



TRENDS AND DEVELOPMENTS

Alaska Fisheries Explorations and Gear Development

POTENTIAL OF COMMERCIAL FISHERY FOR LARGE ALASKA SHRIMP STUDIED:

Giant Alaska shrimp, also described as "prawns" may soon be available as a result of research being conducted under the Alaska exploratory fishing and gear development program of the Interior Department's Bureau of Commercial Fisheries.

The Bureau is following up on the results of this research by offering assistance to the fishing industry in the form of detailed technical information on methods and design of gear, handling methods to obtain the highest quality of product, and assistance in marketing.

According to Harry L. Rietze, Regional Director of the Bureau of Commercial Fisheries at Juneau, fishing for Alaska shrimp is not a get-rich-quick type of activity, but is ideally suited for the 8- or 9-month nonproductive gap now experienced by the salmon fishermen living in remote villages of Southeast Alaska. Vessels that are used in the salmon fishery can easily be adapted to the shrimp fishery and employ a one- or two-man crew. The major capital outlay by the fisherman to start commercial production would be for the construction of shrimp pots at a cost of \$10 to \$15 each. One vessel should be able to handle 100 to 200 pots for a profitable return based on the findings so far.

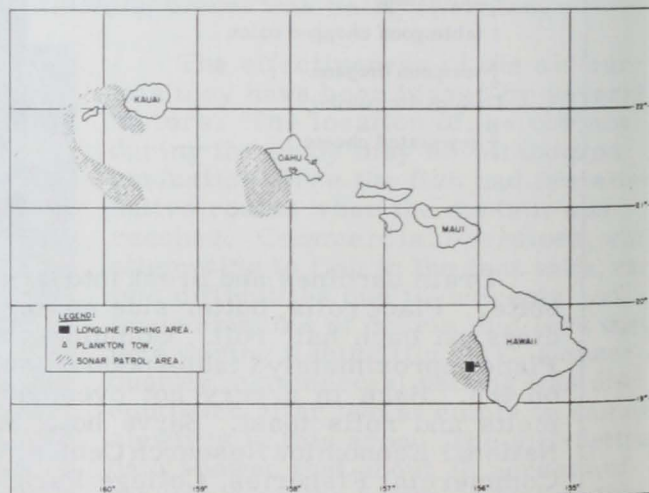
The Bureau of Commercial Fisheries also provides financial assistance to qualified fishermen for the purpose of financing, refinancing, repairing or maintaining vessels, equipment and gear.



Central Pacific Fisheries Investigations

SONAR STUDIES FOR LOCATING SUBSURFACE TUNA:

M/V "Townsend Cromwell" Cruise 24 (April 14-June 10, 1966): Familiarization and development of sonar techniques in searching and tracking subsurface tuna schools was the objective of this cruise by the research vessel Townsend Cromwell of the Interior Department's Bureau of Commercial Fisheries Biological Laboratory, Honolulu, Hawaii. The area of operations was within 100 miles off the islands of Hawaii, Kauai, and Oahu.



Areas in which tuna were studied with CTFM sonar during M/V Townsend Cromwell Cruise 24 (April 24-June 10, 1966).

After installation of a specially designed frequency-modulated sonar system on the vessel, adjustments and calibrations were made to eliminate internal interferences and optimize the performance of the sonar. Two characteristic noise patterns of unknown origin occurred on the visual and audio displays during operations at sea. They occurred irregularly but often enough to hamper the operator's ability to locate and follow targets.

The sonar equipment was subjected to detailed acceptance tests under the supervision of the Defense Research Laboratory of the University of Texas. The overall performance at sea was evaluated. The equipment did not meet specifications in several areas: the source level of the high frequency projector was about 10 decibels (referenced to 1 microbar) below that specified; the transducer assembly did not scan or tilt properly at speeds greater than 4 knots; minor lobes on the vertical beam of the high frequency hydrophone was 10.5 decibels higher than expected; antifouling treatment of transducers appeared ineffectual.

To familiarize personnel with operational procedures, four types of sonar operations were carried out: (1) tracking of tuna schools, (2) searching with ship underway, (3) searching with ship hove to, and (4) patrolling of long-line sets.

To maximize opportunities to track schools, the vessel approached bird flocks which were located visually. Sonar contacts were made with 28 schools. They were 1 school of estimated 20-25 pound skipjack, 1 school of estimated 12-14 pound skipjack, 1 school of estimated 5-8 pound skipjack, 4 schools of estimated 1-3 pound skipjack, 1 school of estimated 100-pound yellowfin, and 2 schools of unidentified fish. The greatest distance of positive sonar contact with a school; was 650 meters (2,132 feet). Successful tracking varied from momentary contacts to tracking a school of large skipjack for 56 minutes. The sonar operator was able to stay with the school even though it sounded twice during that period. Successful tracking of the elusive skipjack will require great skill, persistence, and a technique which will have to be developed step by step.

A total of 42 hours was devoted to searching with the vessel underway at 3-4 knots-- 38 hours were in darkness. Highlight of the searching was the discovery of a surface school of 100-pound yellowfin and a school of large skipjack approximately 50 meters (164 feet) below the surface which eventually surfaced. Identifications were visual. Returns of various descriptions were received from 12 unidentified targets.

Searching with the sonar while the vessel was not underway was done only at night-- 2 nights (18 hours) in open ocean and 2 nights (16 hours) anchored in 35 meters (114.8

feet) of water. On each occasion a night light was submersed 8 meters or 26.2 feet below the surface to attract organisms. During the 34 hours at this activity, three characteristic types of sonar returns were observed. Only one type was seen on any given night but it recurred many times throughout the night. One type was associated with akule (Trachuroops crumenophthalmus) 35 centimeters or 13.8 inches long caught at the stern of the vessel.

Long-line gear was set on 4 days. A total of 60 baskets was set on the first day and 40 baskets on subsequent days. The total catch was 5 big-eyed tuna (Thunnus obesus), 15 yellowfin tuna (T. albacares), 6 skipjack tuna (Euthynnus pelamis), 6 wahoo, 11 shortnose spearfish (Tetrapturus augustirostris), 5 striped marlin (Makaira audax), 1 unidentified marlin, 4 common dolphin (Coryphaena hippurus), 5 Alepisaurus sp., 5 great blue shark (Prionace glauca), and 1 whitetip shark (Pterolamiops longimanus).

Of 127 sonar returns observed while the vessel patrolled the longline, 3 were subsequently matched with fish on the longline. These were a shortnose spearfish, a yellowfin tuna, and a wahoo. A total of 62 of the sonar returns was observed on the first day, and experience from subsequent days suggested that many of them were echo returns from the gear itself. Eleven of the targets were moving; a strong target was swimming at a depth of 220 meters (721.6 feet).

Some general observations of the cruise were: (1) the sonar was used to determine the depth of the longline on one occasion. Midway between the two buoys the longline was 103 meters or 337.8 feet below the surface. (2) The sonar was used to determine the depth of a 1-meter (3.28 feet) plankton net during a tow. The depth of the net was calculated from the wire angle and the length of wire out was 195 meters (639.6 feet) at the deepest part of the tow. The depth of the net determined by the sonar at the same time was 140 meters or 459.2 feet; (3) The ocean bottom was detected up to 1,600 meters, or 5,248 feet, the maximum range of the sonar.

Routine bathythermograph (BT) and weather observations were made during the cruise and all Alepisaurus sp. caught on the long-line gear were preserved in formalin.

In 3 days in the area west of Kauai 28 schools were sighted. They were 15 skipjack, 1 yellowfin, 1 skipjack and yellowfin, and 11 unidentified. Fifteen skipjack schools and 15 unidentified schools were sighted during the 5 days off Kona. In 4 days off Oahu 10 skipjack and 23 unidentified schools were sighted.

Note: See Commercial Fisheries Review, August 1965 p. 31.

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TUNA BIOLOGICAL STUDIES CONTINUED:

M/V "Charles H. Gilbert" Cruise 92 (June 12-17, 1966): To collect and return live scombrids for body density and red muscle size determination for locomotion and hydrostatic equilibrium studies was the main objective of this cruise by the research vessel Charles H. Gilbert. The vessel is operated by the Bureau's Biological Laboratory at Honolulu. The area of operations was within 30 miles of Oahu.



Research vessel Charles H. Gilbert of the U. S. Bureau of Commercial Fisheries.

Other objectives of the cruise were to:

(1) Collect and return live scombrids to the laboratory's behavior tank facilities for studies on schooling behavior, determination of hearing thresholds and red muscle physiology.

(2) Collect fresh samples of fish eye lenses and brains for the Pacific Biomedical Research Center, University of Hawaii. The samples will be used for enzyme studies.

(3) Return yellowfin tuna that have been bled in different manners and chilled in ice to determine if blood streaks in cooked fish can be avoided.

Results of the cruise follow: (1) Densities and gas bladder volumes of 5 yellowfin tuna were determined. Scombrids of desired species and size were not caught for red muscle size determination. (2) A total of 216 skipjack tuna and 34 wavyback skipjack were returned live to behavior tank facilities. Several other objectives of the cruise were not completed.

Thermograph and barograph were operated continuously during the cruise and the standard watch for fish, birds, and aquatic mammals was maintained. Trolling lines were out continuously between Kewalo Basin and each fishing station. The total trolling time was 25 hours--10 skipjack (Katsuwonus pelamis), 17 wavyback skipjack (Euthynnus affinis), and 5 yellowfin (Thunnus albacares) were caught.

Note: See Commercial Fisheries Review, July 1966 p. 20.



Columbia River

EARLY SEASON 1966 SOCKEYE SALMON RUN BETTER THAN EXPECTED:

More than 97,000 sockeye (blueback) salmon had passed over Bonneville Dam by July 7, 1966, indicating that the escapement of 80,000 fish over Rock Island Dam, set by the Oregon Fish Commission and the State of Washington Department of Fisheries as the optimum number needed to adequately utilize the upriver spawning areas, would be substantially exceeded this season. "Based on a comparison of this year's observations with those of previous years, the present run is expected to exceed 120,000 fish," the Oregon Fish Commission director said. Despite this better than expected run, the Commission recommended that no sockeye season be permitted Columbia River gillnetters this year.

On the basis of the size of the run alone, a substantial number of sockeye salmon could have been harvested. The run had been carefully monitored since the fish began passing over Bonneville Dam in June 1966, but a number of factors led to recommendations that no sockeye netting be allowed.

Even with gill-net mesh stipulations and other restrictions, it was believed that the

number of summer chinook that would be taken during a sockeye fishery would be seen in view of the poor condition of the summer run. It also appeared certain that more summer steelhead would have been taken than sockeye and, in view of the fact that the summer steelhead run was just getting under way, and there was no substantial indication of how big the run would be, it seemed inadvisable to allow the taking of any substantial number of steelhead until greater escapement was obtained.

The sockeye run passes upriver in a relatively short period of time with the majority of the fish moving over Bonneville Dam between mid-June and mid-July. Even if a season had been authorized this year, it was too late for a reasonable harvest since possibly 80 percent of the run had passed Bonneville Dam and undoubtedly a substantial portion of the remainder was in the 5-mile stretch of the Columbia River immediately below Bonneville Dam which is closed at all times to commercial fishing. Extreme fluctuations in numbers characterize the sockeye run which, since 1938, has ranged from 10,000 to 327,000 fish annually in an irregular up and down pattern, stated the Oregon Fish Commission director.

This year's run was encouraging in view of the fact that the parent run in 1962 totaled over 29,000 fish over Rock Island Dam which the sockeye must pass to reach the Wenatchee and Okanogan Rivers, the only remaining spawning grounds of the species in the Columbia River system. It indicates the re-entrance of the species and offers promise that sockeye runs in the future could provide a harvestable surplus. The Rock Island site, near Wenatchee River, is some 450 miles above the mouth of the Columbia River.

The fresh-water habitat requirements are more restrictive for sockeye salmon than for the other four species of Pacific salmon since the young sockeye must have ready access to lakes in which they remain at least a year before starting their migration to the sea. This fact precludes any intensive effort to introduce sockeye into lower parts of the Columbia River system except where suitable lakes and reservoirs exist.

Sockeye salmon seldom take bait or artificial lures of any kind and their harvest is therefore confined to gillnetting in the river when the fish are on their upstream migration. "It appears there will be no har-

vest of sockeye in the Columbia River this year, but assuming successful spawning and normal survival of the young, this year's fine escapement should mean good returns to fishermen in four years," the Oregon Fish Commission director concluded. (Oregon Fish Commission, July 9, 1966.)



