

TRENDS AND DEVELOPMENTS

Alaska

APPROVAL OF METLAKATLA FISH TRAPS GIVEN FOR 1963:

The Secretary of the Interior has announced that the Alaska Indian community of Metlakatla will continue the use of fish traps for salmon during the 1963 season. The Metlakatlans have been allowed to fish with traps since 1915 under Secretarial regulations. The Supreme Court ruled in 1962 that the Alaska law prohibiting fish traps in the interest of conservation does not apply to Annette Island where Metlakatla is located. The Secretary said it was desirable to delay changing the



1915 regulations to bring them into harmony with state law until suitable alternatives to the use of traps have been developed. This will permit the Metlakatla Indians to maintain the level of fish production upon which their salmon cannery depends. The cannery is the economic mainstay of the community.

BUREAU OF INDIAN AFFAIRS STUDY PLANNED ON SOUTHEAST SALMON CANNERIES:

A \$44,000 study to find additional uses for five native-owned and operated salmon can-

neries in Alaska has been approved by the Bureau of Indian Affairs. The study is to be made by the Battelle Memorial Institute of Columbus, Ohio, the Alaska congressional delegation stated. The study will cover the villages of Angoon, Kake, Klawock, Hydaburg and Metlakatla.

REVISED FISHING REGULATIONS ISSUED:

Changes in major commercial fishing regulations by the Alaska Department of Fish and Game became effective on February 3, 1963. Changes of interest provided for by



the regulations were: (1) the use of monofilament purse seine web for salmon is prohibited, (2) the use of purse seines and leads to form traps for taking salmon is prohibited, (3) diving gear may be used to take king crab, (4) minimum size of king crab was increased from 6½ inches to 7 inches in the Kodiak area, and (5) the prohibition on the herring reduction fishery in the southeastern area was rescinded.

MARKETS FOR TANNER CRABS PROMISING:

Representatives of a California enterprise attempting to utilize Alaska tanner crab resources visited the Bureau's Exploratory Fishing and Gear Research Base at Juneau to review available knowledge on the abundance of that species. They stated that experimental marketing in the San Francisco area has

resulted in enthusiastic response by local brokers.

**THREE KING CRAB
FACTORYSHIPS TO OPERATE
TO THE WESTWARD:**

Three king crab factoryships will operate with catcher boats this season in the Adak area of the Aleutian Islands. A smaller factoryship will operate in the Kodiak area. All are associated with an Alaska fishing company. One of the larger factoryships can process 8,000 crabs a day, the other 4,000. The group was expected to pack about \$1.5 million worth of crab in about four months.

**CRAB STUDIES
SHOWS PROGRESS:**

Analyses of all samples from the first block of king crab meat of the series of "drip" studies were completed in January at the Bureau's Ketchikan Technological Laboratory. The percent of nitrogen in a low ionic strength extract of the combined meat and drip showed no apparent regression on percent of drip. This suggests that the increase in nitrogen content with increased drip previously reported was probably a solubility effect, i.e., the more drip there is the more nitrogen is leached out.



Alaska Fisheries Investigations

**COOK INLET
KING CRAB FISHING BEST EVER:**

According to a shellfish biologist of the Alaska Department of Fish and Game, Cook Inlet king crab fishermen had better fishing in 1962 than any previous year on record. The total catch for the Inlet that year was 6,705,000 pounds. The crabs averaged 8.9 pounds each. At present there are three major areas of Cook Inlet where the crab are caught. They are Kamishak Bay on the west side of the Inlet, which produced 4,163,000 pounds, Kachemak Bay on the east side of the Inlet, which produced 1,958,000 pounds, and the new crab fishing area off the tip of the Kenai Peninsula where 584,000 pounds of crab were caught. Kamishak Bay has produced the greatest number of crab recently. In past years the entire catch for the district came from Kachemak Bay.

**AGE OF RED SALMON SMOLTS
RELATED TO LOCATION OF SPAWNING:**

Bristol Bay red salmon studies are showing that location of spawning grounds within the large Naknek System may determine how long the fry feed in Naknek Lake before departing for the ocean. Scale samples collected in 1962 from the spawning areas of the Naknek System were recently read for age. Indications are that a majority of the young fish from the upper lakes (Coville and Grosvenor) remain three years in fresh water, whereas young fish from tributaries emptying directly into Naknek Lake spend two years in the lake. Netting in the interconnecting streams has shown that fry of the year migrate from the upper lakes toward the end of the growing season and accumulate in Iliuk Arm or South Arm of Naknek Lake. There they remain for an additional growing season subject to fresh-water mortalities before migrating to sea as smolts.

