963 | 1962 | |
| (Short Tons) | | | |
| Fish Meal and Scrap: | | | |
| Domestic production: | | | |
| Menhaden | - | - | 243 |
| Tuna and mackerel | 1,708 | 1,641 | 20 |
| Herring | 2/ | 2/ | 3 |
| Other | 577 | 1,091 | 41 |
| Total production | 2,285 | 2,732 | 310 |
| Imports: | | | |
| Canada | 2,905 | 2,587 | 4 |
| Peru | 12,672 | 20,082 | 186 |
| Chile | 2,918 | 1,157 | 9 |
| So. Africa Republic | - | 1,500 | 10 |
| Other countries | - | 101 | 3 |
| Total imports | 18,495 | 25,427 | 252 |
| Available fish meal supply | 20,780 | 28,159 | 562 |
| Fish Solubles: | | | |
| Domestic production 3/ | | | |
| | 639 | 1,637 | 123 |
| Imports: | | | |
| Canada | 148 | 208 | 1 |
| So. Africa Republic | - | - | 1 |
| Other countries | - | 65 | 3 |
| Total imports | 148 | 273 | 6 |
| Available fish solubles supply .. | 787 | 1,910 | 129 |

1/ Preliminary.

2/ Included with "other."

3/ 50-percent solids. Includes production of homogenized condensed fish.

United States supply of fish solubles (including homogenized fish) during January 1963 amounted to 787 tons--an increase of 1,123 tons as compared with January 1962. Domestic production and imports dropped 61.0 percent and 41.0 percent, respectively.

FISH MEAL, OIL, AND SOLUBLES:
Major Indicators for U. S. Supply, February 1963: United States fish oil and fish solubles production in February 1963 was lower 0.2 percent and 19.5 percent, respectively, compared with February 1962. Fish meal production increased 25.8 percent.

Major Indicators for U.S. Supply of Fish Meal, Solubles, and Oil, February 1963

| Month and Period | 1963 | 1962 | 1961 | 1960 | 1959 |
|-----------------------------|--------|---------|---------|---------|---------|
| (Short Tons) | | | | | |
| Fish Meal: | | | | | |
| Production 1/: | | | | | |
| April | - | 6,311 | 6,179 | 5,076 | 6,810 |
| March | - | 2,495 | 2,751 | 2,955 | 2,122 |
| February | 2,600 | 2,066 | 2,071 | 1,923 | 2,128 |
| January | 2,285 | 2,732 | 2,723 | 2,443 | 3,095 |
| Jan.-Dec. prelim. | - | 288,336 | 289,039 | 257,969 | 275,396 |
| Totals 2/ | - | 310,000 | 311,265 | 290,137 | 306,551 |
| Imports: | | | | | |
| April | - | 26,390 | 19,060 | 10,397 | 17,654 |
| March | - | 18,528 | 20,458 | 18,652 | 16,719 |
| February | - | 18,819 | 14,344 | 8,081 | 19,463 |
| January | 18,495 | 25,427 | 9,531 | 8,571 | 19,700 |
| Jan.-Dec. | - | 252,307 | 217,845 | 131,561 | 132,925 |
| Solubles: | | | | | |
| Production 3/: | | | | | |
| April | - | 3,766 | 2,539 | 2,870 | 6,987 |
| March | - | 1,903 | 2,564 | 2,462 | 2,382 |
| February | 1,261 | 1,566 | 1,650 | 1,812 | 2,211 |
| January | 639 | 1,637 | 1,800 | 1,697 | 1,913 |
| Jan.-Dec. | - | 123,402 | 112,241 | 98,929 | 165,359 |
| Imports: | | | | | |
| April | - | 323 | 220 | 134 | 1,622 |
| March | - | 308 | 135 | 87 | 410 |
| February | - | 2,249 | 155 | 1,875 | 398 |
| January | 148 | 273 | 219 | 214 | 1,567 |
| Jan.-Dec. totals | - | 6,308 | 39 | 3,714 | 26,630 |
| (1,000 Gallons) | | | | | |
| Body Oils: | | | | | |
| Production: | | | | | |
| April | - | 652 | 439 | 248 | 436 |
| March | - | 42 | 63 | 66 | 42 |
| February | 44 | 49 | 44 | 51 | 38 |
| January | 55 | 93 | 55 | 46 | 64 |
| Jan.-Dec. prelim. | - | 33,178 | 33,471 | 26,690 | 24,418 |
| Totals 4/ | - | - | 34,409 | 27,853 | 24,945 |
| Imports: | | | | | |
| April | - | 1,327 | 980 | 761 | 1,116 |
| March | - | 2,556 | 753 | 421 | 600 |
| February | - | 2,886 | 2,327 | 3,177 | 999 |
| January | 10 | 679 | 1,793 | 276 | 898 |
| Jan.-Dec. | - | 16,407 | 16,331 | 19,154 | 19,264 |

1/Does not include crab meat, shrimp, misc. meals.
2/January data computed from monthly data. Fish meal production reported current data comprised 90 percent for 1959, 89 percent for 1960, 93 percent for 1961, and 90 percent for 1962.
3/Includes homogenized fish.
4/January data computed from monthly data. Represents over 95 percent of the total production.
Data for 1962 and 1963 are preliminary.

Production, January-February 1963: Preliminary data on U. S. production of fish meal, oil, and solubles for February 1963 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the International Association of Fish Meal Manufacturers are shown in table 1.

Table 1 - U. S. Production^{1/} of Fish Meal, Oil, and Solubles, February 1963 (Preliminary) with Comparisons

| Area | Meal | Oil | Solubles | Homogenized ^{3/} |
|--------------------------|------------|---------------|------------|---------------------------|
| | Short Tons | 1,000 Gallons | Short Tons | Short Tons |
| February 1963: | | | | |
| East & Gulf Coasts | 622 | 7 | 118 | - |
| West Coast ^{2/} | 1,985 | 38 | 1,143 | - |
| Total | 2,607 | 45 | 1,261 | - |
| Jan.-Feb. 1963 | | | | |
| Total | 4,616 | 91 | 2,596 | 50 |
| Jan.-Feb. 1962 | | | | |
| Total | 4,798 | 143 | 2,984 | 130 |

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

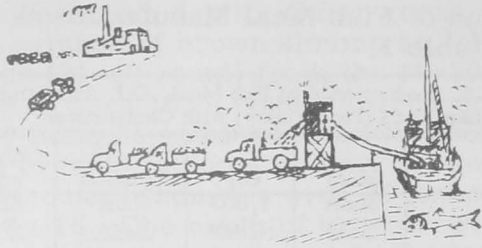
During January 1963 a total of 2,285 tons of fish meal and scrap and 54,654 gallons of marine-animal oils was produced in the United States. Compared with January 1962, this was a decrease of 447 tons or 16 percent in meal and scrap production, and a decrease of 38,282 gallons or 41 percent in oil.

Table 2 - U. S. Production of Fish Meal, Oil, and Solubles, January 1963^{1/} with Comparisons

| Product | January | | Total 1962 |
|---|---------|--------|------------|
| | 1/1963 | 1962 | |
| (Short Tons) | | | |
| Fish Meal and Scrap: | | | |
| Herring | - | - | 3,543 |
| Menhaden ^{2/} | - | - | 243,839 |
| Sardine, Pacific | 6 | 455 | 743 |
| Tuna and mackerel | 1,708 | 1,641 | 20,874 |
| Unclassified | 571 | 636 | 19,337 |
| Total | 2,285 | 2,732 | 288,336 |
| Shellfish, marine-animal meal and scrap | 3/ | 3/ | 21,664 |
| Grand total meal and scrap | 3/ | 3/ | 310,000 |
| Fish solubles | 760 | 1,597 | 112,764 |
| Homogenized condensed fish | 50 | 40 | 10,651 |
| (Gallons) | | | |
| Oil, body: | | | |
| Herring | - | - | 666,503 |
| Menhaden ^{2/} | - | - | 30,548,560 |
| Sardine, Pacific | - | 14,200 | 23,589 |
| Tuna and mackerel | 37,344 | 37,816 | 621,903 |
| Other (including whale) | 17,310 | 40,920 | 1,584,445 |
| Total oil | 54,654 | 92,936 | 33,445,000 |

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

Tuna and mackerel meal amounted to 1,708 tons--accounting for 75 percent of the January 1963 meal total. Oil from tuna and mack-



erel (37,344 gallons) comprised 68 percent of the January 1963 oil production.

A total of 760 tons of fish solubles was produced in January 1963--less than half the production in January 1962. The production of homogenized condensed fish amounted to 50 tons--10 tons more than in January 1962.



Louisiana

SHRIMP AND OYSTER INVESTIGATIONS, 1962:

Highlights of the 1962 shellfish research and management program of the Louisiana Wildlife and Fisheries Commission were described in the March-April 1963 issue of the Louisiana Conservationist as follows:

Shrimp research in 1962 was greatly expanded. Weekly post larval and juvenile samples were taken throughout the year. Growth rates were established and the results when coordinated with hydrographic data furnished information needed for properly regulating the fishing season. Studies of the location and density of juveniles provided useful information for fishermen.

Both brown and white shrimp were successfully grown in experimental ponds. Mortality rates were lower than expected indicating that profitable production might be attained in ponds that were properly managed.

Management of oyster seed grounds involved shell plantings for cultch and the harvesting of seed oysters from Sister Lake on an alternate year experimental plan. Twenty-five thousand cubic yards of clam shells were planted as cultch in the Black Bay area of Louisiana. Seed oysters were found on over

80 percent of the planted shells. Production of seed and other type oysters from Sister Lake exceeded 23,000 barrels during September and October 1962. This reflects the success of the alternate year system of harvesting. Over-all setting of oysters on Louisiana's natural seed grounds in 1962 was the heaviest recorded in recent years, indicating excellent conditions for 1963.



Breaking up clumps of oysters from one of Louisiana's natural reefs.

Routine extension services to individual oyster growers were continued in 1962 at a level similar to past years.



Maryland

NEW DIRECTOR OF SEAFOOD PROCESSING LABORATORY APPOINTED:

The appointment of Dr. Mahlon C. Tatro as Director of the Seafood Processing Laboratory of the Natural Resources Institute, University of Maryland, was announced by the Institute on March 11, 1963.

Tatro received his doctorate in food technology from the University of Massachusetts. His previous experience includes positions with the United States Operations Mission, Santiago, Chile; a food products firm in California; and the Bureau of Laboratories, Vermont State Department of Health.



Atlantic Fisheries

Exploration and Gear Research

STUDIES ON COMMERCIAL FISHING POTENTIAL OF OCEAN PERCH IN DEEP WATER OFF NOVA SCOTIA CONTINUED:

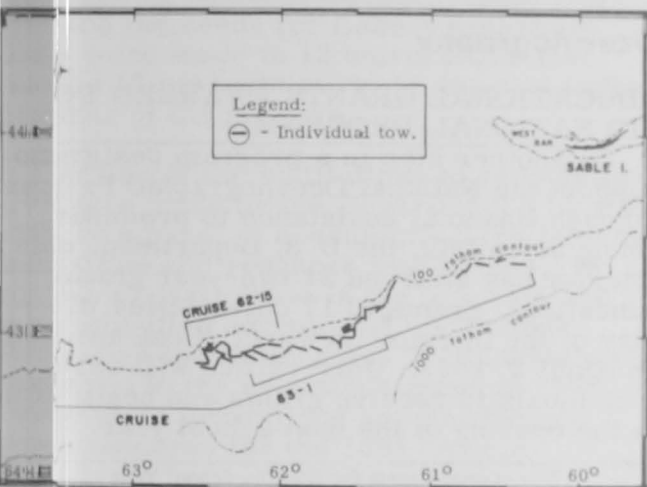
On the "Delaware" Cruise 62 (December 3-11, 1962) and Cruise 63-1 (January 28-February 5 and February 12-21, 1963): The second and third in a planned series of cruises to explore the Nova Scotian section of the Continental Slope with emphasis on a search for commercial concentrations of ocean perch (*Sebastes marinus mentella*) were conducted by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware on February 21, 1963. Such concentrations,

nearer to home port, would permit commercial trawling in deeper waters than are now being fished and might provide supplemental areas for fishing during periods when weather conditions tend to restrict fishing effort or during periods when fish are scarce in other areas.