Commercial Fisheries Research and Development Act

GRANT-IN-AID FUNDS APPORTIONED TO STATES FOR FISCAL YEAR 1967:

The second apportionment amounting to \$4.1 million in grant-in-aid commercial fisheries research and development funds to the States was announced July 29, 1966 by Secretary of the Interior Stewart L. Udall.

The money was appropriated by Congress under a 1964 act to improve commercial fisheries resources of the United States. A similar apportionment of \$4.1 million was made in July 1965.

State and Area	Allocations	State and Area	Allocations
Alabama	\$ 43,500	Nevada	\$ 20,500
Alaska	246,000	New Hampshire	20,500
Arizona	20,500	New Jersey	157,500
Arkansas	20,500	New Mexico	20,500
California	246,000	New York	180,600
Colorado	20,500	North Carolina	53,000
Connecticut	20,500	North Dakota	20,500
Delaware	28,600	Ohio	47,900
Florida	246,000	Oklahoma	20,500
Georgia	90,400	Oregon	120,200
Hawaii	33,300	Pennsylvania	53,500
Idaho	20,500	Rhode Island	25,800
Illinois	23,500	South Carolina	22,100
Indiana	20,500	South Dakota	20,500
Iowa	20,500	Tennessee	20,500
Kansas	20,500	Texas	246,000
Kentucky	20,500	Utah	20,500
Louisiana	246,000	Vermont	20,500
Maine	214,700	Virginia	176,700
Maryland	175,400	Washington	209,400
Massachusetts	246,000	West Virginia	20,500
Michigan	21,600	Wisconsin	20,500
Minnesota	20,500	Wyoming	20,500
Mississippi	121,000	American Samoa	53,300
Missouri	20,500	Guam	20,500
Montana	20,500	Puerto Rico	218,500
Nebraska	20,500	Virgin Islands	20,500

Allocation of money is based on the value of the commercial fishing industry of the various States, the Commonwealth of Puerto Rico, American Samoa, Guam, and the Virgin Islands. No State may receive more than 6 percent, or less than one-half of one

percent, of the fund. Maximum permissible grants--\$246,000 each--were allocated to Alaska, California, Florida, Louisiana, Massachusetts, and Texas.

Under the research and development program, the States are reimbursed for up to 75 percent of the costs of approved projects. The research and development programs are administered by Interior's Bureau of Commercial Fisheries.

The tabulation lists the apportionment of funds to each State and other entity for the 1967 fiscal year, which began July 1, 1966.
Note: See Commercial Fisheries Review, Sept. 1965 p. 22.



Fish Hatcheries

COMPREHENSIVE SURVEY OF NEEDS FOR HATCHERY FISH ANNOUNCED:

A survey to determine future needs for hatchery fish to help manage the Nation's sport fisheries was announced July 24, 1966, by Secretary of the Interior Stewart L. Udall.

The survey will be made by Interior's Bureau of Sport Fisheries and Wildlife in cooperation with State fish and game departments. It will be used to estimate the water now suitable for sport fish and how much of this is or should be stocked, number of fishermen, future stocking needs, and capabilities of National, State, and private hatcheries. The survey is also expected to be helpful in deciding the future roles of public and private hatcheries.

In announcing the survey, Secretary Udall said data gathered will be projected to cover needs for "hatchery fish" in 1973, 1980, and 2000. "The role of artificial production in providing for America's angling needs must be better defined. Stocking and production guidelines resulting from this survey are needed to keep up with the ever-increasing angling pressure while still maintaining or improving the quality of fishing," the Interior Secretary said.

Full cooperation from State game and fish departments was assured by the president of the International Association of Game, Fish, and Conservation Commissioners.



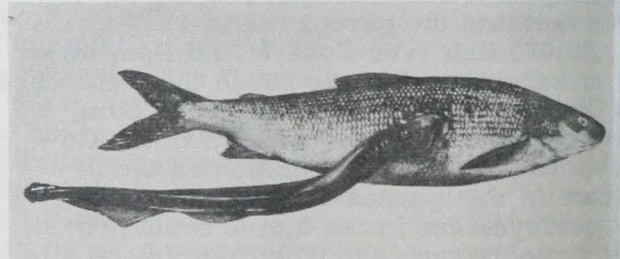
Great Lakes

LAKE TROUT FISHERY ENCOURAGED BY SEA LAMPREY DECLINE:

Prospects for restoring the multimillion-dollar lake trout fishing industry in the upper Great Lakes have become increasingly encouraging due to reduction in numbers of parasitic sea lamprey, Secretary of the Interior Stewart L. Udall said after reviewing latest statistics from the joint United States-Canadian control program.

During the spring of 1966, some 4,300 sea lamprey were captured at 16 checkpoints on the United States shore of Lake Superior, compared with 10,129 for a similar period a year earlier, according to Interior's Bureau of Commercial Fisheries. This represents the most dramatic decrease since the 80-percent reduction recorded in the 1-year period ending in 1962.

The number of spawning adult sea lampreys caught at electric barriers on streams tributary to Lake Superior during 1966 has been about 50 percent below the 1962-1965 level and indicates a reduction of about 90 percent from the average of 1957-61. A steady decline in sea lamprey catches also is reported for Lake Michigan streams.



Shows Great Lakes whitefish with sea lamprey attached to it.

In the program of chemically treating lamprey-spawning streams to destroy the trout predator while it is still in its larvae or ammocete form, about 75 percent of Lake Superior's infested tributaries have now had a second application of the lampicide. The first round of treatments for the 99 Lake Michigan streams was completed early in spring 1966 and the program is now under way in Lake Huron.

Some 4.8 million yearling lake trout are being planted in Lakes Superior (3.1 million) and Michigan (1.7 million) during 1966. This is the largest annual stocking to date and brings the total for Lake Superior to

about 15.7 million fish since rehabilitation of the lake trout fishery began in 1958.

The remarkable comeback of the lake trout attests to the success of the control efforts and replanting with hatchery-raised stocks. Natural reproduction now is returning. The Bureau of Commercial Fisheries is pointing out that in fall 1963, one of its research vessels made the first catch of maraial (not produced in a hatchery) lake trout in Lake Superior since 1959. Also, the whitefish and rainbow trout fisheries have improved in Lake Michigan as an extra bonus of the war on sea lampreys.

The stocking program was initiated in Lake Michigan in 1965. For Lake Huron, stockings with selected hybrid splake (a combination of lake trout and speckled or brook trout) are being scheduled to coincide with the sea lamprey control program and are expected to get under way in 1969. This species, developed by Canadian fishery scientists as a result of a decade of selective breeding research, is expected to offer a special advantage over the lake trout since it will mature and reproduce at an age of three years or earlier, before reaching the size at which it becomes vulnerable to sea lamprey predation. Lake trout become vulnerable at about four years of age, but do not mature and reproduce until seven years of age.

Efforts to find commercial uses for sea lampreys to compensate for the destruction they cause have been unsuccessful. They are unacceptable to Americans as a food, although they are eaten in many European countries. Analyses indicate that oil yield and Vitamin-A potential are much too low for commercial exploitation.

See Commercial Fisheries Review, October 1965 p. 31.

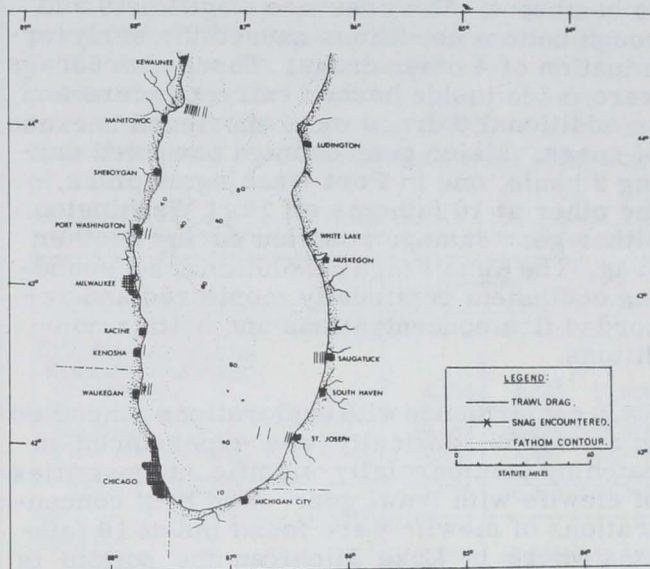
Great Lakes Fisheries Explorations

(a) Gear Development

SEASONAL DISTRIBUTION AND ABUNDANCE STUDIES OF ALEWIFE AND CHUB IN LAKE MICHIGAN CONTINUED:

M/V "Kaho" Cruise 33 (June 7-23, 1966): Further knowledge regarding the seasonal abundance, distribution, and availability of alewife and chub stocks, upon which the commercial fishing industry in Lake Michigan

has become more dependent since the deterioration of other prime fish stocks, was one of the objectives of this cruise by the exploratory fishing vessel Kaho. The vessel is operated by the Bureau of Commercial Fisheries, U. S. Department of the Interior.



Lake Michigan explorations by M/V Kaho Cruise 33 (June 7-23, 1966).

The Bureau, through various research and development studies, is striving to improve the economic utilization of alewife and chubs. The low-cost, high-volume production of those species by trawling makes it possible to use them for pet food, mink food, or fish meal. Such use is still increasing. In 1965, a total of 14.1 million pounds of alewife and 0.9 million pounds of chubs from Lake Michigan were used for that purpose.

The major objective of this cruise was monitoring the availability of the alewife population to bottom trawls at a time of the year when they become difficult to catch--especially on the west side of southern Lake Michigan. Special emphasis was placed on exploration of shoal water areas. Secondary functions of the cruise were to provide fish samples for studies in relation to pesticides and botulism, collect information on lake trout populations, obtain length and fin-clip records for each trout taken during the cruise, and preserve specimens for lake trout food studies conducted by the State of Michigan Conservation Department.

A total of 33 exploratory drags was completed in southern Lake Michigan during the

cruise. All drags were made with a 52-foot (headrope) Gulf-of-Mexico-type fish trawl. The majority of drags were of 30-minute duration. A total of 5 drags were purposely shortened to 15-minute periods to check for alewife at depths where they were assumed to be absent. The presence of gill nets and rough bottom conditions caused the early termination of 4 other drags. Three short drags were made inside harbor entrance piers and an additional 3 drags were shortened because of snags. Major gear damage occurred during 2 hauls, one in Port Washington piers, the other at 10 fathoms off Port Washington. Minor gear damage resulted during another drag. The Kaho's high resolution echo-sounding equipment continually monitored and recorded fish concentrations and bottom conditions.

In conformance with explorations conducted in June 1962, difficulty was experienced in catching commercially-significant quantities of alewife with trawl gear. The best concentrations of alewife were found inside 10 fathoms where in Lake Michigan the bottom is usually too rough to permit effective bottom trawling. Commercially significant quantities of alewife amounting up to 1.8 tons an hour were taken off Benton Harbor, Waukegan, Kenosha, Milwaukee, and Port Washington, respectively. The catches, however, were much smaller than those obtained during earlier cruises in April and May 1966.

Unusually large catches of 450 and 500 pounds of yellow perch were made off Benton Harbor. Little effort was made to locate chubs during this cruise--the largest catch was 120 pounds.

Among other species caught in the trawl were smelt, sculpin, yellow perch, and lake trout.

Note: See Commercial Fisheries Review, August 1966 p. 29.



Great Lakes Fishery Investigations

BIOLOGICAL RESEARCH AND SEA LAMPREY CONTROL, JULY 1966:

Some of the highlights of Great Lakes biological research during July 1966 by the Biological Laboratory at Ann Arbor, Mich., operated by the Bureau of Commercial Fisheries, U. S. Department of the Interior:

Lake Superior research: The Biological Laboratory's research vessel Siscowet operated in western Lake Superior during July. Part of the cruise was in support of the University of Minnesota project under P.L. 88-309. Assessment of the abundance and distribution of lake trout also was carried out at that time. The catch per unit of effort was slightly higher than a year earlier. Two young-of-the-year lake trout were caught during trawling operations in the Apostle Islands region of the lake.

Lake Michigan research: Alewife larvae were abundant during July in the open water of Lake Michigan off Saugatuck, Mich. They appeared to be confined to the upper few meters of water regardless of depth. Although they are found in the lake at very early stages of development, the pattern of movement would indicate there is little or no actual spawning in the lake off Saugatuck.