**KARLUK RED SALMON RACES
SHOWN BY FECUNDITY DIFFERENCES:**

Studies of the fecundity of female red salmon spawning in Karluk Lake tributaries show significant differences between spring and fall run salmon in the same stream. Significant differences in fecundity were also shown between spring run salmon in the different tributaries to Karluk Lake. Those findings lend support to the theory that different subpopulations exist within the Karluk System. These will have to be considered in any comprehensive management program for maximum sustained yield.

**PINK SALMON EGG MORTALITIES
FROM OVERSPAWNING:**

Preserved eggs from the October 1962 sampling of the pink salmon spawning riffles at Olsen Bay in Prince William Sound have been counted and those from the special study area show a heavy mortality largely due to the late spawners disturbing eggs from the early spawners. From the creek water temperatures, it was determined that all pink salmon eggs deposited prior to July 28 should have been in the sac fry stage in October. There were over 900 eggs per square meter on July 28, but only one-tenth as many fry per square meter in the October samples. The exceptionally heavy spawning escapement in 1962 provided a good opportunity to measure the effects of overspawning.



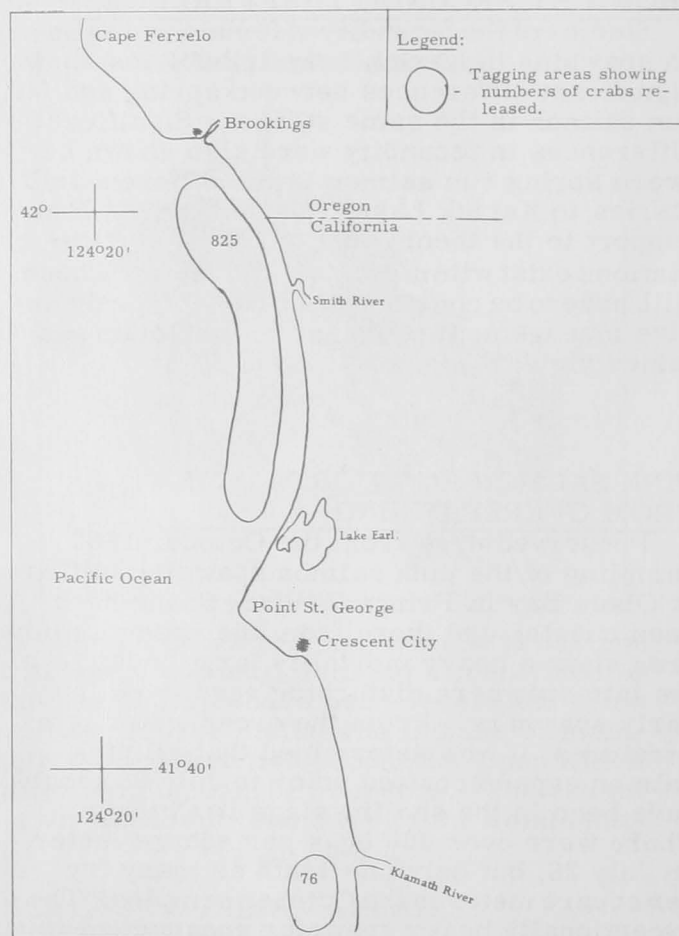
California

DUNGENESS CRABS IN NORTHERN CALIFORNIA AND OREGON WATERS STUDIED:

M/V "N. B. Scofield" Cruise 62-S-8 (November 19-December 14, 1962): The objectives of this cruise by the California Department of Fish and Game research vessel N. B. Scofield in the coastal waters off California

Crabs Caught by the N. B. Scofield on Cruise 62-S-8					
Crab Groups	Number of Crabs	Range, Shoulder Width		Average Shoulder Width	
		Mm.	In.	Mm.	In.
Juveniles	43	15-52	0.6-2.0	23	0.9
Sublegal males	1,646	77-158	3.0-6.2	136	5.4
Gravid females	303	117-164	4.6-6.5	145	5.7
Nongravid females	314	99-167	3.9-6.6	130	5.1
Legal males	913	158-208	6.2-8.2	171	6.7

between Cape Ferrelo, Oreg., and the Klamath River, Calif., were: (1) to tag legal male crabs for population and migration studies in cooperation with the Oregon Fish Commission,



Cruise 62-S-8 by research vessel N. B. Scofield showing tagging areas and number of crabs released.