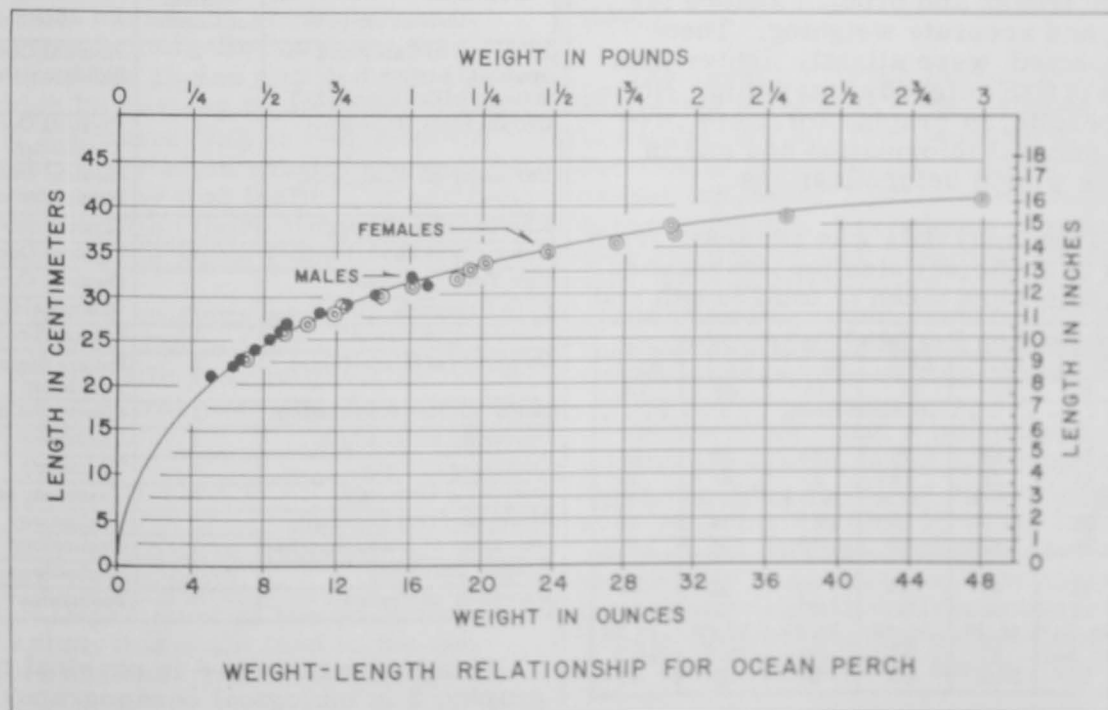
During cruise 62-15, a roller-rigged "number 41" otter trawl net was used without ground cables but with 5-fathom legs. During cruise 63-1, a "number 41 redfish net" was used with both 5-fathom legs and 5-fathom ground cables.

During the two cruises, 45 tows, of 45-minutes duration each were made; all tows were timed from "hook-up" to "knock-out". Of the 45 tows, 37 were made within the depth range of primary interest (200-500 fathoms). Due to the generally uneven and precipitous nature of the slope bottom in this area, an additional 5 tows, which were made near the shoal limits of the depth range, extended into depths of less than 200 fathoms; 2 tows, which were made near the deeper limits of the range, extended into depths greater than 500 fathoms. One additional tow was made entirely in depths exceeding 500 fathoms.

Coverage in the area fished was generally uniform with one exception--during cruise 63-1 a nearly untrawlable area was omitted in order to obtain greater coverage during the limited periods of fishing weather available in this general area during this season. At



Cruises 62-15 and 63-1 of the exploratory fishing vessel Delaware.



WEIGHT-LENGTH RELATIONSHIP FOR OCEAN PERCH

the end of cruise 63-1, three tows were made in the area where the best catch resulted during the first in this series of cruises (cruise 62-11); poor catches resulted - the best of the three was only about 290 pounds in 45 minutes of towing.

The best catches of ocean perch, taken during the two cruises, were made in the depth range of 250 to 300 fathoms with the upper part of this range the most productive. Weight determination of all catches was made by volumetrically measuring the fish caught in bushel baskets and weighing one or more randomly-selected baskets of fish to determine the average (mean) weight per bushel; an extension of the mean weight, per basket, multiplied by the number of baskets gave the total estimated weight. The 4 best catches were all taken during cruise 63-1 and occurred on tows 10, 11, 14, and 23. The estimated weight of those catches was about 2,275, 2,950, 3,800, and 3,175 pounds, respectively. Bottom temperatures taken during these tows were, correspondingly, 5° C. (41.0° F.), 4.5° C. (40.1° F.), 4.75° C. (40.55° F.), and 5° C. The average (mean) weights of the perch taken during each of these tows are calculated to be 1.8, 1.7, 1.5, and 1.4 pounds respectively; the average (mean) lengths are correspondingly, 35.91, 35.57, 34.21, and 35.34 centimeters or approximately 14-1/8, 14, 13-1/2, and 13-7/8 inches. As length-weight information on ocean perch does not seem to be readily available, several bushels of fish were frozen and brought ashore for measuring and accurate weighing. These fish, as expected, were slightly lighter than the fresh, wet fish weighed aboard ship. However, the results, in graphic form are presented for general information and use in approximate weight determinations.

Length-frequency data was recorded from each catch of sufficient size for this purpose. Measurements were taken of total length and

| Length-Frequency Data from Selected Catches | | | | | | |
|---|-------|-------|-------|-------|-------|-------|
| Cruise No. | 62-15 | 63-1 | 63-1 | 63-1 | 63-1 | 63-1 |
| Tow No. | 4 | 10 | 11 | 14 | 23 | 25 |
|(Centimeters)..... | | | | | | |
| Males: | | | | | | |
| Max. | 36 | 35 | 35 | 33 | 39 | 48 |
| Min. | 21 | 32 | 28 | 25 | 27 | 36 |
| Mean | 25.21 | 33.00 | 31.14 | 29.13 | 33.36 | 41.08 |
| Median | 26 | 32.5 | 30 | 28.5 | 34 | 41 |
| Mode | 26 | 32 | 30 | 28 | 34 | 43 |
| Females: | | | | | | |
| Max. | 31 | 41 | 43 | 41 | 42 | 49 |
| Min. | 21 | 30 | 30 | 27 | 28 | 39 |
| Mean | 29.84 | 36.30 | 36.68 | 35.52 | 36.07 | 43.78 |
| Median | 30.5 | 37 | 36 | 36 | 36.5 | 43.5 |
| Mode | 31 | 38.5 | 36 | 38 | 37 | 43 |

read to the nearest centimeter. The large fish were taken on cruise 63-1, Tow No. 2; the smallest were taken on cruise 62-15, Tow No. 4. The data from those tows are presented in the table together with those from the 4 largest tows described in the preceding paragraph.

The largest fish measured was a female taken during Tow No. 25, cruise 63-1; this fish was 49 centimeters long (about 18-7/8 inches). The two smallest fish measured were a male and female fish of equal length taken during Tow No. 4, cruise 62-15; these fish were about 21 centimeters long (8-1/4 inches).



Oceanography

EDUCATIONAL GRANTS AWARDED TO AID NATIONAL PROGRAM:

As another step in a program designed to support the National Oceanographic Program through financial assistance to promising young scientists, the U. S. Department of the Interior has awarded 21 two-year graduate educational grants to 17 universities, Secretary of the Interior Stewart L. Udall announced on April 3, 1963. Universities will select individuals to receive grants and begin studies at the opening of the next school year.

| Educational Grants for 1963/64 School Year | | |
|--|------------------|--|
| Institution | Number of Grants | Field of Study |
| University of California (grants to Scripps Institution of Oceanography) | 2 | Physical Oceanography Biological Oceanography |
| Oregon State University | 2 | Physical Oceanography Technology |
| University of Washington | 2 | Physical Oceanography Fishery Biology |
| Johns Hopkins University | 1 | Physical Oceanography |
| University of Rhode Island | 1 | Physical Oceanography |
| New York University | 1 | Physical Oceanography |
| Duke University | 1 | Biological Oceanography |
| University of Hawaii | 1 | Fishery Biology |
| University of Miami (Fla.) | 2 | Fishery Biology Taxonomy |
| North Carolina State College | 1 | Fishery Biology |
| University of Michigan | 1 | Taxonomy |
| University of Texas | 1 | Taxonomy |
| Iowa State University | 1 | Taxonomy or Biom. |
| Michigan State University | 1 | Technology |
| University of Massachusetts | 1 | Technology |
| Rutgers University | 1 | Technology |
| University of Florida | 1 | Economics |

The grants include 6 in physical oceanography, 2 in biological oceanography, 4 in

fishery biology, 4 in taxonomy, 4 in fishery technology, and 1 in economics.

Tuition fees are paid for each student selected, and each will receive \$3,000 for living expenses on a 12-month basis. Married students with children will receive an additional \$1,000 family allowance. At the close of each academic year, the student's progress is reviewed before the second year grant is approved.

The grant program, the Secretary expected, began in 1962 in accordance with Congressional action. It is administered by the Bureau of Commercial Fisheries of the Fish and Wildlife Service to assist in developing the scientific manpower necessary in the expanding National Oceanographic Program and the needs for fishery biologists. Grants were made to 12 universities last year and 17 graduate students are now in the fifth year of the program.

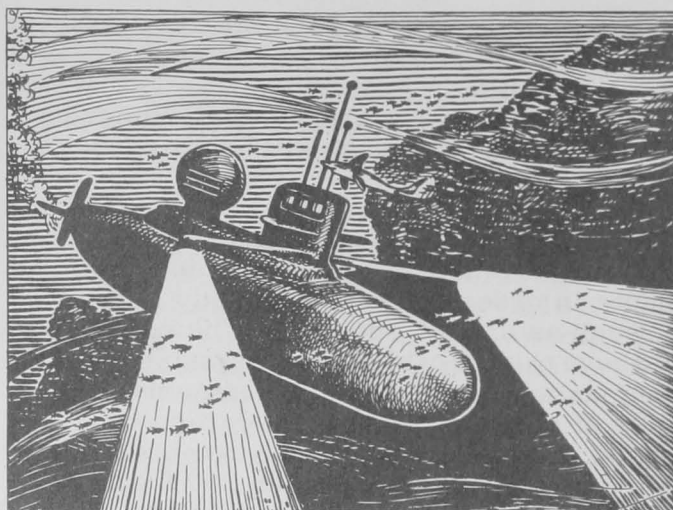
Selection of the institutions to receive the grants was made by the Department with the advice of a panel of consultants from leading universities and research institutions. Invitations to participate in the program are sent to qualified educational institutions. Fifty-five institutions and 77 students were considered in the selections made in 1962. Fifty-eight institutions and 92 students were considered for the 1963 awards.

For eligibility under the grant program an applicant must have been graduated or is expected to be graduated. He may then file with any university of his choice and designate the institution in which he desires to continue his education. If that university is one selected for the grant, the student must then meet the qualifications set by that institution and face whatever competition there is by other students striving in the same field.