Further study by the Bureau's Biological Laboratory to determine the effect of temperature on alewife eggs revealed that hatching may occur over a wide temperature range (52-82° F.). Preliminary field observations indicate that the upper limit for hatching (82° F.) may be the temperature at which natural spawning is completely inhibited. All spawning activity in the Kalamazoo River ceased when water temperatures reached 82° F. All mature eggs taken from females inhabiting 82° F. water were dead and sperm from males was highly viscous and would not mix with water.

Lake Erie research: Assessment of the new year-class strength of various species in the western basin of Lake Erie was conducted during July. Results from trawling as of that time indicated the poorest survival of yellow pike and yellow perch in that area since 1957. The research vessel Musky II also was used in supporting the investigation conducted by the Laboratory's limnological study group off Lorain, Ohio.

Sea lamprey control: Seasonal operation of electric barriers in Lake Superior tributaries was terminated July 13. The adult sea lamprey counts at the assessment barriers declined significantly. Catches of spawning-run lampreys showed a 56-percent reduction from the previous 4-year average (10,825). At the end of the season the catch was 4,761 sea lampreys compared with 11,834 a year earlier.

Chemical treatment of lamprey-producing streams was restricted by low stream flows due to unseasonal drought conditions. Two streams were completed in July--Pine River in Mackinac County, Mich., a tributary of modern Lake Huron was treated for the first time and Sturgeon River in Delta County, a modern Lake Michigan stream, was restricted. Except for major streams, the schedule of chemical treatment of lamprey-producing streams could be delayed on account of low water.



Industrial Fishery Products

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

Production, May 1966: During May 1966, a total of about 19.1 million pounds of marine animal oils and 19,155 tons of fish meal was produced in the United States. Compared with

Product	May		Jan.-May		Total 1965
	1/1966	1965	1/1966	1965	
(Short Tons)					
Fish Meal and Scrap:					
Groundfish	1,040	1,293	4,388	3,783	10,696
Herring	132	77	1,015	1,344	12,932
Menhaden 2/	14,742	18,779	19,832	26,287	175,959
Tuna and mackerel	2,561	1,624	11,923	8,690	25,399
Unclassified	680	3,330	1,617	6,209	17,360
Total 3/	19,155	25,103	38,775	46,313	242,346
(1,000 Pounds)					
Fish Solubles:					
Menhaden	5,980	7,961	10,193	10,126	73,181
Other	1,662	2,726	6,347	7,581	21,658
Total	7,642	10,687	16,540	17,707	94,839
(1,000 Pounds)					
Oil:					
Groundfish	131	177	637	611	2,441
Herring	3/	48	358	600	8,543
Menhaden 2/	18,370	22,353	23,020	32,302	175,202
Tuna and mackerel	375	259	1,632	1,295	4,793
Other (inc. whale)	198	319	494	816	4,521
Total oil	19,074	23,156	26,141	35,624	195,500

In 1965 this was a decrease of about 4.1 million pounds of marine animal oils and 5.8 tons of fish meal and scrap. Fish solubles production amounted to 7,642 tons--a decrease of 3,045 tons as compared with May 1965.

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, January-May 1966: Based on domestic production and imports, the United States available supply of fish meal for the first 5 months in 1966 amounted to 187,401 short tons--26,529 tons (or 12.4 percent) less than during the same period in 1965. Domestic production was 7,538 tons (or 16.3 percent) lower, and imports were 16,758 tons (or 10.1 percent) lower than in January-May 1965. Peru continued to lead other countries with shipments of 93,898 tons.

Item	Jan.-May		Total 1965
	1966	1965	
(Short Tons)			
Fish Meal and Scrap:			
Domestic production:			
Groundfish	4,388	3,783	10,696
Herring	1,015	1,344	12,932
Menhaden	19,832	26,287	175,959
Tuna and mackerel	11,923	8,690	25,399
Unclassified	1,617	6,209	17,360
Total production 1/	38,775	46,313	242,346
Imports:			
Canada	17,905	17,020	43,830
Peru	93,898	141,119	209,801
Chile	30,011	3,908	5,651
Norway	33	-	78
So. Africa Rep.	1,000	700	5,100
Other countries	5,779	2,637	6,206
Total imports	148,626	165,384	270,666
Available fish meal supply	187,401	213,930	524,717
Fish Solubles 2/:			
Domestic production	16,540	17,707	94,839
Imports:			
Canada	743	766	1,488
Iceland	33	-	-
Other countries	2,302	2,240	3,650
Total imports	3,078	3,006	5,138
Available fish solubles supply	19,618	20,713	99,977

^{1/}Does not include a small quantity of shellfish and marine animal meal and scrap because production data are not available monthly.
^{2/}Wet weight basis except for imports from South Africa Republic (included in "other countries").
 Source: U. S. Department of the Interior, Bureau of Commercial Fisheries, and U. S. Department of Commerce, Bureau of the Census.

The United States supply of fish solubles during January-May 1966 amounted to 19,618 tons--a decrease of 5.3 percent as compared with the same period in 1965. Domestic production of fish solubles decreased 6.5 percent and imports of fish solubles increased 2.4 percent.



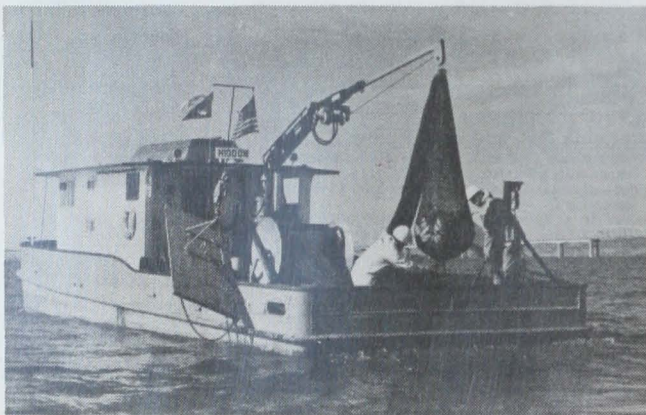
Inland Fisheries Explorations and Gear Development

OAHE RESERVOIR TRAWLING STUDIES CONTINUED:

Reservoir Research Vessel "Hiodon"
Cruise 7 (June 1966): To delineate areas for effective bottom trawling and collect catch and biological data was the purpose of these explorations in the Oahe Reservoir located on the upper Missouri River in North and South Dakota. Trawling operations by the reservoir fishery research vessel Hiodon, which is operated by the U. S. Department of the Interior's Bureau of Commercial Fisheries, were conducted in zones 1-6.

FISHING OPERATIONS: A total of 74 drags was made with 35, 45, and 52-foot (headrope) trawls. Drags totaling 51 were of 15 minutes duration, 5 of 10 minutes duration, and 18 of 5 minutes duration. A total of 7 of the drags was made at night. Another 9 drags were incomplete because of fouling of the net.

Seven drags were made for the primary purpose of effecting trawl modification and testing the results; 8 drags were made primarily for the collection of biological data; 17 drags were made to test for differences between day and night catches; and 42 drags were for exploration of trawling grounds and checking fish distribution.



Shows trawl containing catch being lifted aboard reservoir fishery research vessel Hiodon.

FISHING RESULTS: The 74 drags took a total of 8,702 adult fish weighing 7,853 pounds for an average of 118 fish or 106 pounds per drag. Carp comprised 77.4 percent of the catch by weight; yellow perch, 6.2 percent; bigmouth buffalo, 3.5 percent; and carpsuckers, 3.2 percent. Other species accounted for less than 2.0 percent of the catch.

A 45-foot headrope trawl required minor changes to correct a tendency toward twisting of the cod section. Correction was achieved by placing floats on the top side of the cod. The combination of experimentation and dragging on flats resulted in a low catch rate of only 39 pounds per drag. Species composition of the catch was 90 percent carp, 3 percent burbot, and 2 percent drum.

The 8 "biological drags" yielded a total of 1,400 fish that weighed 857 pounds for an average of 107 pounds per drag. Data relative to length-weight relationships, scale samples, and other biological information obtained was to be used in biological studies.

Ten daytime drags and 7 nighttime drags were made as an experiment to determine whether there is a significant difference in the rate of catch or species composition of catches made at different times of the day. During the cruise, drags made during daytime caught an average of 66 pounds a drag and nighttime drags caught an average of 82 pounds a drag. Carp made up 79 percent of the daytime catch (by weight) and 60 percent of the nighttime catch. Drum, carpsucker, bigmouth buffalo, and white crappie made up a slightly higher percentage of the night catches. Perch accounted for less than 2 percent of the daytime catch, but comprised 13 percent of the nighttime total.

Of some interest was the large increase in yearling fish caught at night. An average of 13 yearlings per drag entered the daytime catch as compared to 154 per drag at night. The large increase resulted primarily from the increased catch of yearling bullheads (2 per drag during daylight; 81 per drag at night), white crappie (5 - 37) and perch (2-26). Comparison of daytime and nighttime catches will continue through the 1966 field season program.

A total of 2,080 yearling fish was caught during the cruise. The species composition was 53 percent perch, 19 percent bullheads, 10 percent white crappie, 5 percent yellow pike (walleye), 4 percent sauger, 3 percent northern pike, and 2 percent white bass. Other species taken were goldeye, black crappie, drum, carp, carpsucker, channel catfish, and burbot.

Note: See Commercial Fisheries Review, August 1966 p. 34.

Maine Sardines

CANNED STOCKS, JULY 1, 1966:

Canners' stocks of Maine sardines on July 1, 1966, were down 42,000 cases from those of the same date in 1965, but were sharply higher as compared with the same date in the previous years.

were down. U. S. per capita consumption of fishery products in 1966 will likely not exceed 10.9 pounds in view of slightly smaller production and population gains. In 1965, consumption of fishery products averaged 11.0 pounds per person, the highest since 1954.

Canned Maine Sardines--Wholesale Distributors' and Canners' Stocks, July 1, 1966, with Comparisons 1/

Type	Unit	1965/66 Season					1964/65 Season				
		7/1/66	6/1/66	4/1/66	1/1/66	11/1/65	7/1/65	6/1/65	4/1/65	1/1/65	11/1/64
Distributors	1,000 actual cases	195	208	234	267	289	194	198	236	238	291
Packers	1,000 std. cases 2/	253	248	312	520	689	295	203	314	538	629

1/ Table represents marketing season from November 1--October 31.

2/ 3 3/4-oz. cans equal one standard case.

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

Source: U. S. Bureau of the Census, Canned Food Report, July 1, 1966.

The 1966 pack of canned Maine sardines totaled 742,000 standard cases as of August 1, 1966, according to the Maine Sardine Council, as compared with 773,000 cases packed during the same period in 1965. Fishing was very spotty along the entire Maine coast during most of August and packing plants were working only a few days a week. Packers are hoping for improved supplies during September and October.

Preliminary data show the 1965 pack as 866,903 standard cases (100 cans 3 3/4-oz.) canned in 23 plants in Maine. That was 46.3 percent more than the 865,751 cases packed during 1964, when fishing was extremely poor. The 1965 pack was 21.8 percent less than the 929,235 cases in 1963.

New legislation permitting year-round canning of Maine sardines removed the traditional December 1 closing date for the pack- ing season. The new legislation opened winter canning to all Maine sardine packers and allowed winter canning with domestic as well as imported herring.

See Commercial Fisheries Review, July 1966 p. 32.



Marketing

EDIBLE FISHERY PRODUCTS, MIDYEAR 1966:

Indications about midyear 1966 were that supplies of edible fishery products may fall a little below those of a year earlier. Domestic production in 1966 probably will be slightly below the 1965 total; imports will be substantially, but beginning 1966 stocks

Lower canned salmon supplies were anticipated for 1966 based on expectations of smaller salmon runs. However, salmon runs were surprisingly good and the 1966 salmon pack it was believed could well develop into a heavy one. Canned tuna may be less plentiful than in 1965. The early 1966 pack was above that of a year earlier because imports of raw tuna stocks ran especially heavy, but domestic landings have been lower. Inventories of canned tuna were lowered by heavy sales during 1965, and in view of growing consumer requirements and strong world demand, canners will be hard pressed to replenish inventories. Prospects were for a reduction in supplies of shrimp. Stocks were down appreciably at the beginning of 1966, landings in the Gulf of Mexico have been smaller, and imports have been running below a year earlier. Supplies of northern lobsters may also hold lower this year as compared with 1965. About the same quantity of flounder will be available this year, and halibut supplies will about equal 1965. But it appeared that scallops, haddock, and spiny lobster tails will be more plentiful this year.