Most of the 17 students who are studying under grants awarded in 1962 are in their third, fourth, or fifth year of graduate work. There are in their first year and three are in their second year.

FEASIBILITY STUDY OF RESEARCH SUBMARINE PROPOSED:

The U. S. Department of the Interior has proposed a study that could lead to the construction of a nuclear-powered research sub-



Artist's version of a mesoscaphe.

marine, or mesoscaphe, to explore the deep frontier of the ocean. Such a mesoscaphe, which literally means "middle boat," could carry out studies on marine fishing and mineral resources, disposal of atomic wastes, national defense, and weather predictions, according to Secretary Stewart L. Udall, U. S. Department of the Interior. Biological, physical, and chemical oceanography are prime investigational areas for a research mesoscaphe, he said.

According to the Director of the Bureau of Mines, the submarine's mineral missions would include investigations of marine mineral resources such as coal, petroleum, and metals. It would probe the bottom of the sea by obtaining cores drilled from the ocean floor.

The Director of the Bureau of Commercial Fisheries noted that a mesoscaphe operating to depths of 1,000 feet could obtain important records of temperature, salinity, dissolved oxygen nutrients, light, and the vagaries of ocean currents. Techniques presently available for underwater observations are largely limited to SCUBA diving, underwater photography and television, underwater viewing ports in surface craft, and bathyscaphes which are usually capable of only vertical movement.

On the other hand, a mesoscaphe with its lateral movement, could scoop up various types of plankton, follow sonar-tagged fish with instruments, and, by using lights, study many of the strange undersea creatures now known only from museum specimens. Viewing ports would allow direct observation of bottom fish and shrimp on the Continental Shelf and on the fishing banks. The reactions

of fish to fishing gear and the effects of fishing vessel noise on fish could be studied.

The all-weather capability of a submerged craft would permit its use at all latitudes during stormy seasons.

The mesoscaphé, as visualized by scientists, would require a submerged speed of 20 knots in order to track and study large fish, such as sharks and tuna. The vessel would have to be capable of staying submerged as long as six weeks to allow uninterrupted studies of biological and oceanographic changes. The length of the research submarine would have to be less than 200 feet for maneuverability. Nuclear power might be necessary to meet those requirements.

The Department of the Interior has asked Congress for funds to carry out a feasibility study on the mesoscaphé. Hull and power plant design, construction features, type of undersea collecting gear, and crew training problems would be included in such a study.

The study was proposed as part of the National Oceanographic program which is being planned and coordinated by the Inter-agency Committee on Oceanography of the Federal Council for Science and Technology.

"We need better eyes in the sea, eyes comparable in power to those with which scientists are probing outer space," Secretary Udall said. "We need to apply our technological abilities to more intensive probing of inner space, the world ocean."

* * * * *

NEW RESEARCH AIDS FOR WOODS HOLE OCEANOGRAPHIC INSTITUTION:

A converted four-engine C-54 airplane capable of taking scientists and equipment to any part of the world's oceans was to be delivered to the Woods Hole Oceanographic Institution, Woods Hole, Mass., late in the spring of 1963. The airplane was converted for science by an aircraft company in Miami, Fla., under grants from the Office of Naval Research and the National Science Foundation.

The C-54 will be operated by the Institution on a continuing loan from the Office of Naval Research. It will be used mainly for meteorological studies, but it will also be equipped for tracking scientific buoys, taking

temperature readings, and geological and geochemical studies. Its normal complement will be a scientific party of 8 and a crew of 10. Its first major assignment will be to the Indian Ocean in May 1963, according to the Director of the Institution.

The airplane is part of a continuing development program aimed at providing maximum facilities for an expanding basic research program at Woods Hole, according to the Director.

The Director said the Institution was also acquiring the following major new facilities as part of the current development program.

A 210-foot research vessel, the Atlantis, which was scheduled for delivery late in January 1963. The modern oceanographic vessel will have a range of 8,000 miles. It has accommodations for a crew of 28 and a scientific party of 25. Costing around \$4 million, the Atlantis II was built under a grant from the National Science Foundation.



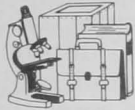
Artist's conception of the Atlantis II.

A 50,000-square foot biology and chemistry research laboratory now being erected in Woods Hole and scheduled for completion the summer of 1963. It will provide space for about 150 investigators, as well as an auditorium seating 250 persons. The main source of funds for the new laboratory was a \$2 million grant from the National Science Foundation.

A 99-foot research vessel, the Gosnold, which was converted from an Army cargo ship and delivered in December 1962. The Gosnold will be used principally for short cruises in local waters and along the continental shelf. It cost around \$35,000 and was paid for from the Institution's private funds.

20-foot submarine, capable of diving 660 feet into the ocean, scheduled for delivery late in the summer of 1963. The underwater craft, accommodating a pilot and one scientist, is designed for scientific studies of currents, turbulence, temperature, salinity, speed velocity, and biology--principally along the continental shelf. It was financed by a \$85,000 grant from the Office of Naval Research.

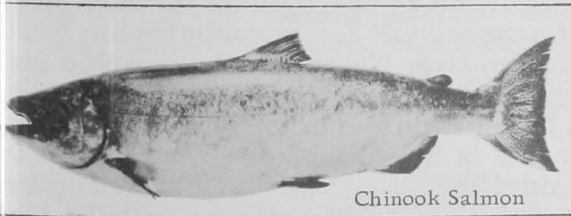
The Director said that those five major additions to the Institution's facilities, all within less than one year, should meet the needs of their scientific program for the immediate future. (Newsletter, January 31, 1963, United States National Oceanographic Center.)



Oregon

FISHERIES MAINTAIN SPRING CHINOOK SALMON RUN IN THE MIDDLE WILLAMETTE RIVER:

Construction of the Lookout Point-Dexter hydroelectric facilities left the spring chinook run in the Middle Willamette River heavily dependent on Oregon fish hatcheries. During late summer and fall, as the spawning period approaches, there is a heavy draw-down of the Lookout Point pool. This causes water temperatures in the river to rise above 60°F. Incubation of spring chinook salmon eggs at such relatively high temperatures results in heavy egg mortality and a high rate of deformity.



Chinook Salmon

In 1955, the Oregon Fish Commission established a salmon trapping facility below Dexter Dam. Chemical treatment of adult salmon during the holding period, transfer of adults to holding ponds at the Willamette Hatchery near Oakridge, Ore., pasteurization of the salmon viscera used in fingerling food, and the development of the Oregon pellet for fingerling fish have all contributed to a brighter outlook for the Middle Willamette run.

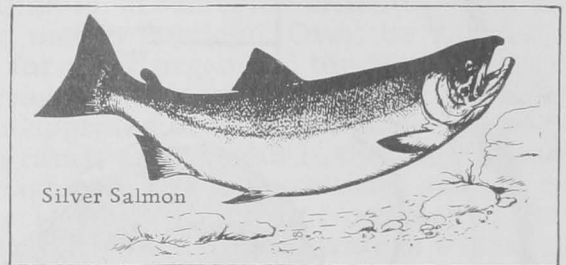
Approximately 1½ million yearling spring chinook were released in the Middle Willamette River in early 1963. Over 3 million young chinook are being reared for release during the early spring of 1964.

A record total of over 4½ million spring chinook eggs was taken from fish trapped at Dexter Dam during the 1962 season. The 2,193 adults trapped at Dexter in 1962 was slightly below the 2,240 annual average in the years since 1955. Despite the smaller number of returning salmon, more favorable water temperatures and improved disease control techniques resulted in higher survival of adults.

In the past, disease associated with warm temperatures during the fall took a high toll. Adult female losses at the Dexter collecting facility during the seven-year period between 1954 and 1960 ranged between 36 and 68 percent. The prespawning mortality of adult females was reduced to less than 7 percent during the last two seasons. (Oregon Fish Commission, March 25, 1963.)

NEARLY A MILLION YEARLING SILVER SALMON PLANTED IN ALSEA RIVER:

A total of 994,000 year-old silver salmon were released in the Alsea River in the first part of 1963 by the Oregon Fish Commission.



Silver Salmon

The young fish weighed 16 to the pound and averaged about 6 inches in length.

In earlier years, it was a common practice among fish culturists to release large numbers of fry shortly after hatching. But scientific investigation has indicated that rearing silver salmon to yearling migrant size leads to much higher survival rates.

A total of 6 million silver salmon eggs was taken at the Alsea Hatchery during the fall of 1962. The yield was well above the yearling rearing capacity of the station and helped supplement egg takes at other hatcheries. In

addition, 1,163 adult salmon were counted through the hatchery rack as they were allowed to pass upstream to spawn naturally. Large numbers of spawners also passed upstream uncounted during several periods of high water.

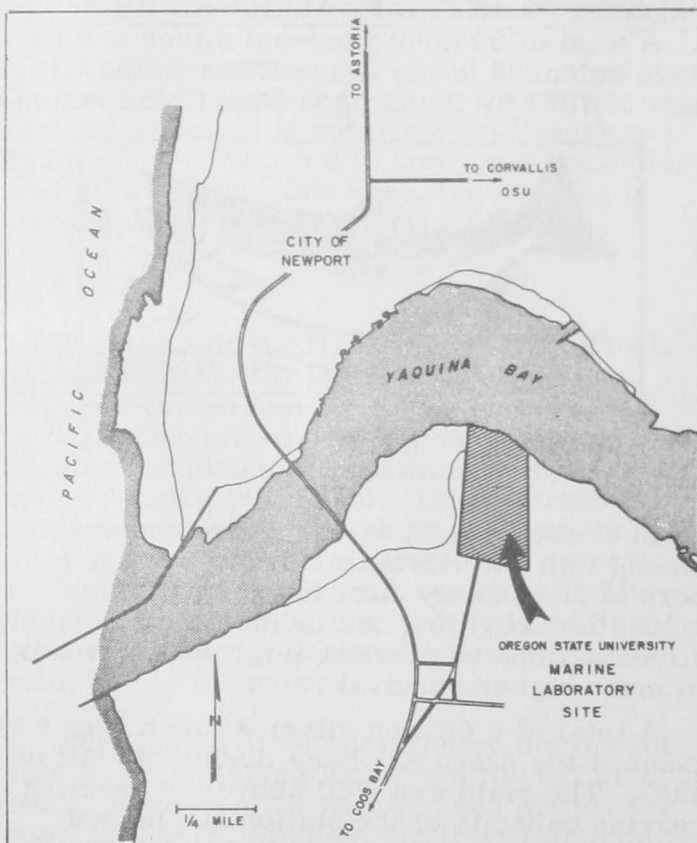
Since the liberation of 421,000 yearling silver salmon in 1961 formed the basis of last season's record Alsea run, the release in 1962 of 674,000 yearling silvers could mean an even heavier return during the fall of 1963.

The Alsea station appears to have contributed substantially to last year's good offshore silver salmon catch by commercial and sport fishermen, especially in the Newport-Waldport area. "This is an encouraging sign for the future indicating that, with modern fish cultural techniques, hatcheries can make a substantial contribution to the fishery," the Oregon Fish Commission's Director of Fish Culture said on April 1, 1963.

* * * * *

NEW MARINE SCIENCE LABORATORY WILL AID OCEANOGRAPHIC RESEARCH:

Construction is due to begin on the Marine Sciences Laboratory for Oregon State Uni-



versity. The laboratory will be located on Yaquina Bay just inside the harbor entrance. It will include docks and service facilities for the University's oceanographic vessels, and laboratory space and equipment for experimental work on marine organisms. There will also be a public aquarium and auditorium. The building, financed by a grant from the U. S. Area Redevelopment Administration, will be used by scientists in many phases of marine work, including oceanography.

Oceanographic work was begun at Oregon State in 1954 and expanded rapidly since the Department of Oceanography was formed in 1959. Research projects include studies of offshore water characteristics, currents and oceanic fronts; determination of bathymetry and analysis of sediments; inventories and ecological studies of marine life from bacteria to large fish and at all depths including the sea floor; chemistry and radio chemistry of sea water and marine organisms; and seismic and magnetic survey programs.

The early work was principally of a survey type. This phase is complete for some of the fields, as for example, the general study of physical and chemical properties and distributions of water masses. Papers on three aspects of this work are in preparation. Emphasis in physical oceanography is shifting to direct measurement of currents at all depths, the study of oceanic fronts, and examination of the effects of the weather, e.g. wind, on oceanic properties and circulation. The University will continue to sample a regular station pattern, however, to obtain data for time series studies.

Facilities in use include the R/V *Aconia*, the first vessel built for oceanographic research under the U. S. Navy's oceanographic research program. A four-story oceanography building will be built on the campus in Corvallis this year and is expected to be ready for occupancy by mid-1964. Most of the cost will be defrayed by a grant from the National Science Foundation, and about 25 percent of the funds will come from the State of Oregon.

The research program is accompanied and strengthened by graduate instruction. At present, 33 students are working toward graduate degrees in oceanography.

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**YEAR-OLD SILVER SALMON PLANTED
IN COOS RIVER SYSTEM:**

The release into the Coos River system of 250,000 yearling silver salmon has climaxed the third year of activity at Millicoma Pond, the Oregon Fish Commission-Weyerhaeuser Company's cooperative salmon rearing impoundment in Coos County, the Commission's Director of Fish Culture reported April 3, 1963.

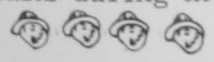
Of the 262,000 yearling salmon reared in the eight-acre impoundment, 16,000 were transported by tank truck and released in South Coos tributaries. The balance of the fish were liberated into the East Fork Millicoma at the outlet of the pond. In 1962, when the young silver salmon were reared in Millicoma Pond, they averaged a length of 2 1/2 inches in length. At the time of release the average length was close to 6 inches.

Millicoma Pond is a production facility, part of the Fish Commission's hatchery system. This is in contrast with Wahkeena Pond, located just off the Columbia River Highway near Multnomah Falls, which is an experimental facility designed to investigate the feasibility of rearing salmon to release without supplemental feeding. At Millicoma, hatcherymen have been feeding the salmon pellet, the nutritionally complete food developed some years ago through the cooperative efforts of the Fish Commission and Oregon State University scientists.

The yearlings just released will make their way to the ocean within the next few weeks. Not all will survive to make the return trip back upstream. Predators will take a toll and many other mishaps will thin the ranks during the ensuing months. Both sport fishermen and offshore commercial trawlers harvest Coos system fish over a



considerable reach of the ocean. Some of the young silvers will spend only 7 or 8 months in the ocean before returning as jacks in the fall of 1963. Most of the survivors, however, will remain in the sea for 19 or 20 months before returning as adults during the fall of 1964.



Preservation

**ULTRAVIOLET RADIATION TO REDUCE
BACTERIA IN REFRIGERATED
SEA WATER TESTED:**

Investigation of the effectiveness of two ultraviolet units designed for reducing the bacterial population in grossly contaminated liquid media is under way at the U. S. Bureau of Commercial Fisheries Technology Laboratory at Gloucester, Mass. One unit is a commercial unit and the other is an improvised unit. Both units are located at the Massachusetts Shellfish Treatment Plant in Newburyport.

Preliminary data on a refrigerated sea water sample collected after ultraviolet radiation treatment indicates a definite reduction of bacteria. Successful application of this technique could be of great importance to fishing vessels using refrigerated sea water for preservation of the catch. This is because the increasing bacterial content of the cold recirculating sea water sometimes results in a reduction of the quality of the fish.



Salmon

**PACIFIC SALMON INTERAGENCY
COUNCIL ORGANIZED:**

High level fisheries officials in the Northwest met in Portland, Ore., on March 28, 1963, and formally organized the Pacific Salmon Interagency Council. The Council's objective is to appraise current and future plans, needs, programs, and results in the field of salmon management and to coordinate salmon research. The Council is composed of State and Federal fishery administrators with a major responsibility for the management or study of Pacific salmon. The Council was formed pursuant to recommendations from the second Governors' Conference on Pacific Salmon which was held January 1963 in Seattle, Wash.

During the Portland meeting, the Director of the Oregon Fish Commission was elected chairman of the Council for the coming year. The Pacific Regional Director of the U. S. Bureau of Commercial Fisheries at Seattle was named vice-chairman, and the Executive Secretary of the Pacific Marine Fisheries Commission was elected permanent secretary.

The Council's bylaws provide for a technical committee composed of one fisheries scientist from each member agency. The primary responsibility of the committee of scientists is to develop a comprehensive program to insure an optimum sustained yield from the salmon resources of the Pacific Coast. The technical committee was instructed to (1) review and evaluate the report of the Second Governors' Conference on Pacific Salmon, (2) evaluate existing data and programs for duplication or omission, (3) determine information needed on a priority basis, and (4) submit a written report to the council. The scientists planned to begin working on their assignment immediately.

The seven state organizations represented on the interagency council are the Alaska Department of Fish and Game, California Department of Fish and Game, Idaho Department of Fish and Game, Oregon Fish Commission, Oregon Game Commission, Washington Department of Fisheries, and Washington Department of Game. Federal agencies represented include the Office of the Commissioner, U. S. Fish and Wildlife Service; Bureau of Commercial Fisheries, Pacific Regional Office and Alaska Regional Office; Bureau of Sport Fisheries and Wildlife, Pacific Regional Office; and Corps of Engineers, North Pacific Division.

Note: See Commercial Fisheries Review, February 1962 p. 48.



Scallops

CANADIANS JOIN WITH NEW BEDFORD PRODUCERS IN PROMOTIONAL PROGRAM:

The New Bedford (Mass.) Seafood Council, promotional organization of the New Bedford sea scallop fishing fleet, has announced that the Canadian scallop industry has joined in its United States program of advertising and public information.

Negotiations for joint promotion in the United States have been under way since the spring of 1962. Canadian buyers and packers of scallops will be the contributors to the program which formerly has been supported solely by funds from New Bedford vessel owners and crews.

It is expected that the Canadian participation will add about \$15,000 to the Council's advertising budget for 1963. This will per-

mit expansion of the present program which involves an annual budget of approximately \$70,000. It will enable the Council to seek out markets heretofore unexplored and strengthen areas that have been underexploited for budgetary reasons.

In the past few years imports of Canadian scallops have shown a sharp increase. In 1962, scallop imports from Nova Scotia dealers amounted to a new high of over 11 million pounds of scallop meats. New Bedford scallop vessels landed about 19 million pounds of scallop meats. The United States market was able to absorb both the domestic production and the Canadian imports at relatively profitable price levels.



Shad

COLUMBIA RIVER RUN INCREASES:

A total of 94,000 American shad were counted passing Bonneville Dam in 1960. The count jumped to 265,000 in 1961, and then to 417,000 in 1962, according to the Executive Director of the Pacific Marine Fisheries Commission. He suggested that the increase in size of the shad run in the mid-Columbia River may be due to ecological changes in the



Counting station on Bradford Island (on Columbia River) fish landings.

er caused by the construction of The Dalles Dam. The bulk of the shad migration has been observed between the dams at Bonneville and The Dalles. No shad were counted over Rocky Reach Dam in 1962. The Washougal reef below Bonneville is a famous shad spawning area.

Shad were transplanted in western rivers from the East Coast. They migrate to the ocean and come back to spawn more than once. In the Sacramento River, which supports an active shad sport fishery, they reach a size of 24 inches and a weight of around 10 pounds.

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SUSQUEHANNA RIVER STUDY PROPOSED:

A 2½-year study on the possibility of reestablishing shad runs in the Susquehanna River was proposed on April 4, 1963, by an administrative committee composed of representatives from the U. S. Fish and Wildlife Service and the States of Maryland, New York, and Pennsylvania. The suggested study, which was designed by a special technical committee, called for biological investigations to determine the advisability of constructing fishways at dams along the Susquehanna.

Features of the plan include hatching studies on 2 million shad eggs in 1963 and 1964. The eggs would be studied in floating hatching boxes at Falls on the North Branch of the Susquehanna River, at Sunbury and Marks Ferry on the main river, and at Lewistown on the Juniata River, all in Pennsylvania. Research would include bioassays to determine the effects of environmental factors on the early stages of shad development.

Some 50 million fertilized shad eggs from the Columbia River on the Pacific Coast would be planted in the Susquehanna River during the summer of 1963 and 1964 to produce young fish for studies of downstream migrations. Young shad spend their first summer in rivers and then migrate to sea in the fall. Stations would be set up at York Haven, Safe Harbor, Holtwood, and Conowingo dams to capture young shad and measure their downstream movement.

In another phase of the study, some 2,000 adult shad would be released above Conowingo and York Haven dams. Each year, 10 percent of the adult fish would be marked with

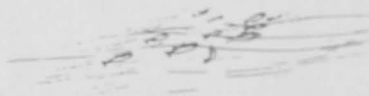
tags, including a recently developed sonic tag by which the movement of fish can be traced electronically. Fishermen who catch the adult tagged fish would be asked to report their catch so that the movement of the fish could be recorded.

Action to develop a means of financing the project was to be undertaken with the hope that actual work on the Susquehanna River could be started in April 1963. Biologists from Federal and State agencies would comprise the study force.

Development of the plan followed a 1962 study financed by the State of Pennsylvania that indicated it would be possible to design and construct a series of fishery structures at the power dams along the river which would allow upstream migration by shad and other fish species.

The possibility of redeveloping a run of shad on the Susquehanna has aroused considerable interest among fishermen and others, who recall the successful reestablishment of shad in the Connecticut River above Holyoke, Mass. State and Federal fishery biologists hope such a program could also be successful on the Susquehanna River, but evidence is yet insufficient to justify the substantial investment necessary to construct the fishways.

Although the earlier studies demonstrated the engineering feasibility of designing structures at the Susquehanna dams, additional data are needed about upstream conditions of the river, and whether a new shad fishery would survive and prosper.



Shrimp

UNITED STATES SUPPLY AND DISPOSITION, 1959-1962:

The available United States shrimp supply in 1962 was 11.2 percent greater than in 1961, but 1.5 percent below the supply in 1960. Although shrimp imports were at a record level in 1962, domestic landings were up only 9.2 percent from the low level of 1961.



Vessel unloading catch of shrimp at wharf.