Prices of fishery products generally increased during the first half of 1966. Continued high prices on most items are likely if demand continues strong and overall supplies hold a little below 1965.

As of midyear 1966, supplies of many popular fishery items were heavier than a year earlier. More cod fillets and steaks, more halibut, and more fish sticks and portions were on hand than at mid-1965, although cold-storage holdings of raw

headless shrimp and ocean perch fillets were down. Frozen stocks of crab meat, lobster tails, and scallops were above a year earlier. Stocks of canned pink salmon from the new season pack were up substantially from a year earlier, and there was some increase in stocks of canned chum and coho salmon.

Note: This analysis was prepared by the Bureau of Commercial Fisheries, U. S. Department of the Interior, and modified from that published in the August 1966 USDA issue of the National Food Situation (NFS-117).

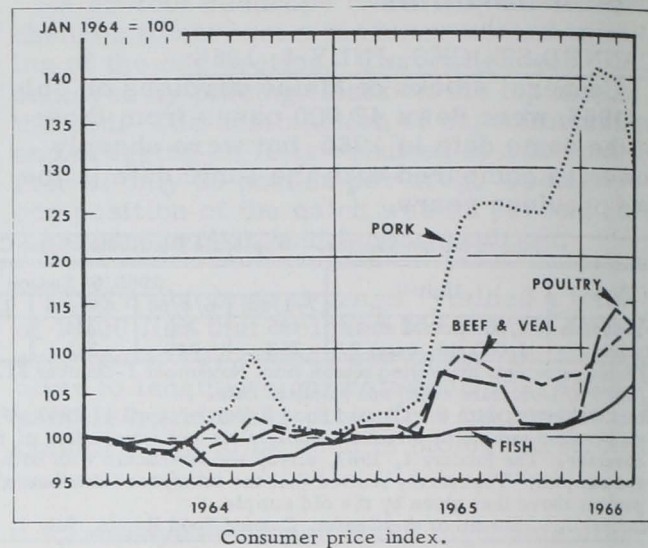
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PRICE INCREASE IN 1965 MODEST FOR FISHERY PRODUCTS--HIGH FOR MEAT:

In 1965 the Bureau of Labor Statistics Consumer Price Index, commonly referred to as the "cost-of-living index" increased 1.7 percent from the previous year. Many of the 400 or so goods and services priced in the index contributed to this overall increase. However, much publicity has been given to the fact that one of the five major categories--food--contributed most to the overall increase in the Consumer Price Index. Most of the gain in food prices can be attributed to the rising cost of meats, poultry, and fish. Prices of those commodities rose 7 percent from 1964 to 1965. Only during the shortages in 1951 and 1952 have prices for meats, poultry, and fish averaged higher than in 1965.

Carrying the breakdown even further, pork had the largest gain in the red meats group averaging 13.8 percent higher in 1965, while beef and veal averaged 4.8 percent higher. Retail prices for poultry in 1965 increased 3.1 percent. The price increase for fish was the least of all--only 2.0 percent higher from 1964 to 1965. For each of these commodities, price gains were most pronounced during the last half of 1965.

What caused these sharp gains in 1965 compared with the relatively low prices which prevailed in 1964? Pork prices were up 14 percent over 1964 as a result of a 6½-pound cut in per capita supplies. For several years, pork prices had remained relatively low. Retail beef prices, responding to the generally tight meat supplies and strong demand, increased an average of 5 percent in 1965 even though per capita beef supplies were down only slightly. Despite substantially increased broiler supplies, retail prices averaged 3 percent higher in 1965. Prices for fishery products joined meat in the general advance during 1965 by increasing an average of 2 percent.



When April 1966 prices are compared with year earlier prices, meat prices rose more than fish prices--an 18-percent increase for meat as against a 5-percent increase for fish. The increase in meat prices accounted for nearly all of the 6 percent increase for total food. Pork led the rise with 28 percent, followed by beef and veal with 9 percent, and poultry with 8 percent.

For the remainder of summer 1966, it was conjectured that fish sales could benefit from continued high beef and pork prices. Retail prices for fishery products generally decline during the summer months due to the seasonal increase in supplies. (U. S. Bureau of Commercial Fisheries, Branch of Current Economic Analysis.)



Maryland

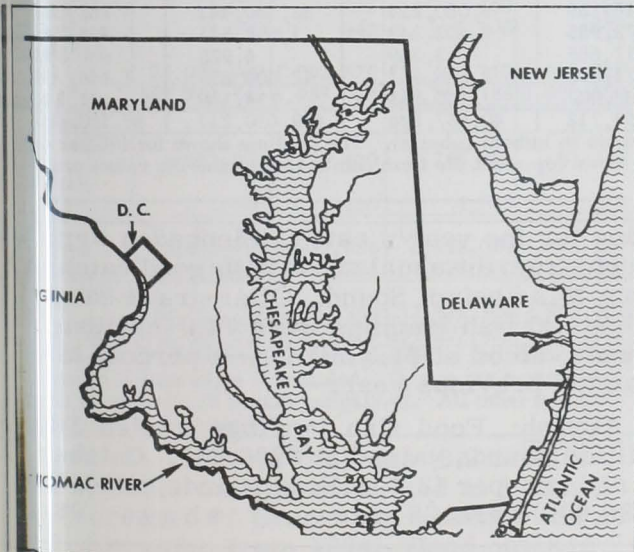
FISHERY LANDINGS AND TRENDS, 1965:

Landings of fish and shellfish at Maryland ports in 1965 totaled 86.6 million pounds with an ex-vessel value of \$13.2 million--an increase of 22 percent in quantity and 13 percent in value as compared with 1964. Blue crabs, oysters, menhaden, and soft clams accounted for 68 percent of the 1965 catch.

Crabs: Hard blue crab landings totaled 32.0 million pounds in 1965, an increase of 6.8 million pounds. This was a record-high year for hard crabs--the previous record was 31.6 million pounds landed in 1930. Crab ex-vessel prices varied from a high of \$10 a barrel in April to \$4 a barrel in August for picking crabs.

Soft and peeler blue crab landings in 1965 totaled 898,000 dozen, 23 percent below 1964.

Oysters: Landings improved over 1964 showing a gradual recovery from the record low catch of 1963. There were 1,845,800 U.S. bushels landed--an increase of 157,000 bushels or 9 percent over 1964. Oysters were the second most important species in quantity landed, but were the leading species in value (as estimated \$6.4 million). The spring catch was below the same period of the previous year and as a result packers purchased shell oysters from Gulf States to supply orders. The last three months of the season improved as harvesting increased and some oyster bars that were closed for many years were reopened by the State. Also, results of the State's shell and seed-oyster planting program were beginning to appear. Ex-vessel prices ranged from \$2.50 to \$4.50 a bushel in the spring to \$2.50 to \$6.75 a bushel in the fall. Clam and bushel prices for standards and sects were lower in the spring (\$6.00 to \$10) and in the fall prices were higher.



Maryland fishing areas.

The past three dry years affected oysters by raising the salinity of the water in Maryland's portion of the Chesapeake Bay and the spread of the MSX organism was accelerated.

Soft Clams: Landings of soft clams totaled 900 bushels--a 6-percent decrease from 1964. Ex-vessel prices were fairly constant at \$2.50 a bushel throughout the year. The controversy over clamming regulations in the Potomac River was resolved in February 1965. The Potomac River Fisheries Commission was given authority and a 40-bushel-

per day limit was placed on clams which is consistent with the rest of the State. The Potomac River, as in 1964, produced 31 percent of the soft clam catch.

Finfish: Maryland landings of finfish in 1965 totaled 35.0 million pounds valued at \$1.6 million, as compared against 28.2 million pounds with a value \$1.5 million in 1964. The 1965 landings of menhaden (8.3 million pounds) and scraffish (12.7 million pounds) accounted for much of the increase.

Landings of striped bass--Maryland's leading foodfish--dropped from 3.3 million pounds in 1964 to 2.9 million pounds in 1965. The white perch catch of 1.4 million pounds was up sharply from the 638,200 pounds landed in 1964. Landings of alewife (2.1 million pounds) were also up. There was a large increase in the 1965 shad landings (1.3 million pounds) and fluke landings (733,886 pounds) were up slightly.

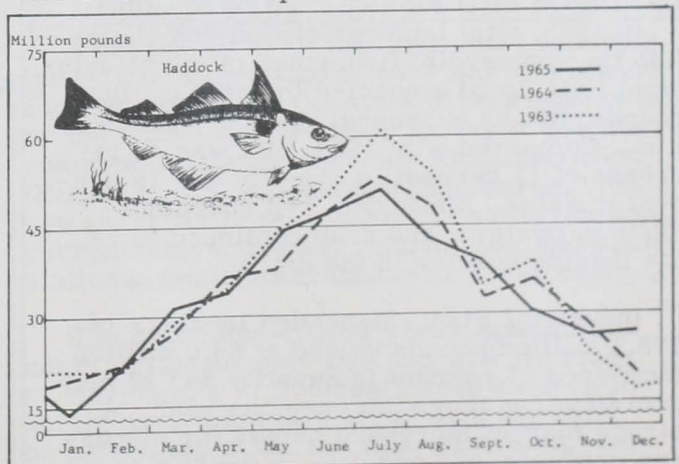
In 1965, two tuna purse-seine vessels landed 824,000 pounds of bluefin and 8,000 pounds of skipjack tuna. The Atlantic Coast tuna fishery was less active than in 1964.



Massachusetts

FISHERY LANDINGS, 1965:

Landings of fish and shellfish in Massachusetts during 1965 totaled 408.7 million pounds valued at \$40.6 million--a drop of less than 1 percent in quantity, but an increase of 15 percent in value from 1964. Fishermen landed 36 percent of the year's total catch at the port of New Bedford, 30



Massachusetts landings by months, 1963-1965.

Summary of Massachusetts Landings, 1965 and 1964

Species	1965		1964	
	Quantity Pounds	Value \$	Quantity Pounds	Value \$
Alewives, round.	6,336,200	71,292	3,998,630	39,985
Cod, drawn	27,259,385	2,577,660	29,504,382	2,363,568
Cusk, drawn	1,652,978	113,401	1,683,995	98,107
Flounders, round	16,445,012	1,746,178	13,809,239	1,317,585
Dab	7,015,709	622,159	5,530,718	376,816
Fluke	405,721	126,432	1,358,228	441,591
Gray Sole	3,264,741	377,017	2,906,383	317,347
Lemon Sole	1,897,317	404,384	2,083,829	426,909
Yellowtail	70,888,231	6,712,605	70,933,339	4,876,011
Haddock, drawn	115,629,799	13,423,369	114,261,114	11,556,406
Hake:				
Red, round	2,379,350	29,204	2,875,870	32,790
White, dressed	1,541,784	155,334	2,426,103	176,677
Halibut, drawn	199,789	81,547	196,699	71,698
Herring, sea, round	4,442,705	69,749	1,962,969	36,954
Mackerel, round	1,828,912	127,106	2,725,435	172,224
Ocean Perch, round	23,293,505	1,014,005	30,331,669	1,280,520
Ocean Pout, round	728,010	9,925	2,453,115	32,625
Pollock, drawn	9,351,612	670,535	10,557,807	612,498
Swordfish, dressed	381,006	117,074	870,522	308,396
Tuna, round:				
Bluefin	2,381,737	143,760	2,058,223	143,482
Skipjack	5,000	500	1,154,040	84,269
Unclassified	210,000	18,990	-	-
Whiting:				
round	44,671,732	1,301,958	56,303,425	1,215,270
dressed	139,260	7,582	1,057,690	47,556
Wolfish, drawn	469,565	30,014	666,938	36,637
Unclassified fish	51,116,189	1,080,854	32,380,441	767,505
Lobsters, northern	2,472,985	1,403,349	1,694,511	898,745
Shrimp	17,685	2,249	6,925	916
Sea scallop meats	11,871,791	8,028,661	13,603,835	7,446,109
Squid	436,002	30,933	234,140	11,245
Total	408,733,712	40,557,826	409,630,214	35,190,441

Note: Includes all landings in Massachusetts except for a small quantity taken in inshore fisheries. The landings shown for 1964 accounted for 93.2 percent of the Massachusetts total catch. The weights shown represent the fresh fish as landed and the values are those received by the vessels.

percent at Gloucester, 25 percent at Boston, and 9 percent at other Massachusetts ports.



Mississippi

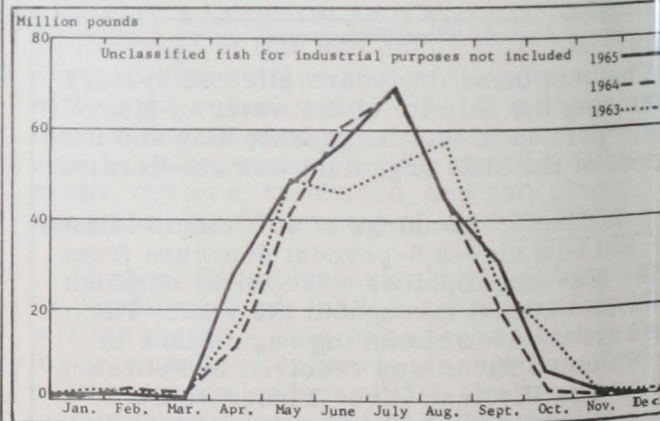
LANDINGS AND FISHERY TRENDS, 1965:

In 1965, total landings of fish and shellfish by commercial fishermen of the Mississippi Gulf Coast amounted to 368.4 million pounds with an ex-vessel value of \$9.3 million. Compared with 1964, that was an increase of 11 percent in quantity and 15 percent in value. Menhaden, red snapper, shrimp, oysters, and crab continued to be the leading species in the catch.

Industrial Fish: Menhaden landings of 278.1 million pounds valued at \$4.0 million increased 17 percent in quantity and 27 percent in value above the previous year. A strong market increased prices for menhaden products, and resulted in the higher

value for the year's catch. Menhaden were caught from the usual areas with good catches from Mississippi Sound. Otter-trawl caught industrial fish landings were 74.0 million pounds valued at \$1.3 million - 6 percent less than the previous year.

Finfish: Food fish landings totaled 3.6 million pounds valued at \$720,000. Catches of red snapper (2.4 million pounds valued at \$589,000) were 28 percent above 1964.



Mississippi landings by months, 1963-1965.

Landings of spotted sea trout were about the same as 1964. Black and red drum landings decreased. Bluefish landings were 72,300 pounds--4 times greater than in 1964. Flounder landings were 21 percent greater than in 1964.

steady, but less than the previous year. Prices for raw oysters increased sharply after the hurricane "Betsy" because dealers were unable to get adequate supplies. At the end of the year prices of raw oysters were 20 to 30 percent higher than in the same period of 1964.

Mississippi Landings, 1965 and 1964

Species	1965		1964	
	Qty. Lbs.	Value \$	Qty. Lbs.	Value \$
Bluefish	72,350	8,228	14,630	1,463
Crab	220	18	900	71
Drum	-	-	500	30
Flounder	33,120	2,193	45,730	3,060
Shrimp	32,600	4,783	49,950	7,187
Spot	69,260	9,206	57,345	7,810
Sea trout	321,910	34,939	268,350	29,302
Whiting	271,130	16,185	322,960	19,802
Mullet	278,104,210	3,972,568	237,832,600	3,131,440
Menhaden	240,800	12,494	249,530	12,391
Pompano	60	6	200	100
Sea bream	20,110	923	16,650	836
Sea bream				
Sardine	148,560	37,138	148,130	30,522
Wahoo	27,150	1,685	26,150	1,399
Shrimp	25,520	1,965	49,300	3,847
Shrimp, red	2,365,320	589,470	1,849,190	460,872
Spiny mackerel	3,220	337	660	62
Spiny	5,700	342	7,200	540
Unidentified				
Mullet	74,020,900	1,292,576	78,425,210	1,348,925
Bluefish	355,762,140	5,985,056	319,365,185	5,059,659
Crab				
Blue				
Spot	1,692,120	130,600	1,285,980	81,610
Striped				
Hermit	1,400	210	1,700	252
Shrimp				
Heads-on	8,232,989	2,522,758	6,416,024	1,804,829
Oysters	2,695,265	626,796	4,828,600	1,098,736
Shellfish				
Mussel	12,621,774	3,280,364	12,532,304	2,985,427
Clam				
Total	368,383,914	9,265,420	331,897,489	8,045,086

Hard blue crab landings of 1.7 million pounds increased 32 percent above the previous year and marked the third year of increased catches. Crab prices were up during the year and with a good market for crabmeat, processors worked at full capacity. Local canning plants used the surplus meat and had good inventories of canned crab meat by the end of the year.

Several new vessels joined the fisheries in 1965. Boatyards were busy with orders for a variety of new wood and steel vessels. New vessels were generally large with more engine power and with steel used mainly in the larger-sized vessels. At the end of 1965, the demand for vessel construction was more than boatyards could handle with resultant lags in completion dates and higher prices.

The commercial fishing industry was greatly affected by hurricane "Betsy," with 2 small shrimp and oyster canning plants damaged beyond repair. One petfood plant was damaged and out of operation for nearly 6 weeks and a shrimp and oyster unloading facility was destroyed.



Nautical Charts

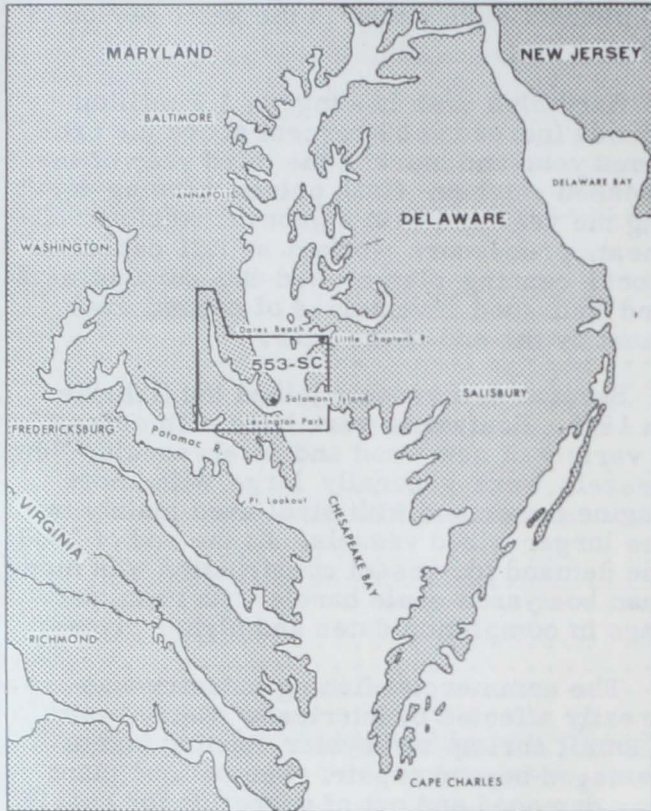
NEW CHART ISSUED FOR CHESAPEAKE BAY:

A new small craft nautical chart covering the entire width of Chesapeake Bay between the Patuxent and Little Choptank Rivers was issued by the Coast and Geodetic Survey of the Environmental Science Services Administration (ESSA), U. S. Department of Commerce. The new chart will provide navigators with tide and current tables, weather information, and a tabulation of facilities available for small craft.

The accordion-folded chart spans "the heart of Chesapeake Bay and will aid many of Maryland's 77,000 registered boaters in safely navigating this area" said the chief of the Survey's Marine Chart Division. He added that the new chart will enhance the

Shrimp landings (8.2 million pounds, heads-on weight) valued at \$2.5 million increased 28 percent in quantity and 40 percent in value from 1964. Good catches were made from the offshore areas adjacent to Horn and Ship Islands and the inside areas of Mississippi Sound. As in the 1964 season, the summer brown shrimp season in 1965 accounted for most of the annual production with 6.2 million pounds landed--75 percent of the total landings for the year. Demand for shrimp by canners remained strong during the season and higher prices were paid. Oyster landings of 2.7 million pounds of oysters were 44 percent less than in 1964--the first sharp decrease noted since 1962. Production in the spring months from public and private reefs in Louisiana waters was

recreational value of a "picturesque and historic area." The chart, identified as Chart 553-SC, is described as "a basic document for navigating the area."



Nautical chart covering the Chesapeake Bay (area indicated by the box).

The chart can be purchased for \$1 from nautical chart agents or at a 20-percent discount if ordered in lots of 10 or more from the Coast and Geodetic Survey, Washington Science Center, Rockville, Md., 20852, where individual copies may also be obtained.

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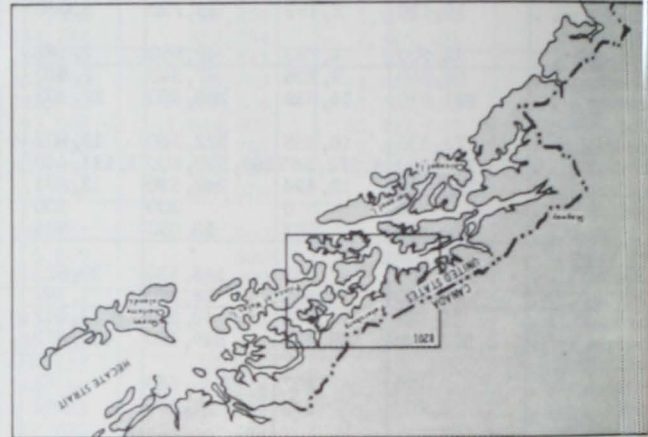
NEW CHART ISSUED FOR SOUTHEAST ALASKA:

A new edition of a nautical chart covering part of southeast Alaska was issued by the Coast and Geodetic Survey, an agency of the U. S. Department of Commerce's Environmental Science Services Administration (ESSA). Nautical charts are important to fishing interests in the area, as well as to its timber and mining industries which must transport their products by sea.

The chart, the first new edition of Chart 8201 in more than three years, covers southeast Alaska from Etolin Island to Midway Is-

lands, including Sumner Strait. It is the 12th edition of the chart (first issued in 1888).

The new edition includes the results of recent hydrographic and topographic surveys and shows changes in the area during the past three years. Included for the first time in the chart is an inset of Duncan Canal in the vicinity of Big Castle Island based on 1965 hydrographic and topographic surveys. The inset is more than 10 times larger in scale than the base chart.



Nautical chart covering southeast Alaska (area indicated by the box).

Chart 8201 provides coverage for the primary shipping routes of fishing vessels which operate in southeast Alaska. In 1965, about 484 million pounds of fish and shellfish valued at some \$72 million were marketed by Alaskan fishermen.



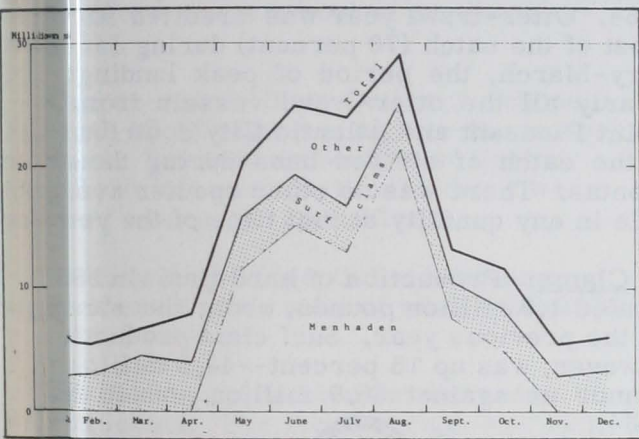
New Jersey

FISHERY LANDINGS, 1965:

Summary: Landings of commercial fish and shellfish in New Jersey during 1965 totaled 159.9 million pounds with an ex-vessel value of \$11.3 million--an increase of 15 percent in quantity and 20 percent in value compared with 1964. Menhaden landings were up 10.0 million pounds, and surf clams were up 5.5 million pounds. There were appreciable increases in landings of sea scallops, swordfish, scup, whiting, blue crabs, and bluefish.

Following are some of the highlights of the New Jersey fisheries during 1965:

Industrial fish: Menhaden production made a very slow comeback after a disastrous year in 1964. Landings for 1965 were up 10.0 million pounds, but in this high volume industry the catch of 74.4 million pounds, worth \$1.3 million, is still considered poor. Landings in 1964, although not a peak year, were 178.4 million pounds valued at \$2.2 million. In past years the industry in New Jersey had annual harvests that were as high as 486 million pounds. Only 1 of the reduction plants in New Jersey processed menhaden during the entire 1965 season.



New Jersey landings by months, 1965.

Clams: Landings were in record quantities. In 1965, total landings exceeded the 1964 catch by about 5.5 million pounds of meat. A total of 4 vessels was added to the surf-clam fleet, bringing the total to about 60 vessels. Increased production was due to: virgin surf-clam grounds located off Wildwood; labor disputes, and favorable weather. Because of the increasing sales of clam products, production of that species has steadily increased since 1952.