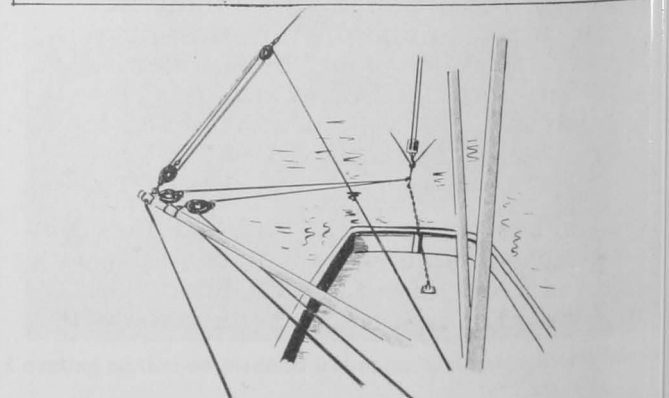
U. S. Supply and Disposition of Shrimp, 1959-62

| Item | 2/1962 | 1/1961 | 1/1960 | 1/1959 |
|--|---------|---------|---------|---------|
| Supply--Heads-on Weight: (1,000 lbs.) | | | | |
| Domestic Landings | 190,600 | 174,494 | 249,452 | 240,182 |
| Foreign product of U. S. fisheries ^{3/} | 716 | - | - | - |
| Imports ^{4/} | 240,738 | 213,957 | 189,431 | 177,610 |
| Total supply (heads-on) | 432,054 | 388,451 | 438,883 | 417,792 |
| Disposition--Heads-on Weight (Approximate): | | | | |
| Frozen: | | | | |
| Headless ^{5/} | 6/ | 238,901 | 278,535 | 247,649 |
| Meat, raw (includes some cooked) ^{5/} | 6/ | 81,107 | 76,933 | 53,805 |
| Meat, cooked ^{2/} | 6/ | 8,114 | 8,985 | 5,918 |
| Breaded | 6/ | 74,717 | 72,049 | 69,980 |
| Specialities | 6/ | 574 | 583 | 363 |
| Total frozen ^{7/} | 331,881 | 318,428 | 338,653 | 317,464 |
| Canned | 59,547 | 41,484 | 51,900 | 53,939 |
| Dried | 3,506 | 4,499 | 6,330 | 3,389 |
| Fresh | 30,000 | 24,000 | 42,000 | 43,000 |
| Unclassified | 7,120 | 40 | - | - |

- 1/ Revised.
 - 2/ Preliminary.
 - 3/ Caught by domestic craft, principally in waters off Central America, and shipped to the United States. Reported by the U. S. Bureau of the Census as "Products of the American Fisheries."
 - 4/ The total quantity of all types of shrimp imports (fresh, frozen, cooked, dried, canned, etc.) was reported by the U. S. Bureau of the Census as follows: 1959--106,555; 1960--113,418; 1961--126,268; and 1962--141,384 pounds. The equivalent heads-on weight was computed.
 - 5/ May include some fresh products.
 - 6/ Not available.
 - 7/ The totals do not add and are less than actual totals because products frozen more than once have been eliminated.
- Notes: (1) Shrimp data were compiled from figures assembled by the U. S. Tariff Commission and the Bureau of Commercial Fisheries. To convert the weight of heads-on shrimp to heads-off, divide by 1.68.
 (2) See Commercial Fisheries Review, June 1962 p. 34.

UNITED STATES SHRIMP SUPPLY INDICATORS, MARCH 1963:

| Item and Period | 1963 | 1962 | 1961 | 1960 | 1959 |
|---|-----------|---------|---------|---------|---------|
| (1,000 Lbs., Heads-Off) | | | | | |
| Total landings, So. Atl. and Gulf States: | | | | | |
| May | - | 6,151 | 5,276 | 6,335 | 6,886 |
| April | - | 3,349 | 3,171 | 4,728 | 3,599 |
| March | 3,700 | 3,317 | 4,754 | 4,099 | 2,959 |
| February | 3,920 | 4,125 | 3,910 | 3,784 | 3,202 |
| January | 4,000 | 3,828 | 5,686 | 5,402 | 4,300 |
| January-December | - | 105,100 | 91,396 | 141,035 | 130,658 |
| Quantity canned, Gulf States 1/: | | | | | |
| May | - | 1,794 | 1,208 | 1,461 | 2,458 |
| April | - | 12 | 9 | 66 | 7 |
| March | 50 | 86 | 35 | 117 | 8 |
| February | 280 | 241 | 90 | 204 | 1 |
| January | 570 | 492 | 183 | 266 | 2 |
| January-December | - | 23,210 | 14,500 | 26,394 | 22,655 |
| Frozen inventories (as of end of each mo.) 2/: | | | | | |
| May 31 | - | 13,904 | 24,696 | 17,540 | 21,131 |
| April 30 | - | 15,637 | 27,492 | 20,502 | 23,388 |
| March 31 | 3/ | 16,607 | 31,345 | 23,232 | 24,899 |
| February 28 | 4/ 27,597 | 19,012 | 37,612 | 29,063 | 27,551 |
| January 31 | 4/ 28,487 | 21,328 | 37,842 | 34,332 | 30,851 |
| January 1 | - | 31,577 | 19,755 | 40,913 | 32,844 |
| Imports 5/: | | | | | |
| May | - | 11,221 | 8,278 | 9,902 | 8,281 |
| April | - | 10,219 | 9,208 | 7,733 | 9,051 |
| March | 3/ | 9,658 | 10,347 | 8,545 | 8,491 |
| February | 12,100 | 10,599 | 8,932 | 7,657 | 7,481 |
| January | 13,139 | 12,907 | 12,338 | 8,596 | 8,231 |
| January-December | - | 141,384 | 126,268 | 113,418 | 106,551 |
| ... (¢/lb., 26-30 Count, Heads-Off) ... | | | | | |
| Ex-vessel price, all species, So. Atl. & Gulf Ports: | | | | | |
| June | - | 84.4 | 53.7 | 64.1 | 60.7 |
| May | - | 83.7 | 52.8 | 62.9 | 63.3 |
| April | - | 82.2 | 55.4 | 60.6 | 65.2 |
| March | 6/ 85-92 | 80.9 | 56.0 | 56.3 | 67.6 |
| February | 6/ 83-93 | 78.9 | 53.5 | 51.8 | 69.6 |
| January | 6/ 82-90 | 76.3 | 52.5 | 49.4 | 70.9 |
| Wholesale price for froz. domestic brown species (5-lb. pkg.) at Chicago, Ill.: | | | | | |
| June | - | 102-104 | 67-72 | 76-77 | 73-74 |
| May | - | 96-103 | 67-69 | 74-77 | 70-76 |
| April | - | 94-97 | 69-70 | 74-75 | 75-82 |
| March | 102-106 | 94-95 | 69-71 | 65-68 | 81-83 |
| February | 102-106 | 93-95 | 69-71 | 65-67 | 82-87 |
| January | 102-106 | 91-94 | 69-71 | 64-66 | 86-88 |



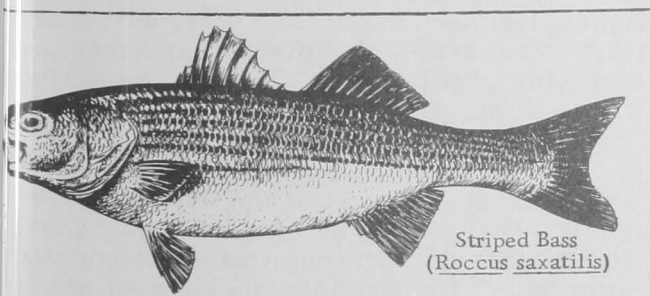
Striped Bass

TAGGING PROJECT HELPS ESTIMATE CHESAPEAKE BAY ABUNDANCE:

A total of 3,100 striped bass (rockfish) were tagged and released in Chesapeake Bay between Annapolis and Solomons, Md., during early January, 1963, in a joint study by the Maryland State Chesapeake Biological Laboratory at Solomons and the U. S. Bureau of Commercial Fisheries Biological Laboratory, Beaufort, N. C. About 12 percent of the tagged fish had been recaptured by the end of February by cooperating fishermen. The returned tags will be useful in estimating the size of the rockfish supply in upper Chesapeake Bay during late winter.

The tagging program is part of a larger cooperative striped bass study designed to pinpoint the utilization, movements, and other aspects of the biology of the species during the rest of the year. This is the second year that biologists from the two agencies have worked closely in northern Chesapeake Bay.

State and Federal biologists began their population studies of striped bass populations in the Potomac estuary in 1959. They were continued during 1960 and 1961. The studies were limited to small fish that are 2 and 3 years old, because that group makes up most of the sports and commercial catch of striped bass. Numerical estimates of sublegal size and older fish larger than about 17 inches were not included. The Chesapeake Biological Laboratory has started a separate study to recast hatches of striped bass by taking water samples of the young fish.



Striped Bass
(*Morone saxatilis*)

The results of the population studies can be applied to management purposes as techniques are being subjected to further critical studies. The Director of the Maryland Natural Resources Institute said, "Attempts are being made to insure the ear-

liest possible application of these findings to the best management of striped bass in Maryland. Reliable knowledge of the number of striped bass present early in the fishing season is of enormous value to everyone. . . . It will contribute to wise decisions by management authorities on the quantity of fish which should be taken each year, and to the best distribution between netter and angler catch."



Swordfish

LONG-LINING OFF NEW ENGLAND SUCCESSFUL IN 1962:

The beginning of a new fishery to New England was indicated on August 13, 1962, when the large trawler *Gulf Stream*, operating out of Portland, Me., landed at Portland with 6 swordfish. It was the first swordfish ever caught by long line commercially and landed at a United States port. The vessel had also been harpooning and caught 35 swordfish by that method on the trip. On September 17, the same vessel landed 119 swordfish at Boston that were caught by long line. Shortly thereafter, the medium trawler *Cap'n Bill III* also began long-lining for swordfish, landing most of its catch at Woods Hole. By the end of 1962, those two vessels had made a total of 10 trips and landed 1,056 swordfish weighing 150,800 pounds (see table). About 366 tuna weighing 53,900 pounds were also caught by those vessels. The *Cap'n Bill III* continued fishing into January 1963.



Unloading dressed swordfish from long-liner *Cap'n Bill III*.

The vessel Gulf Stream made its first trips with the technical assistance of the U. S. Bureau of Commercial Fisheries Exploratory Base at Gloucester, and as a result of earlier explorations by Bureau scientists and the Woods Hole Oceanographic Institution. The Cap'n Bill III was chartered by the Woods Hole Oceanographic Institution on its first trip and also received technical assistance from the Bureau. A small trawler from Point Pleasant, N. J., also made a few long-line trips for swordfish which were landed at that port.

| Date Landed | Port Landed | Swordfish | | Tuna | |
|-----------------------|-----------------|-----------|------------|----------|------------|
| | | No. Fish | 1,000 Lbs. | No. Fish | 1,000 Lbs. |
| Aug. 13 ^{2/} | Portland | 8 | 1.8 | - | - |
| Sept. 17 | Boston | 119 | 23.0 | 4 | 0.5 |
| Oct. 16 ^{3/} | Woods Hole | 17 | 3.4 | 32 | 4.2 |
| Oct. 17 | Portland | 105 | 21.0 | - | - |
| Nov. 1 | Woods Hole | 99 | 14.8 | 148 | 25.0 |
| Nov. 15 | Woods Hole | 94 | 10.7 | 65 | 10.9 |
| Dec. 2 | Woods Hole | 83 | 11.5 | 36 | 5.0 |
| Dec. 4 | Newport (R. I.) | 88 | 13.0 | 37 | 3.9 |
| Dec. 20 | Woods Hole | 366 | 36.6 | 44 | 4.4 |
| Dec. 21 | Portland | 77 | 15.0 | - | - |
| Total | | 1,056 | 150.8 | 366 | 53.9 |

^{1/}Preliminary.
^{2/}35 additional swordfish caught by harpoon.
^{3/}Experimental trip chartered by Woods Hole Oceanographic Institution.

The normal swordfish season in the western North Atlantic extends from late June to early October when fishing is conducted by harpooning. Most of the harpooning is done on Georges Bank when swordfish are available during the warm weather. Long-lining allows vessels to follow the swordfish on their apparent southward migration to the edge of the Gulf Stream. The late-season trips in 1962 were made to that area.

The long-line method of catching swordfish is not new. The Japanese have caught swordfish with long-line gear incidental to tuna long-line operations. The Cubans have had a long-line fishery for many years. Also, the Canadians in 1962 modified halibut long-line gear to fish swordfish on North Atlantic grounds. A Norwegian long-line trawler also caught swordfish on Georges Bank in 1962 while fishing for mackerel shark.