Scallops: Landings reached an all-time high of 1.9 million pounds, averaging 60 cents a pound. Most of the scallops were taken in an area off Cape Henry, Va., where vessels from Canada to the Carolinas operate. During the period of peak catches, June-September, landings of 10,000 to 30,000 pounds of meats per trip were common. In July the vessel caught 36,800 pounds on one trip.

Sardines: In New Jersey, swordfishing is a new and somewhat unexploited fishery. Now 10 years old, it is strictly a long-line operation. The 5 vessels engaged in this fishery landed 1.0 million pounds or 694,000 pounds more than in 1964.

Scup: This fishery continues to lead in total landings of edible finfish. Scup may well be considered the backbone of the New Jersey fishery. Otter-trawl catches in the fall and winter months were exceptionally good and totaled 80 percent of the annual scup landings.

Whiting: This fishery is becoming more prominent in New Jersey. Previously no great effort was made to catch large quantities of whiting because local fishermen were unable to compete with the whiting fishery in the New England States. As this species was somewhat scarce in New England waters, there was a greater demand during the year.

Blue crabs: Landings were up 347,000 pounds in 1965, due to the unusually good catches made by the crab pot fishery in Delaware Bay during August and September. This area produced 81 percent of the total. The remaining 19 percent was caught by crab dredges in Sandy Hook, Raritan and Barnegat Bays.

Tuna: Purse seiners from Massachusetts and California operating out of New Jersey experienced a disappointing season. Since the start of this fishery in 1963, first landings were usually made during June and the season lasted 3 months. In 1965, no fish were caught until mid-July and the last trip was made by August 1. The State's ports are centrally located to important wholesale markets and transportation is readily at hand, but tuna vessels are handicapped by the lack of large, deep inlets, and sufficient unloading and storage facilities. The 1965 landings of tuna amounted to 1.3 million pounds compared to 2.8 million pounds in 1964.

Oysters: Production was down by almost 600,000 pounds as the State did not open the public seed beds located at the mouth of the Delaware River. The normal practice is to plant seed oysters on private grounds and allow them to grow for 3-4 years prior to harvesting. The high incidence of MSX disease in the growing areas requires that harvesting be at the earliest possible moment--within the same calendar year or no later than 1 year after planting. As the main seed beds were closed in 1965, the only sources of oysters were: the remaining oysters obtained from the public seed beds in 1964; about 12,000 bushels of seed taken by tongers from minor seed beds opened by the State in 1965;

and a small quantity on privately-owned beds. During the past ten years, production of oysters has been governed by the amount of seed available from the State's natural seed beds. The State has not opened the seed beds every

New Jersey Landings, 1965 and 1964

Species	1965		1964	
	Qty.	Value	Qty.	Value
Fish	Lbs.	\$	Lbs.	\$
Bluefish	817,137	12,335	541,000	87,043
Butterfish	1,138,123	91,267	1,187,200	132,938
Cod	164,286	28,311	283,000	44,974
Fluke	3,612,738	855,775	3,670,500	865,495
Menhaden	74,362,219	1,270,649	64,278,700	969,552
Scup or porgy . .	9,089,953	887,316	8,551,000	847,326
Sea Bass	2,145,977	344,309	2,194,900	335,309
Striped Bass . . .	779,694	166,165	995,600	174,057
Swordfish	1,000,553	437,987	306,900	103,338
Tuna:				
Bluefin	1,260,557	84,897	2,758,300	139,104
Whiting	3,727,882	156,319	3,270,800	153,836
Other fish	12,194,027	306,724	8,250,300	303,434
Total fish . . .	110,293,146	4,742,054	96,288,200	4,156,406
Shellfish, etc.				
Crabs:				
Blue:				
Hard	892,100	95,468	569,500	81,487
Soft	34,045	8,839	9,600	1,919
Rock	60,257	2,231	44,800	1,515
Horseshoe	211,600	1,058	354,000	1,594
Lobsters	1,018,859	562,276	1,060,600	516,301
Shrimp	1/	1/	2,400	2,400
Clams:				
Hard	1,869,970	858,767	1,894,000	820,169
Soft	33,648	14,020	21,500	8,965
Surf	42,306,687	3,047,857	36,875,200	2,503,719
Conchs	183,500	48,385	190,900	39,076
Mussels, sea . . .	1/	1/	600	300
Oysters	502,659	681,319	1,097,700	1,024,410
Scallops:				
Bay	95,533	45,000	376,300	154,911
Sea	1,895,979	1,152,610	140,300	79,756
Squid	453,017	32,718	376,900	21,735
Terrapin, diamond-back .	1/	1/	3,900	1,365
Turtles	1/	1/	55,900	6,585
Total shellfish, etc.	49,557,854	6,550,548	43,074,100	5,266,207
Grand total . . .	159,851,000	11,292,602	139,362,300	9,422,613

year and this has been the main cause of year-to-year fluctuations in production.

Bay Scallops: Catches dropped sharply from 1964. The failure was attributed to the abundance of weed growth, usually removed by northeast storms in the fall months. There were no storms, however, and dredges picked up large quantities of seaweed, thus limiting the fishery.

Shad: Fish were caught by drift and stake-gill nets mainly in the Delaware Bay and Hudson River during the spring. There was good fishing in the Hudson River the last week in April and the first week in May, but

the catch did not meet fishermen's expectations. Fishing effort was less than in 1964 and was partially responsible for the poor catch. Delaware Bay stake-net fishermen were just able to show a profit from the catches in 1965. Those fishermen would have made larger catches if prices for shad had been higher. Many fishermen quit fishing weeks before the run of shad ended.

Striped Bass: This was the second best year with landings of about 800,000 pounds--216,000 pounds below the record year of 1964. Otter-trawl year was credited for most of the catch (70 percent) during January-March, the period of peak landings. Nearly all the otter-trawl vessels from Point Pleasant and Atlantic City contributed to the catch of striped bass during those months. There was no other species available in any quantity at that time of the year.

Clams: Production of hard clams in 1965 totaled 1.9 million pounds, about the same as the previous year. Surf clam production however, was up 15 percent--42.3 million pounds as against 36.9 million pounds in 1964.



North Atlantic Fisheries Investigation

DISTRIBUTION OF BRIT HERRING STUDY

M/V "Rorqual" Cruise 5-66 (June 22-30 1966): To search for and sample "brit"-size herring (2 to 3 inches) and sardine-size herring schools was the objective of this cruise by the research vessel *Rorqual*, operated by the Bureau of Commercial Fisheries, U. S. Department of the Interior. The area of operation was Saco Bay to Machias Bay (Gulf of Maine) inshore to 5 fathoms and offshore to 50 fathoms.

Surveys during the cruise were made with an echo sounder and traces were sampled with a high-speed trawl and an otter trawl. The areas surveyed and the results obtained were as follows:

Casco and Saco Bays (depth 10-20 fathoms, daytime)--there were no traces of herring and net tows did not catch any; offshore Casco and Saco Bays (depth 20-50 fathoms, night)--no traces of herring were found.

Deepscot Bay (depth 10 fathoms, night)--traces of herring, mixed catch of brit, and same-size herring were found.

Offshore and thoroughfare waters from Mungus Bay to Machias Bay (depth 5-10 fathoms, daytime)--continuous traces were identified as brit herring.

Southwest Harbor to Petit Manan Island (depth 5-30 fathoms, daytime)--no herring were found.

Machias River (depth less than 5 fathoms, night)--there was a school of sardine herring.

Offshore waters from Cutler to Schoodic Point (depth 20-50 fathoms, night)--there were no catches. Schoodic to Southwest Harbor (depth 5-20 fathoms, daytime)--there were scattered traces, not identified.

Bothbay Harbor (depth 5-15 fathoms, night)--there were traces of what apparently were brit herring.

Surface salinity and temperature data were collected. The thermograph was run continuously.

* * * * *

LOBSTER AND SEA HERRING POPULATION STUDIES CONTINUED:

M/V Albatross IV Cruise 66-8 (June 15-25, 1966): To sample populations of lobsters and sea herring and obtain related environmental data was the main objective of this cruise by the Bureau of Commercial Fisheries research vessel Albatross IV. Other objectives were to obtain blood samples from lobster and sea herring and make plankton tows for lobster and herring larvae. The cruise along the Continental Shelf from Veatch Canyon east to Corsair Canyon, generally area of Georges Bank, and Cashes Ledge were the areas of operations.

FISHING OPERATIONS: Lobster: A total of 68 trawl sets was made at the 4 major lobster stations. The sets made in waters of 68 to 100 fathoms yielded 580 lobsters (59 percent females and 41 percent males). A total of 100 of the females were berried. The average weight of the lobsters was 3.4 pounds, with a range in weight 0.1 to 25 pounds. Seven lobster pots set on Cashes Ledge were hauled 4 days later and contained 27 lobsters (10 females and 17 males). The average weight

of the lobsters was 1 pound ranging in weight from 0.4 to 6 pounds. Large lobsters were prevalent in the catches from Lydonia, Oceanographer, and Corsair Canyons, while short lobsters were prevalent in the catches from Veatch Canyon. A total of 278 lobster blood samples was obtained for analysis.

Herring: Six herring trawl sets were made at 6 stations. The sets (1-hour duration) made in waters of 30 to 40 fathoms yielded a total of 29 bushels; the herring were from 25.4 to 34.6 centimeters (about 10.0 to 13.6 inches) long. The majority of herring in the samples were from the 1960 and 1961 year-classes. A total of 50 blood samples were obtained for analysis. Species of fish, other than herring, collected during the cruise were haddock (30 bushels), cod (3 bushels), yellowtail (1 1/4 bushels), ocean perch, (11 1/2 bushels), gray sole (3 bushels), white hake (2 bushels), alewives (1 bushel), dogfish (3 1/2 bushels), skates (3 bushels), silver hake (2 bushels), mackerel (1 bushel), sculpin (4 bushels), goosefish (4 bushels), pollock (1 bushel), and eel pout (2 bushels). One bushel of squid and 1/2 bushel of shrimp also were obtained in the catches.

PLANKTON OPERATIONS: During the cruise 26 one-meter net plankton tows of 15 minutes each were made (5 minutes at 20 meters, 5 minutes at 10 meters, and 5 minutes at the surface). No larval herring were obtained.

HYDROGRAPHIC OBSERVATIONS: Seabed drifters and drift bottles were released at selected stations along the Continental Shelf. At each trawl station bathythermograph (BT) casts were made, salinities collected, and weather observations recorded.

Note: See Commercial Fisheries Review, July 1966 p. 37.



North Pacific Fisheries Explorations and Gear Development

PELAGIC FISHING GEAR RESEARCH:

M/V "Commando" Cruise 13 (June 5-21, 1966): The exploratory fishing vessel M/V Commando, chartered by the U. S. Department of the Interior's Bureau of Commercial Fisheries, returned to Seattle, Wash., on June 21, 1966, after completing a 16-day

cruise in Puget Sound and northern Oregon coastal waters.

The primary objectives of the cruise were to: (1) develop a method of fishing a dandyline-rigged small-mesh 94-foot fish trawl with a single towing warp; (2) assess the intra-station variability in composition of fish and shellfish catches associated with a series of replicate tows made at the 300 and 375 fathom stations on the trackline southwest of the Columbia River mouth; and (3) collect additional data on the composition, distribution and abundance of demersal fish species at stations deeper than 450 fathoms on the Columbia River trackline using the small-mesh 94-foot fish trawl and 70-foot shrimp trawl.

GEAR: The following trawls were fished using V-type otterboards and either a single or double warp trawling arrangement: (1) standard 400-mesh (94-foot) commercial Eastern otter trawl with no liner in the codend, (2) 70-foot semi-balloon Gulf of Mexico shrimp trawl and (3) 94-foot small mesh fish trawl. The latter trawl had essentially the same physical dimensions as the 400-mesh commercial Eastern otter trawl. The major difference was in the smaller mesh sizes which were $2\frac{1}{2}$ inches in the wings and square and $1\frac{5}{8}$ inches in the belly, intermediate, and codend. Because of the great depths to be fished, 4- and 8-inch glass floats were used on headropes of all trawls. The 10-fathom danleanos which consisted of 7-fathom cables from the doors to the butterfly with 3-fathom legs from the butterfly to the net were used in conjunction with the above trawls.