Most of the long-line caught swordfish was shipped and handled fresh on the Boston wholesale market. The appearance of fresh swordfish in November and December was completely new to dealers who would nor-

mally be handling only the frozen product at that time. Fresh swordfish moved at fairly high prices because the demand was very good.

Considerable interest in this new fishery has been indicated by vessel owners and dealers in New England. A number of vessels in New Bedford and Gloucester began outfitting with long-line gear, or planned to do so. It is important the fishery will eventually become cannot be forecast at this time. Several key factors, such as the extent of the resource in the waters off the coast and the damage done by sharks during the summer, are largely unknown. Continued fishing in the immediate future will no doubt supply some of the answers.

-- John J. O'Brien
 Supv. Market News Report
 Fishery Market News Service
 Boston, Mass.



Transportation

FISHERIES AND FARM ORGANIZATIONS SUPPORT REMOVAL OF BULK COMMODITY MINIMUM RATE REGULATIONS:

Twelve national organizations, representing a major portion of the nation's farmers, fishermen, and allied distribution industries have joined in support of the Administration's March 5, 1963, recommendation to Congress for removal of minimum rate regulations on the transportation of agricultural (includes fishery products) and bulk commodities. These organizations, however, voiced united opposition to the possible alternative, as referred to in the Administration's message, applying regulation to all surface carriers in those areas presently exempt.

"Although there may be some honest differences in views as to the detailed safeguards that should be spelled out by Congress in adopting the minimum rate deregulation approach," the group's spokesman stated, "we have no differences in our policy position that less regulation of railroads and not more regulation of motor and water carriers in these areas will promote a stronger national transportation system and be in the best interest of shippers and the public generally."

Experience has demonstrated that products from farms and fishery products cannot be

distributed to the consumers in the cities, towns, and rural areas throughout the country economically and efficiently under a system of federal control.

It is ironical that those modes of transportation which have made the greatest gains and progress in the past two decades under a regulatory policy which grants to those modes exemption from economic regulation in transporting agricultural and bulk commodities, now vigorously oppose extension to railroads of a comparable freedom from regulation," the group's spokesman added. "This is an issue of grave concern to all of agriculture as well as to other shippers and the public generally and in our opposition to a narrowing or repeal of the agricultural bulk commodities exemptions, we stand united." (United Fresh Fruit and Vegetable Association, Washington, D. C., March 20, 1963)



GOOD SKIPJACK TUNA SEASON FORECAST FOR HAWAII IN 1963:

A better than average 1963 summer catch of skipjack tuna in Hawaiian waters has been forecast by the U. S. Bureau of Commercial Fisheries Biological Laboratory in Honolulu.

The prediction of the availability of skipjack tuna to Hawaii's fishermen is based on the warming rate of the ocean's surface water in the spring. Oceanographic studies have indicated that the earlier in the year the ocean begins to warm up, the better will be the catch of skipjack in the ensuing summer fishing season.

This year, the waters off Koko Head on the island of Oahu began to show a temperature upturn in the first part of February, one of the earliest changes on record. That development was checked against the seasonal change in the salt content of surface water. This indicator also showed an early change, and scientists are expecting a good year for the skipjack tuna industry.

Knowledge of the life history of the skipjack tuna is still insufficient to enable oceanographers and biologists to explain exactly

why the relation between water temperature changes and the skipjack catch is so consistent. They have found, however, that the relation has held over the past 10 years, which is as long as suitable records of ocean temperature changes have been kept in Hawaii. It is thought that the skipjack schools move into the Hawaiian area with the seasonal movement of certain types of central Pacific waters, such as the boundary between the California current extension and the north Pacific central water.

Although the ability to predict catches is one of the major goals of fishery science, dependable forecasting techniques are still to be worked out for most of the world's fisheries. It is not yet possible to predict with certainty the exact level of Hawaiian skipjack landings, but there is a considerable practical value in even a general pre-season forecast. Such knowledge enables processors and distributors to regulate their alternate sources of raw material and to buy appropriate supplies. It also lets the fishermen know in advance what sort of return may be expected from their investment in fishing gear and equipment.



U. S. Fishing Vessels

DOCUMENTATIONS ISSUED AND CANCELLED, FEBRUARY 1963:

Table 1 - U. S. Fishing Vessels 1/- Documentations Issued and Cancelled, by Areas, February 1963 with Comparisons

| Area (Home Port) | Feb. | | Jan.-Feb. | | Total 1962 |
|---------------------------------------|-----------|-----------|-----------|-----------|---------------|
| | 1963 | 1962 | 1963 | 1962 | |
| (Number) | | | | | |
| <u>Issued first documents 2/:</u> | | | | | |
| New England | 2 | - | 3 | 2 | 28 |
| Middle Atlantic | - | - | 1 | - | 3 |
| Chesapeake | 3 | 2 | 3 | 6 | 43 |
| South Atlantic | 5 | 2 | 7 | 4 | 47 |
| Gulf | 11 | 5 | 23 | 15 | 110 |
| Pacific | 5 | 6 | 9 | 12 | 130 |
| Great Lakes | - | - | - | - | 5 |
| Puerto Rico | - | - | - | - | 2 |
| Total | 26 | 15 | 46 | 39 | 368 |
| <u>Removed from documentation 3/:</u> | | | | | |
| New England | 1 | 3 | 2 | 5 | 24 |
| Middle Atlantic | 6 | 1 | 10 | 9 | 39 |
| Chesapeake | 2 | 1 | 3 | 3 | 23 |
| South Atlantic | 3 | 4 | 10 | 7 | 38 |
| Gulf | 5 | 6 | 10 | 19 | 104 |
| Pacific | 8 | 11 | 15 | 27 | 111 |
| Great Lakes | - | 1 | 2 | 6 | 22 |
| Hawaii | - | - | - | 1 | 3 |
| Puerto Rico | - | - | - | - | 1 |
| Total | 25 | 27 | 52 | 77 | 362 |

1/For explanation of footnotes, see table 2.

During February 1963, a total of 26 vessels of 5 net tons and over were issued first documents as fishing craft, as compared with 15 in February 1962. There were 25 documents cancelled for fishing vessels in February 1963 as compared with 27 in February 1962.

Table 2 - U. S. Fishing Vessels--Documents Issued and Cancelled, by Tonnage Groups, February 1963

| Gross Tonnage | Issued ^{2/} | Cancelled ^{3/} |
|--------------------|----------------------|-------------------------|
| | (Number) | |
| 5-9 | 6 | 7 |
| 10-19 | 9 | 6 |
| 20-29 | - | 3 |
| 30-39 | 1 | 5 |
| 40-49 | 1 | 1 |
| 50-59 | - | 1 |
| 60-69 | 1 | - |
| 70-79 | 2 | - |
| 80-89 | 1 | - |
| 100-109 | - | 1 |
| 110-119 | 1 | - |
| 140-149 | 4 | - |
| 190-199 | - | 1 |
| Total | 26 | 25 |

^{1/}Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
^{2/}Includes 1 redocumented vessel in February 1963 previously removed from records. Vessels issued first documents as fishing craft were built: 7 in 1963; 7 in 1962; 1 in 1961; 2 in 1960, and 9 prior to 1951.
^{3/}Includes vessels reported lost, abandoned, forfeited, sold alien, etc.
 Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, JANUARY 1-MARCH 31, 1963:

From the beginning of the program in 1956 through March 31, 1963, a total of 1,249 applications for \$34,341,496 have been received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. Of the total 657 (\$15,305,654), have been approved, 459 (\$11,982,700) have been declined or found ineligible, 142 (\$5,936,599) have been withdrawn by applicants before being processed, and 20 (\$320,870) are pending. Of the applications approved, 263 (\$1,641,317) were approved for amounts less than applied for.

The following loans were approved from January 1, 1963, through March 31, 1963:

New England Area: Boat Pelican, Inc., New Bedford, Mass., \$23,513;

South Atlantic and Gulf Area: Pete Smirch, Freeport, Texas, \$19,647;

California: Glenn A. McCune, Crescent City, \$20,000; Douglas N. Fearon, Cupertino,

\$20,000; Leo Leroux, San Pedro, \$9,030; Donald R. Pache, Smith River, \$3,000;

Pacific Northwest Area: Ben F. Jones, Newport, Oregon, \$8,200; Ole I. Olson, Seaton Wash., \$7,000;

Alaska: Thomas W. Maloney, Auke Bay, \$6,600; Erling O. Broderson, Homer, \$40,000; Philip C. Leshner, \$22,000; Donald A. Davis, Ketchikan, \$4,015.

Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the first quarter of 1963, 9 applications to insure mortgages for \$305,000 were received and commitments to insure mortgages in the amount of \$140,865 on 3 fishing vessels were approved. Since the start of this program (June 5, 1960), 23 applications were received for \$1,853,611. Of the total, 15 applications have been approved for \$1,798,096. Approval of 8 applications for \$55,515 is pending. Since the Mortgage Insurance Program began, applications received and approved by area were:

New England Area: Received 9 (762,490), approved 7 (\$622,490);

California: Received and approved 1 (\$557,000);

South Atlantic and Gulf Area: Received 9 (\$326,575), approved 3 (\$111,060);

Pacific Northwest Area: Received and approved 4 (\$507,546).

In the Construction Differential Subsidy Program, no applications were received during the first quarter of 1963. One pending differential subsidy payment to Stagan Corporation for about \$51,700 was approved during the quarter. The first approval in this program was made in March 1961. The amount approved for subsidy represents about one-third the cost of a new vessel. Since the beginning of the program on June 12, 1960, 9 applications (excludes several ineligible applications) were received for \$698,325, of which 6 applications were approved for \$547,658. Approval of 3 applications for about \$150,667 under this program is pending.



Foreign Trade

EDIBLE FISHERY PRODUCTS, JANUARY 1963:

Imports of fresh, frozen, and processed edible fish and fish into the United States in January 1963 were up 0.1 percent in quantity, but down 10.9 percent in value from the previous month. Imports were up in January for fish blocks and slabs, groundfish fillets, frozen tuna other than albacore (increase mostly from Peru and British West Africa), swordfish fillets, yellow pike fillets, frozen salmon, canned crab meat, and sea scallops. But there was a decline in imports of most other fishery products. Imports of frozen albacore tuna dropped to a very low level in January and imports were also down substantially for canned tuna in brine, canned sardines in oil and not in oil, fish from Canada, and frozen shrimp (decline mostly from Mexico).

this January, but there was a substantial decline in exports of canned mackerel.

IMPORTS OF TUNA CANNED IN BRINE UNDER QUOTA PROVISIO FOR 1963:

The quantity of tuna canned in brine which may be imported into the United States during calendar year 1963 at the 12½ percent rate of duty is limited to 63,130,642 pounds (or about 3,006,221 standard cases of 48 7-oz. cans). This is 6.9 percent more than the 59,059,014 pounds (about 2,812,000 standard cases) in 1962, 10.5 percent more than the 57,114,714



Compared with the same month in 1962, the imports in January 1963 were down 2.7 percent in quantity and 13.4 percent in value. There was a sizable decline this January in imports of canned salmon, frozen albacore tuna, canned tuna in brine, canned sardines in oil, canned oysters, and frozen spiny lobster tails (decline mostly from South Africa). The decline was offset partly by a large increase in imports of frozen tuna other than albacore, and fish blocks and slabs.

pounds in 1961, 18.1 percent more than the 53,448,330 pounds in 1960, 20.5 percent more than the 52,372,574 pounds in 1959, 41.2 percent more than the 44,693,874-pound quota for 1958, and 38.9 percent more than the 45,460,000-pound quota for 1957. Any imports in excess of the 1963 quota will be dutiable at 25 percent ad valorem.