METHODS OF OPERATION: The double warp trawling operation was conducted in the standard manner. The single warp operation was modified to permit the use of the danleanos. Both doors were hung from the starboard stanchion and the 50-fathom bridles from the doors to the single towing warp were wound on the main winch. The 10-fathom danleanos and trawl were wound on a reel on the stern of the vessel. After the trawl and danleanos were payed out from the reel, they were connected to the doors by extensions from the back of the doors. Both towing warps were connected end to end to permit trawling at depths greater than 500 fathoms.

RESULTS: A total of 24 drags--8 with the 94-foot small-mesh fish trawl, 10 with the 400-mesh Eastern fish trawl, and 6 with the

70-foot shrimp trawl--were made during the cruise.

GEAR EVALUATION: SCUBA-equipped divers observed the 94-foot small-mesh version of the 400-mesh Eastern fish trawl rigged with 10-fathom danleanos, V-type doors and 90-foot "tickler" chain attached to the footrope, to evaluate its fishing configuration in 10 fathoms of water. In general, the fishing configuration of the net was good with a horizontal measured spread of 29 feet between wing-tips, and an estimated height of 10 feet at the center of the net and 6 feet at the wing tips. The "tickler" chain was 4 to 10 inches off bottom at the center part of the net and on bottom along the wings. Along the wings the "tickler" remained under or slightly behind the footrope, but at the center the "tickler" was in front of and at about a 45° angle to the footrope. The butterfly part of the danleano remained upright at all times. A tension of 3,500 pounds as measured by a dynamometer was exerted on the main towing cable during the experiments.

REPLICATE SERIES EXPERIMENT: Two series of replicate tows (6- and 4-one-hour tow series) were made with the 400-mesh commercial Eastern otter trawl southwest of the Columbia River mouth at 268-310 and 358-394 fathoms, respectively. The results indicate that at the depths sampled, species dominance in the catches remains the same and the size of catches of the dominant species do not vary excessively. For instance at 268-310 fathoms, catches per hour of sablefish (*Anoplopoma fimbria*) ranged from 400 to 1,600 pounds, Dover sole (*Microstomus pacificus*) from 35 to 300 pounds, channel rockfish (*Sebastobus alascanus*) from 20 to 50 pounds, and Tanner crabs (*Chionoecetes tanneri*) from 30 to 65 pounds. At 358-394 fathoms the catches per hour were less variable, with sablefish (725 to 1,000 pounds), Dover sole (70 to 100 pounds), channel rockfish (105 to 180 pounds), and Tanner crabs (115 to 182 pounds).

DEEP-WATER EXPLORATIONS: A total of 5 drags at depths greater than 500 fathoms was made southwest of the Columbia River mouth. Three of the drags were made with the 94-foot small-mesh fish trawl at depths of 500, 600-710, and 820-840 fathoms yielding catches of 84, 614, and 1,024 pounds, respectively. The towing time of the 3 drags were $\frac{1}{2}$, 2, and 3 hours, respectively. The 2 drags made at 500 and

160 fathoms with the 70-foot shrimp trawl resulted in catches of 407 and 314 pounds in 1 and 1.2 hours of towing, respectively. The tow at 1,160 fathoms was the deepest made on the Columbia River trackline. A speed ratio of only 1.4:1 was successful.

The deep-water catches consisted largely of rattails (*Coryphaenoides acrolepis* and *phoralis*), longfinned cod (*Antimora rostrata*) and channel rockfish (*Sebastes albus*). An exception to this pattern was a 7-pound catch made at 500 fathoms containing 300 pounds of sablefish averaging 52 centimeters (21 inches) in length.

Difficulty was experienced in retrieving the 94-foot small-mesh fish trawl and 70-foot shrimp trawl from deep water. On two occasions ruptured hydraulic lines interrupted the hauling operation.

OTHER SAMPLING AND OBSERVATIONS: Two tows of 1.0 and 1.5 hours duration made with the 70-foot shrimp trawl at 122 and 98-101 fathoms, respectively, yielded catches of less than 50 pounds. Pacific ocean perch terminated those catches. Two other tows with the same gear at 11-14 fathoms yielded 13 and 331 pounds in 0.3 and 0.4 hours of towing, respectively. Hake was the principal species in the latter two hauls.

See Commercial Fisheries Review, February 1966 p. 27.



Oceanography

INTERIOR DEPARTMENT NAMES RESEARCH OCEANOGRAPHER TO COORDINATE EASTROPAC EXPEDITION:
Dr. Warren S. Wooster of the University of California was named by the Department of the Interior's Bureau of Commercial Fisheries to coordinate the largest exploratory oceanographic expedition ever planned in the eastern tropical Pacific (EASTROPAC), which was announced July 14, 1966.

Dr. Wooster, internationally recognized research oceanographer, teacher, and administrator, is a professor at the University's Scripps Institution of Oceanography in La Jolla, Calif., and will continue some of his academic duties while on special assignment with the Bureau.

Wooster will be coordinator for EASTROPAC, the designation for the coming multi-

agency investigation of the oceanic region stretching south from San Diego, Calif., to northern Chile and westward for 2,000 to 4,000 miles, said Donald L. McKernan, Bureau Director. The main purpose of the project, which will begin in early 1967 and continue for about 18 months, will be to gain knowledge of climatic variations in the region and their bearing on fishery resources. The Bureau Director said, "The solution of many problems relating to fisheries, weather forecasting, and defense depends on an understanding of the changing ocean environment."

The Bureau of Commercial Fisheries will be responsible for coordinating the oceanographic program. Participation is expected from Peru, Ecuador, Chile, and the Inter-American Tropical Tuna Commission. The Smithsonian Institution, the Environmental Science Services Administration (ESSA) of the Department of Commerce, Texas A & M College, Oregon State University and the U. S. Coast Guard are also expected to participate.

Wooster received his doctor of science degree from the University of California, San Diego. He is a member of several professional societies and serves on a number of national and international committees concerned with the marine sciences. He spent a year in Lima, Peru, as the first director of Peru's oceanographic and fishery research laboratory, which he organized. He was in Paris from 1961-1963 as Director, Office of Oceanography, United Nations Educational, Scientific and Cultural Organization (UNESCO), and Secretary of the Intergovernmental Oceanographic Commission.

* * * * *

NEWEST RESEARCH VESSEL "OCEANOGRAPHER" COMMISSIONED:

The oceanographic research vessel, Oceanographer, was commissioned on July 13, 1966, when it was turned over to the Coast and Geodetic Survey of the Environmental Science Services Administration (ESSA), U. S. Department of Commerce.

The Oceanographer is the largest, most modern, and most completely automated vessel built in the United States to probe the secrets of the deep sea. The \$9.2 million "floating laboratory" will bring to 14 the number of vessels operated by the Coast and Geodetic Survey.



The U.S. Coast & Geodetic Survey research vessel, Oceanographer (OSS01), is the most advanced oceanographic research ship of its kind built in the United States.

President Johnson spoke at the commissioning ceremonies which were held at the Washington, D. C., Navy Yard. The President called for a vigorous program of ocean research and said, "... the sea holds the ultimate answer to food for the exploding population of the world. Nearly four-fifths of all life on earth actually exists in salt water..." He added, "Our scientists are developing a process for turning whole fish into a tasteless but highly nutritious protein concentrate which can be used as a supplement to our daily diet. In addition, the United States Senate has recently passed a bill for the construction of several pilot plants to begin the commercial development of this fish protein food. The daily output of one of these plants would provide enough protein supplement for well over half a million people each day."

The vessel has a cruising range of 13,000 miles and can remain at sea for 150 days at a time. Its normal complement will be 13 officers, 39 crew and 45 technical and scientific personnel, with additional accommodations for 8 visiting scientists.

The Oceanographer will be followed later this year by a sister ship, now under construction in Jacksonville, Fla. The vessels are part of the national oceanographic program which received its impetus from the late President Kennedy who, shortly after taking office in 1961, asked Congress to authorize a new vessel with deep ocean capabilities.

The Oceanographer can operate equally well in any area of the global sea, including polar waters, and has over 4,100 square feet of laboratory space. All living quarters

and scientific areas are air-conditioned. Closed circuit television is provided throughout the engine room.

Note: See Commercial Fisheries Review, June 1966 p. 26.



Oregon

DUNGENESS CRAB CATCH, 1965/66 SEASON:

Commercial Dungeness crab landings for the 1965/66 season were well above the average for the past 20 years and the best since the 1960/61 season, the Oregon Fish Commission reported. From December 1965 through April 1966, Oregon landings of Dungeness crab totaled 8 million pounds, well above the 6.7 million pounds taken during the entire preceding season. It was estimated that the 1965/66 harvest would exceed 9.5 million pounds by the end of the season in mid-August. The 1960/61 landings were 11.3 million pounds, with average landings for the past 20 years between 7.5 and 8 million pounds.

Commercial crabbers indicated there were good numbers of legal size male crabs over the 6¼-inch commercial minimum width which provides optimism for the 1966/67 season.

The market for Oregon crabs was off early in the season, but with the cooperation of various state, Federal, industry, and consumer interests in publicizing this excellent seafood, the product made a strong and rapid comeback.

In recent years, the commercial fishery has taken about 90 percent of the legal size male crabs each season in a fishery that has grown in a spectacular manner under an usually lively market demand since the end of World War II.

The trend during the 1965/66 season is especially heartening since the crabs landed were predominately from the 1962/63 year class and were in the highly vulnerable larval stage during the summers of 1962 and 1963 when there was extensive seismic oil exploration activities off the Oregon coast. At that time concern was expressed by some that the use of explosives in the seismic work on the offshore grounds destroyed great quantities of crab larvae which would result

drastically reduced crab populations in subsequent years. Part of the basis for the concern was that the landings fell from 6.9 million pounds in the 1961/62 season, immediately prior to extensive seismic work, to 4 million and 3.5 million pounds, respectively, in the immediately succeeding years. Much of the oil exploration was conducted.

It appears now that the decline in landings merely reflected the normal variations in abundance of marine biological populations occasioned by changes in ocean environmental conditions. (Oregon Fish Commission, August 12, 1966.)

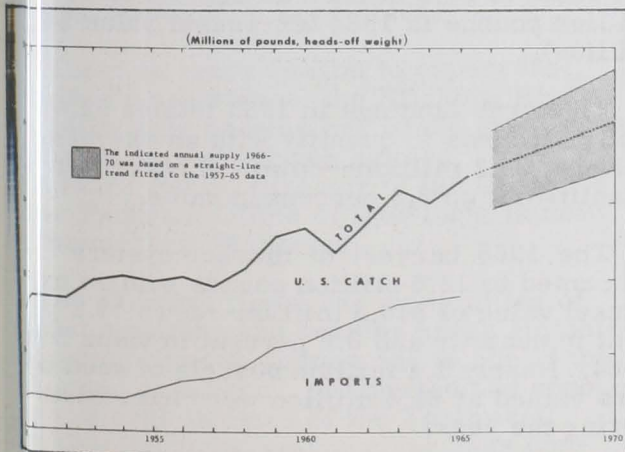
See Commercial Fisheries Review, February 1966 p. 16.



Simp

GULF AND SOUTH ATLANTIC LANDINGS, 1965:

United States commercial shrimp landings (heads-off weight) in the Gulf and South Atlantic States during 1965 totaled 139.6 million pounds with an ex-vessel value of \$81.1 million--an increase of 12 percent in quantity and 17 percent in value compared with the previous year. Landings at ports of Texas, Louisiana, and on the west coast of Florida made up 80 percent of the 1965 total catch in the southern states.



S. shrimp supply, 1950-65 and indicated supply, 1966-70.

In 1965, Texas led all other states with total shrimp landings of 48.3 million pounds, followed by Louisiana with 39.8 million pounds, and the Florida West Coast with 16 million pounds.

Brown shrimp again was the leading species landed in Texas (34.3 million pounds), while white shrimp predominated in Louisiana (21.2 million white and 18.1 million pounds brown). Pink (21.5 million pounds) shrimp made up the bulk of Florida West Coast landings.

A breakdown, by major fishing areas, of the 1965 Gulf catch (excluding the Atlantic areas), shows 12.8 million pounds were taken from Sanibel and Tortugas; 3.4 million pounds from the Apalachicola area; 14.5 million pounds from Pensacola to the Mississippi River; 39.7 million pounds from the Mississippi River to Texas; 35.2 million pounds from the Texas coast; 5.0 million pounds from the high seas off the Mexican coast west of 94° W. longitude; 11.3 million pounds from the high seas off Oregon and Campeche; and 1.4 million pounds from the Caribbean Sea south of 21° N. latitude.