Any tuna classifiable under the Tariff Act of 1930, as amended, paragraph 718(b)--fish, prepared or preserved in any manner, when packed in airtight containers. . . (except fish packed in oil or in oil and other substances; . . .)--which is entered, or withdrawn, for consumption is included.

A proclamation (No. 3128), issued by the President on March 16, 1956, gave effect to an exchange of notes with the Government of Iceland to withdraw tuna canned in brine from the 1943 trade agreement and invoked the right to increase the duty reserved by the United States in negotiations with Japan and other countries under the General Agreement on Tariffs and Trade. The quota is based on 20 percent of the previous year's United States pack of canned tuna.

The 1963 tariff-rate quota was published in the April 17, 1963, Federal Register by the

U. S. Imports and Exports of Edible Fishery Products, January 1963 with Comparisons

| | Quantity | | | Value | | |
|---|----------|------|---------|-------|------|-------|
| | Jan. | Year | Year | Jan. | Year | Year |
| | 1963 | 1962 | 1962 | 1963 | 1962 | 1962 |
| Imports: | | | | | | |
| Shellfish: | | | | | | |
| fish, froz. & processed ^{1/} | 86.6 | 89.0 | 1,169.7 | 27.9 | 32.2 | 397.4 |
| Imports: | | | | | | |
| Shellfish: | | | | | | |
| processed only ^{1/} (including fresh frozen) | 3.7 | 3.5 | 35.6 | 1.6 | 1.4 | 16.0 |
| Includes pastes, sauces, clam chowder and juice, and other specialties. | | | | | | |

Imports of processed fish and shellfish from the United States in January 1963 were down 22.9 percent in quantity and 3.8 percent in value from those in the previous month. There was a sharp drop in January in exports of canned sardines not in oil and exports were also down for canned shrimp and canned mackerel. The decline was offset partly by a moderate increase in exports of canned salmon and canned squid.

Compared with the same month in 1962, the exports in January 1963 were up 5.7 percent in quantity and 14.3 percent in value. There was a big increase in exports of canned salmon

Bureau of Customs of the U. S. Department of the Treasury.

Note: Pounds converted to cases at 21 pounds equal 1 standard case of 48 7-oz. cans.

* * * * *

IMPORTS AND EXPORTS OF FISHERY PRODUCTS, 1962:

In 1962, about 47 percent of the United States supply of fishery products was obtained from foreign countries, according to preliminary data. Imports were at record levels for such products as groundfish fillets and blocks, shrimp, sea scallops, spiny lobsters, frozen tuna, tuna loins, canned oysters, and fish meal.

Table 1 - U. S. Imports of Selected Fishery Products, 1961 and 1962

| Commodity | 1962 | 1961 | Percentage Change from 1961 to 1962 | |
|---|---------|---------|-------------------------------------|-----------|
| | | | In-crease | De-crease |
| .. (1,000 Lbs.) .. | | | | |
| Groundfish and ocean perch: | | | | |
| Fillets | 77,907 | 76,490 | 2 | - |
| Blocks and slabs | 143,539 | 118,609 | 21 | - |
| Total | 221,446 | 195,099 | 14 | - |
| Fillets, other than groundfish: | | | | |
| Flounder | 18,442 | 18,420 | - | - |
| Fresh-water fish | 10,672 | 9,840 | 8 | - |
| Other | 21,450 | 27,974 | - | 23 |
| Swordfish, incl. steaks & chunks | 19,644 | 19,033 | 3 | - |
| Tuna, fresh or frozen: | | | | |
| Albacore | 83,940 | 71,945 | 17 | - |
| Other than albacore | 188,525 | 125,182 | 51 | - |
| Total | 272,465 | 197,127 | 38 | - |
| Tuna loins and discs | 10,522 | 8,348 | 26 | - |
| Tuna, canned in brine: | | | | |
| Albacore | 27,836 | 29,116 | - | 4 |
| Other than albacore | 28,526 | 29,116 | - | 2 |
| Total | 56,362 | 58,232 | - | 3 |
| Tuna, canned in oil | 358 | 431 | - | 17 |
| Bonito and yellowtail, canned | 6,128 | 6,853 | - | 11 |
| Crabmeat, canned | 3,506 | 4,237 | - | 17 |
| Lobster, fresh or frozen: | | | | |
| Northern | 22,102 | 21,299 | 4 | - |
| Spiny | 35,948 | 32,610 | 10 | - |
| Lobster and spiny lobster, canned | 3,309 | 2,828 | 17 | - |
| Oysters and oyster juice, mostly canned | 7,828 | 7,701 | 2 | - |
| Salmon: | | | | |
| Fresh or frozen | 9,735 | 12,309 | - | 21 |
| Canned | 6,844 | 7,167 | - | 5 |
| Sardines: | | | | |
| Canned in oil | 32,613 | 27,877 | 17 | - |
| Canned not in oil | 17,317 | 14,611 | 19 | - |
| Sea scallops, fresh or frozen | 11,564 | 8,652 | 34 | - |
| Frog legs, fresh or frozen | 2,598 | 2,089 | 24 | - |
| Shrimp, mostly frozen, some canned and dried | 141,384 | 126,268 | 12 | - |
| (Tons) | | | | |
| Fish Meal | 252,307 | 217,845 | 16 | - |
| Fish Solubles | 6,308 | 6,739 | - | 6 |

During 1962, United States exports of fishery products showed some recovery from low levels of 1961.

Table 2 - U. S. Exports of Selected Fishery Products, 1961 and 1962

| Commodity | 1962 | 1961 | Percentage Change 1961 to 1962 | |
|---|---------|---------|--------------------------------|-----------|
| | | | In-crease | De-crease |
| .. (1,000 Lbs.) .. | | | | |
| Misc. fish, mostly fresh-water, fresh or frozen | 13,957 | 3,608 | 287 | - |
| Oysters, shucked | 411 | 579 | - | - |
| Salmon: | | | | |
| Fresh or frozen | 1,507 | 1,094 | 38 | - |
| Canned | 8,978 | 7,186 | 25 | - |
| Mackerel, canned | 4,271 | 3,908 | 9 | - |
| Misc., canned fish, mostly Calif. anchovies | 531 | 454 | 17 | - |
| Sardines: | | | | |
| Canned not in oil | 7,188 | 7,475 | - | - |
| Canned in oil | 578 | 185 | 212 | - |
| Shrimp^{1/}: | | | | |
| Fresh or frozen | 3,457 | 4,771 | - | - |
| Canned | 2,212 | 2,503 | - | - |
| Squid, canned | 7,785 | 3,432 | 127 | - |
| Whale and sperm oil | 2,697 | 1,208 | 123 | - |
| Fish oils | 123,050 | 122,486 | 1 | - |

^{1/}Does not include re-exports of Mexican shrimp.

Note: See Commercial Fisheries Review, May 1962 p. 35.



Vessel Equipment

FIRM TO BUILD AND SELL CONTROLLABLE PITCH PROPELLER:

A corporation with research and development offices in Wilmington, Mass., has obtained an exclusive license to build and sell controllable pitch marine propeller which designed by a marine products firm in Warren, R.I. In a statement announcing the license on February 19, 1963, an official of the corporation said his company was interested in new applications of the propeller for hydrofoils and other high-speed craft, as well as large ocean-going vessels, research vessels, fishing vessels, and tugboats.

The controllable pitch propeller, which is one of a few that are designed and built in the United States, has been used at sea in various vessels for more than two years. It was installed on the Gosnold, an oceanographic ship of the Woods Hole Oceanographic Institution and the Narragansett, the first United States automated stern trawler.



Virginia

ELECTRONIC COMPUTER SPEEDS
RESEARCH AT MARINE LABORATORY:

The purchase of a transistorized analog computer for use in marine research projects was announced by the Virginia Institute of Marine Science on April 5, 1963. The Director of the Institute said, "Although this is a relatively small model, compared to computers used by large industries and Federal agencies, it represents a step forward in providing better up-to-date tools for marine research. Such devices can hasten considerably the development of various research projects."

The computer has been put to work on plankton studies sponsored by the Office of Coastal Research. Its application is to stimulate the behavior of natural plankton systems through the use of mathematical models. In this manner, it will be possible to formulate and test theories of the basic productivity of plankton.

The scientist in charge of plankton research pointed out that the computer can also be used in other research projects at the Institute, including studies of water mass movements, waves, beach erosion, and population dynamics of selected marine organisms. It can be applied whenever a scientist can formulate a mathematical model of his research problem which employs differential equations.



Washington

VESSEL REDUCTION IN PUGET SOUND
SALMON FISHERY RECOMMENDED:

Series misuse of two of Washington State's more important resources--salmon and manpower--has turned the once-dynamic Puget Sound salmon fishery into an industry with continuing conservation and grave economic problems. Despite some salmon runs of record size, the inland sea's commercial fisherman is being broke. His net income, according to a recent University of Washington study, averages considerably less than \$2,000 a year and in many instances, such as purse-seine fishing, it is impossible for him to earn more than one-half of the average income received by all Washington State residents. In addition, an increased fishing effort on the Puget Sound salmon runs has produced serious conservation problems. More and more fishermen, using more efficient gear and fishing over an expanded area are threatening to deplete the fish stocks entirely.

In April, 1962, the University of Washington's Fisheries Research Institute was asked by the State Legislature's Interim Fisheries Committee to find out not only

why incomes were depressed, but to make recommendations to correct both the economic and conservation problems. In an unusual interdisciplinary study, Dr. Gerald J. Paulik and Dr. Donald E. Bevan of the Research Institute joined with Dr. James Crutchfield of economics and Prof. Robert L. Fletcher of law, to provide a biostatistical, economic, and legal analysis of the Puget Sound salmon industry. Dr. William F. Royce of the Fisheries Research Institute was in charge of the project.

Among their findings, the University study group concluded that the biggest problem in the fishery was overdevelopment and recommended that the present fleet be cut by one-third. Basing their recommendation upon statistical studies, the researchers pointed out that in 1945, slightly more than 1,500 units of fishing gear were employed to harvest 52 million pounds of salmon. In 1961, nearly three times that amount of gear was used to harvest only 30 million pounds of salmon. "Over the past 15 years we have been using more and more fishing effort to catch fewer and fewer fish," said Dr. Crutchfield. "By any standard--physical or economic--this is inefficient."

To achieve the fleet reduction, the University study group recommended that the number of commercial fishing licenses presently issued be frozen to enable the weeding out of licenses for vessels which have not fished for salmon within the past few years. Then, the researchers continued, license fees should be raised to levels bearing a more realistic relationship to the value of the fishing privilege conferred. The University study also recommended that the license revenues be used in a revolving fund to permit the State to buy out some of the fishermen (at the fisherman's option) and take their gear out of service. Those recommendations and others proposed by the Research Institute are now being studied by the Legislative Committee as well as representatives of the fishing industry. It is expected that legislation will be drafted and submitted to the State Legislature before the end of this session.

"The general reaction to the study has been favorable," said Dr. Royce, project coordinator. "Of course people in each group have some reservations until they see how it will affect their particular interests. No one questions the need for a fleet reduction. It is a question now of who will be cut." Dr. Crutchfield commented further: "The basic issue is not how, but who shall harvest the fishery. No one has any responsibility for, or ability to, reduce and as long as anyone is free to enter the fishery whenever he wants, there is no reason for any one unit to reduce. The situation, therefore, is not self-corrective. Under any method of calculation we are wasting from \$1 to \$4 million a year by having too many men and ships tied up."

Puget Sound fishermen, using purse seine, gill net and reef net gear, harvest primarily the sockeye and pink salmon runs from the outer San Juan Straits, through the Puget Sound waters, to the Fraser River in British Columbia. These runs are under the regulation of the International Pacific Salmon Commission which provides for equal catches by Canadian and United States fisheries. In previous years, in order to preserve the fish stock, the Commission adopted regulations limiting the size of fishing vessels, prohibiting the use of certain gear and either closing or greatly reducing fishing in major areas.

Conservation has been achieved by gross reductions in fleet efficiency, which is hardly the most economical

way of running a business as Dr. Crutchfield pointed out in his economic analysis. "Conservation is more than fish biology," he said. "It also involves people--those who catch the fish and those who eat them. Regulations which have the effect of reducing economic efficiency are wasteful. No business would think of operating in this manner."

The question now before members of the Legislative Committee is whether or not the fleet reduction would work, and if it did, would it be legal? Using factors determined from recent fishing data collected by the Washington State Department of Fisheries, Drs. Paulik and Bevan translated approximately 1,000 mathematical equations into instructions to simulate salmon runs, fishing activity and the catch under various conditions on the University's IBM 709 computer. From these studies, the researchers concluded that even with a one-third reduction in the fishing fleet, the fishery would still harvest even large salmon runs without approaching the exploitation limits of the present gear. Even with a 50 percent fleet cut, all but the very large and unexpected salmon runs could be harvested.

Dr. Crutchfield conservatively estimated that a one-third reduction in gear would save from \$700,000 to more than \$2.5 million depending upon the size of the run and the ability of the fleet to harvest it. A 50-percent cut, he added, would yield savings from \$1 to \$4 million. In addition, the fleet reductions would (1) increase individual unit efficiency, (2) enable the Commission to relax some of the restrictions on gear efficiency, (3) minimize the risk of loss from breakdown, (4) improve the quality of the end product by spreading out deliveries to packers over a 4- or 5-day week and (5) extend the fishing week to 4 or 5 days which would improve the management problem.

The scientist explained that at the present time the Commission relies upon the fishermen for information as to size of runs, timing, etc. Under present regulations it is difficult to know what is occurring in the Pudget Sound waters during the closed period. "Even in one day of fishing, the present fleet is capable of catching dangerously large proportions of the given number of salmon. The longer the fishing week, the greater the range and accuracy of information reaching the Commission and the more accurate its regulatory techniques can be made."

Will a legislative provision restricting the number of commercial fishermen in a major portion of the State's salmon fishery be constitutionally valid? In the opinion of Professor Fletcher, who conducted the legal studies for the University survey, the answer is "yes" He said "In the early history of the United States Supreme Court, such a scheme perhaps would have been held unconstitutional as some sort of unwarranted deprivation of property or liberty, or possibly as some sort of discriminatory denial of equal opportunity to pursue gainful employment. In modern times, however, the Supreme Court is most tolerant of legislative judgements of economic matters."

Any kind of legislation will stand the tests of constitutionality, he said, if it has these minimum requirements: (1) a rational determination that some benefit to the general welfare of the people will be served by the legislation; (2) it is founded upon some basis of fact; and (3) it includes a rational choice of means to accomplish the objective.

"No one would quarrel with the proposition that the wise use of a natural resource is a matter of utmost concern to the legislature and the people," said Dr. Fletcher. "So far we have not attributed to the fishing grounds the same incidents of area control that we do in the case of ordinary land ownership."

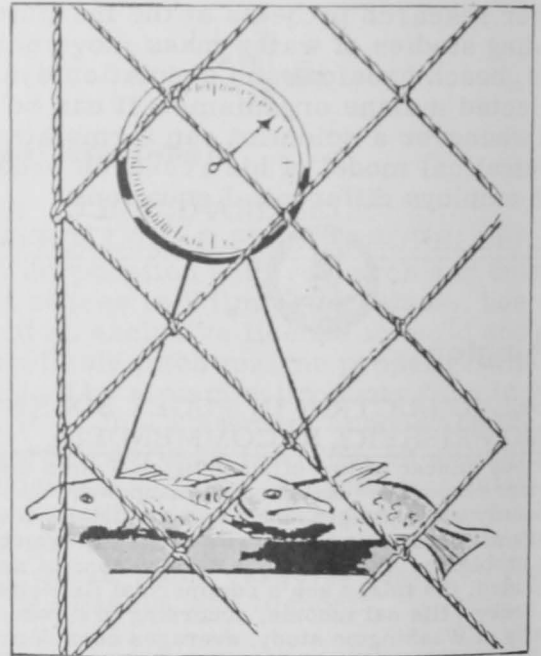
One of the important principles behind the University's Puget Sound Salmon Survey is the introduction of an entirely new concept in the fisheries industry--that economic efficiency is an important criteria for regulatory policies.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, MARCH 1963:

Wholesale prices for edible fish and shellfish (fresh, frozen, and canned) in March this year dropped slightly (0.9 percent) from February 1963 due primarily to lower ex-vessel prices for fresh drawn haddock and lower wholesale prices for fresh haddock fillets, frozen dressed halibut and salmon, fresh



shrimp, and canned Maine sardines. Compared with the same month a year ago, wholesale prices for fishery products this March were lower by 2.5 percent due mainly to lower prices for fresh dressed and filleted haddock, a smaller drop in prices for frozen flounder and ocean perch fillets, and generally lower prices for canned fish products.

The drawn, dressed, and whole finfish group index in March 1963 was down 1.2 per

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, March 1963 With Comparisons

| Group, Subgroup, and Item Specification | Point of Pricing | Unit | Avg. Prices 1/ (\$) | | Indexes (1957-59=100) | | | | | | |
|---|------------------|------|---|-----------|-----------------------|-----------|-----------|-----------|--|--|-------|
| | | | Mar. 1963 | Feb. 1963 | Mar. 1963 | Feb. 1963 | Jan. 1963 | Mar. 1962 | | | |
| | | | ALL FISH & SHELLFISH (Fresh, Frozen, & Canned) | | | | | | | | 117.3 |
| Fresh & Frozen Fishery Products: | | | | | 123.0 | 124.4 | 130.0 | 119.4 | | | |
| Drawn, Dressed, or Whole Finfish: | | | | | 121.2 | 122.7 | 137.2 | 121.8 | | | |
| Haddock, lge., offshore, drawn, fresh | Boston | lb. | .12 | .12 | 91.9 | 94.6 | 162.9 | 124.0 | | | |
| Halibut, West., 20/80 lbs., drsd., fresh or froz. | New York | lb. | .41 | .43 | 122.2 | 125.6 | 128.1 | 116.8 | | | |
| Salmon, king, lge. & med., drsd., fresh or froz. | New York | lb. | .95 | .96 | 132.7 | 133.8 | 134.5 | 120.5 | | | |
| Whitefish, L. Superior, drawn, fresh | Chicago | lb. | .68 | .68 | 100.7 | 100.7 | 106.0 | 111.9 | | | |
| Yellow pike, L. Michigan & Huron, rnd., fresh | New York | lb. | .69 | .69 | 113.0 | 113.0 | 88.5 | 120.4 | | | |
| Processed, Fresh (Fish & Shellfish): | | | | | 125.5 | 128.5 | 130.4 | 123.2 | | | |
| Filletts, haddock, sml., skins on, 20-lb. tins | Boston | lb. | .39 | .41 | 94.7 | 98.3 | 137.2 | 121.4 | | | |
| Shrimp, lge. (26-30 count), headless, fresh | New York | lb. | 1.07 | 1.12 | 125.4 | 130.7 | 127.2 | 117.2 | | | |
| Oysters, shucked, standards | Norfolk | gal. | 7.75 | 7.75 | 130.7 | 130.7 | 132.8 | 130.7 | | | |
| Processed, Frozen (Fish & Shellfish): | | | | | 117.3 | 117.3 | 117.5 | 109.0 | | | |
| Filletts: Flounder, skinless, 1-lb. pkg. | Boston | lb. | .39 | .39 | 97.6 | 98.9 | 100.1 | 100.1 | | | |
| Haddock, sml., skins on, 1-lb. pkg. | Boston | lb. | .37 | .37 | 108.5 | 108.5 | 107.0 | 101.1 | | | |
| Ocean perch, lge., skins on 1-lb. pkg. | Boston | lb. | .34 | .33 | 117.5 | 115.7 | 117.5 | 119.2 | | | |
| Shrimp, lge. (26-30 count), brown, 5-lb. pkg. | Chicago | lb. | 1.04 | 1.04 | 123.4 | 123.4 | 123.9 | 112.1 | | | |
| Canned Fishery Products: | | | | | 107.7 | 108.0 | 108.0 | 122.1 | | | |
| Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. | Seattle | cs. | 24.75 | 24.75 | 107.9 | 107.9 | 107.9 | 124.2 | | | |
| Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs. | Los Angeles | cs. | 11.75 | 11.75 | 104.4 | 104.4 | 104.4 | 107.9 | | | |
| Mackerel, jack, Calif., No. 1 tall (15 oz.), 48 cans/cs. | Los Angeles | cs. | 5.90 | 5.90 | 2/100.0 | 2/100.0 | 2/100.0 | 3/118.5 | | | |
| Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs. | New York | cs. | 9.06 | 9.31 | 116.2 | 119.4 | 119.4 | 164.3 | | | |

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.
 2/One commodity has been dropped in the fishery products index as of December 1962--"Sardines, Calif., tom. pack, No. 1 oval (15-oz.), 24 cans/cs."--and replaced in the fishery products index by--"Mackerel, jack, Calif., No. 1 tall (15-oz.), 48 cans/cs." Under revised procedures by the Bureau of Labor Statistics all new products enter wholesale price indexes at 100.
 3/Based on Calif. sardines and not directly comparable with new subgroup item (jack mackerel) for January-March 1963.

from a month earlier, and dropped about 10 percent from March a year ago. Lower vessel prices at Boston for fresh drawn haddock (down 2.9 percent), plus further decreases in wholesale prices for frozen dressed trout and salmon were responsible for the increase from February to March this year. From March a year ago to March this year, the decrease of 25.9 percent in the drawn fresh haddock price and lower prices for the fresher varieties were just about cancelled out by higher prices for frozen salmon and halibut.

The fresh processed fish and shellfish subgroup index this March decreased 2.3 percent from a month earlier but was up 1.9 percent from March 1962. From February to March this year, prices were lower for fresh haddock filletts at Boston (down 3.7 percent) and fresh shrimp at New York City (down 4.1 percent). The fresh shucked oyster price was unchanged from February to March 1963 and remained at the same level as March a year ago. Compared with March 1962, fresh haddock filletts this March were down 22.0 percent, but fresh shrimp prices were higher by 7.0 percent.

The March 1963 processed frozen fish and shellfish subgroup price index was unchanged from the preceding month but was up 7.6 percent from the same month of 1962. From mid-February to mid-March this year, prices for frozen flounder filletts dropped 1.3 percent but frozen ocean perch filletts were higher by 1.6 percent. Compared with the same month a year ago, the March 1963 subgroup index was up because of higher frozen shrimp prices at Chicago (up 10.1 percent) and an increase of 7.3 percent in the frozen haddock fillet price. As compared with March last year, prices for frozen flounder and ocean perch filletts were slightly lower.

The canned fishery products subgroup index from February to March 1963 dropped slightly (0.3 percent) due to lower prices for canned Maine sardines. From March a year ago to this March, the subgroup index dropped 11.8 percent because of a sharply lower canned Maine sardine price (down 29.3 percent), a lower canned pink salmon price (down 13.1 percent), and a 3.2 percent drop in the canned tuna price.