Note: See Commercial Fisheries Review, July 1966 p. 46.



Tuna

PACIFIC ALBACORE MIGRATED NORTHWARD EARLY:

Continued inshore warming of the ocean region off southern California caused tuna to remain well offshore this past summer and to migrate northward earlier than usual. The staff of the Tuna Forecasting Program, U. S. Bureau of Commercial Fisheries Tuna Resources Laboratory, La Jolla, Calif., had been observing the rapid offshore warmup and earlier had forecast an albacore fishery in the Pacific Northwest commencing in late July 1966. To test the laboratory's prediction, a technician was placed aboard the Bureau's research vessel David Starr Jordan to troll for albacore while on her regular anchovy-sardine surveys to determine whether or not the fish were moving northward. The first large concentration of fish was found at 35°22' N., 124°51' W. on the morning of July 14 (about 160 miles southwest of Monterey) in 61-62° F. water. Subsequently, the David Starr Jordan proceeded to take albacore in a broad band extending 120 miles southeast from 36°19' N., 125°26' W. to 35°07' N., 124°03' W. Earlier, the fishing vessel Sunrise, under charter to the Oregon Fish Commission on a pre-season albacore survey, also reported taking 70 albacore along a line extending southward 30 miles

from 43°00' N., 127°00' W. (about 120 miles west of Cape Blanco) on July 8, 1966, in 59-60° F. water.

Thus, actual confirmation of early off-shore warming followed by northward-moving albacore was secured by the Tuna Resources Laboratory, in collaboration with the California Current Resources Laboratory and by Oregon Fish Commission biologists. It was believed that the Davidson Seamount region southwest of Monterey should produce commercial quantities of albacore by the third week of July, and commercial concentrations of albacore should appear off Eureka and about 100 miles west of Cape Blanco, Oreg., by the fourth week of July.

Note: See Commercial Fisheries Review, July 1966 p. 52.

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AERIAL SURVEY OF WATERS BETWEEN CAPE COD AND CAPE HATTERAS:

Biologists of the Sandy Hook Marine Laboratory at Highlands, N. J., operated by the Interior Department's Bureau of Sport Fisheries and Wildlife, reported spotting 5 large schools of tuna between Cape Charles and Assateague Island, Va., on July 18, 1966, during their regular monthly aerial survey of sea surface temperatures and marine animals over the Atlantic shelf waters between Cape Cod and Cape Hatteras. The schools of tuna were located between 2 and 40 miles off the coast. The closest school to the shore was 2 miles due east of Little Inlet, Va.

Water temperatures over the shelf ranged from the low 70's off the Virginia-Maryland line to about 80° F. off Cape Hatteras. In addition to the tuna, the biologists observed an unusually high concentration of sea life in the surface waters over that area. There were several species of schooling fishes, giant manta rays, sunfish, sea turtles, and sharks. There were concentrations of hammerhead sharks 35 miles ENE of Cape Hatteras, and several schools of dolphin seen feeding on flying fish 130 miles ESE of Cape Henry, Va.

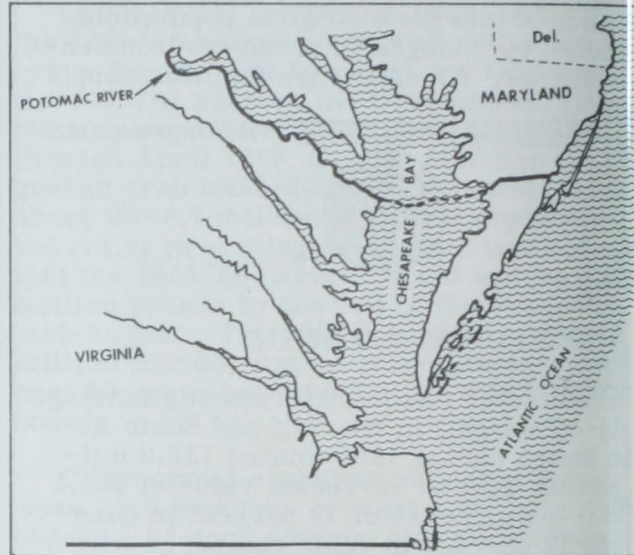


Virginia

FISHERY LANDINGS, 1965:

Commercial fishery landings in Virginia in 1965 totaled 503.7 million pounds with an

ex-vessel value of \$26.8 million as compared with 1964 landings of 465.8 million pounds worth \$24.2 million. A total of 121.0 million pounds was foodfish, and the remainder (383 million pounds) was used for canned pet food, bait, and for reduction. Heavy landings of menhaden accounted for most of the increase in quantity, while large harvests of oysters, blue crabs, and sea scallops contributed to the increase in value. Menhaden, blue crab, alewives, and oysters accounted for almost 90 percent of the 1965 landings.



Virginia fishing areas.

Virginia's menhaden landings in 1965 totaled 350.9 million pounds with an ex-vessel value of \$5.2 million as against 330.2 million pounds in 1964 (ex-vessel value \$4.2 million).

Blue crab landings in 1965 totaled 51.6 million pounds in quantity with an ex-vessel value of \$4.2 million--down 1.8 percent in quantity but up 8.2 percent in value.

The 1965 harvest of market oysters amounted to 12.6 million pounds with an ex-vessel value of \$10.3 million--down 11.2 percent in quantity and 0.8 percent in value from 1964. Nearly 1.1 million bushels of seed oysters valued at \$1.4 million were harvested during the year.

In 1965, landings of sea scallop meats amounted to 2.8 million pounds valued at \$1.4 million; only 193,600 pounds were landed during 1964. Large beds of sea scallops were found off Cape Henry and scallop dredgers from as far away as Maine and Canada came to harvest the scallops.

The leading food finfish items landed in 1966 were alewives (36.2 million pounds), bluefish (10.5 million pounds), and sea bass (10.5 million pounds). Other finfish landings exceeding the million-pound mark were scup, rockfish, striped bass, fluke, croaker, spot, trout, and shad.



Washington

50,000 FINGERLINGS PLANTED ON YAKIMA INDIAN RESERVATION:

Some 50,000 fingerling spring chinook salmon were planted in the Klickitat River on the Yakima Indian Reservation by the Fish and Wildlife Service in cooperation with the Bureau of Indian Affairs, the Department of the Interior announced. The young salmon were raised by the Bureau of Sport Fisheries and Wildlife at the Willard National Fish Hatchery in Washington and were transported to the Klickitat River by truck.

The young fish were released about mid-July 1966 into the river at the McCormick Meadows area above Castile Falls on the slopes of Mount Adams in southwestern Washington in an effort to populate the upper reaches of the stream with natural-spawning fish. Fisheries biologists expect that the fingerlings, after journeying to the ocean, will return as mature fish in 2 or 3 years to the spot where they were released.

"There is every reason to expect that, with man's assistance, the Klickitat River will ultimately become one of the great producers of spring chinook salmon," said Dr. Edward Perry, director of the Columbia River Program Office of Interior's Bureau of Commercial Fisheries.

The Klickitat River has many miles of natural spawning and rearing areas suitable for spring chinook salmon and is one of the great undammed, undiverted and unpolluted natural streams of the Northwest. The Klickitat Hatchery, on the river, was constructed by the Federal Government and is operated by the Washington Department of Fisheries. It provides hatchery-raised coho (over) and spring and fall chinook to augment the natural run of salmon in the river.

Under the Columbia River Fishery Development Program of Interior's Fish and Wild-

life Service, fishways have been constructed at the mouth of the river and at the Castile Falls in the headwaters to facilitate movement of fish into that watershed.

The planting of 50,000 fingerlings is aimed at increasing fish population in the upper reaches. It raises to about 250,000 the number of fingerlings planted in the Klickitat in 1966 by the Fish and Wildlife Service.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, JULY 1966:

Because July 1966 prices for all fresh finfish were higher than the previous month, the wholesale price index for edible fishery products (fresh, frozen, and canned) at 129.7 percent of the 1957-59 average rose 2.0 percent. Compared with July 1965, the overall index this July was up 18.1 percent as a result of higher prices for nearly all items. July 1966 prices were sharply higher than a year earlier for most fresh and frozen fishery products and also for several canned fish products which were in short supply.

The subgroup index for drawn, dressed, or whole finfish was up 11.6 percent from June to July 1966 because of substantially higher prices for nearly all items. At Boston, prices for ex-vessel large haddock were sharply higher (up 51.5 percent) as a result of light supplies; Lake Superior fresh whitefish at Chicago by 17.8 percent; and Great Lakes round yellow pike at New York City by 14.7 percent. July wholesale prices were up at New York City for fresh king salmon (up 2.4 percent) and were slightly higher for western fresh and frozen halibut (up 1.1 percent). As compared with July 1965, the subgroup index this July was higher by 13.9 per-



Wholesale Average Prices and Indexes for Edible Fish and Shellfish, July 1966 with Comparisons								
Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1957-59=100)			
			July 1966	June 1966	July 1966	June 1966	May 1966	July 1965
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					129.7	127.2	126.9	103.8
Fresh & Frozen Fishery Products:					133.3	128.3	127.8	112.8
Drawn, Dressed, or Whole Finfish:					135.8	121.5	119.9	115.0
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.18	.12	143.8	94.8	101.5	91.4
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.49	.48	144.2	142.7	140.5	147.9
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.96	.94	134.5	131.3	120.9	125.8
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.63	.54	94.0	79.8	104.4	87.9
Yellow pike, L. Michigan & Huron, rnd., fresh.	New York	lb.	.70	.61	114.6	99.9	122.8	102.3
Processed, Fresh (Fish & Shellfish):					130.1	132.4	134.8	108.6
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.45	.41	109.3	99.6	91.1	97.2
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.10	1.15	128.9	134.7	140.6	100.8
Oysters, shucked, standards	Norfolk	gal.	8.00	8.00	134.9	134.9	134.9	120.2
Processed, Frozen (Fish & Shellfish):					128.0	125.5	123.8	105.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.43	.43	109.0	109.0	109.0	97.8
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.40	.39	115.8	114.3	112.9	108.5
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.33	.33	114.0	114.0	114.0	112.2
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.15	1.12	136.3	132.8	130.4	103.7
Canned Fishery Products:					123.8	125.6	125.6	104.9
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	28.50	28.50	124.2	124.2	124.2	95.9
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	13.20	13.69	117.2	121.5	121.5	102.6
Mackerel, jack, Calif., No.1 tall (15 oz.), 48 cans/cs.	Los Angeles	cs.	8.00	8.00	135.6	135.6	135.6	120.9
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	10.25	10.25	131.5	131.5	131.5	131.5

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

Source: U. S. Department of Labor, Bureau of Labor Statistics.

cent. Prices were generally higher for most items--sharply higher for fresh haddock (up 57.1 percent) and yellow pike (up 12.0 percent). July 1966 prices for whitefish were up 7.7 percent and for king salmon up 6.9 percent from the same month a year earlier but were lower by 2.5 percent for western halibut.

Although July 1966 prices for fresh haddock fillets at Boston rose 9.7 percent from the previous month, they were offset by a price drop at New York City for South Atlantic fresh shrimp (down 4.3 percent). This brought the fresh processed subgroup index down 1.7 percent from the previous month. July 1966 prices at Norfolk for shucked standard oysters were unchanged for the 3-month period since May but as compared with July 1965 were higher by 12.2 percent. Compared with July 1965, the subgroup index this July was up 19.8 percent. Prices were substantially higher for all items, but the greatest increase was for fresh shrimp (up 27.9 percent).

The July 1966 subgroup index for processed frozen fish and shellfish rose 2.0 percent from the previous month. Prices were

2.6 percent higher at Chicago for frozen shrimp and at Boston were up 1.3 percent for frozen haddock fillets; there were no changes for other items in the subgroup. This July the subgroup index was 21.1 percent higher than in the same month in 1965 because of higher prices for all items--substantially higher for frozen shrimp (up 31.4 percent) and flounder fillets (up 11.7 percent).

The wholesale price index for canned fishery products dropped 1.4 percent from June to July as a direct result of lower prices for canned tuna (down 3.5 percent). Prices for other canned fish items were unchanged. As compared with the same month a year earlier the index this July was 18.0 percent higher. Prices were sharply higher for canned pink salmon (up 29.5 percent) because of the very light 1965 pack; prices for canned tuna were up 14.2 percent and jack mackerel up 12.2 percent. July prices for canned Maine sardines were steady and at the same level as in the previous month. (U. S. Department of the Interior, Bureau of Commercial Fisheries, Fishery Market News Service.)