(2) to determine crab sizes, sex ratios, and condition during tagging operations, and (3) to survey the northern California crab stocks to determine abundance, sizes, sex ratios, and condition prior to the beginning of the 1962/63 fishing season.

Tagging operations received priority and the survey portion of the original cruise plan was abandoned due to bad weather.

During 11 operational days, a total of 540 sets of commercial 40-inch diameter traps were made in depths of 10 to 40 fathoms. Traps were grouped in strings of 10 at 20 locations and in strings of 20 at 17 sites.

Legal male crabs (6.25 inches shoulder width or 7 inches in greatest width were marked with neon-red Peterson discs at the lateral margin of the carapace. During the cruise, 901 crabs were tagged and released. In the area between Brookings, Ore., and Lake Earl, Calif., 825 crabs were released in 10 to 17 fathoms. Seventy-five crabs were released in 13 fathoms and one in 22 fathoms off the Klamath River. The goal of 2,000 tagged crabs was not reached due to the scarcity of crabs. Several tagged crabs were recovered by commercial fishermen before completing the cruise.

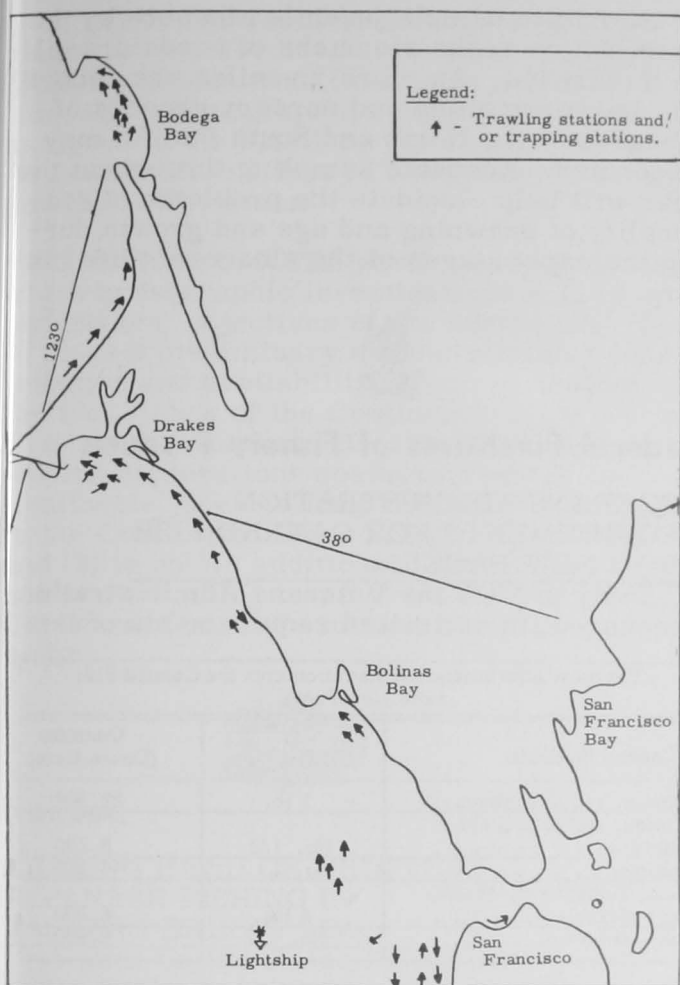
All crabs captured were in good condition. Only 15 (1.64 percent) of 913 legal male crabs had soft shells. The 303 gravid female crabs were carrying reddish-orange egg masses, a color characteristic of early development.

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GROWTH AND LIFE HISTORY OF DUNGENESS CRABS INVESTIGATED:

M/V "Nautilus" Cruise 62-N-2g-Crab (July 16-20, 1962), 2h (August 13-17), 2i (September 10-14), 2l (December 10-14): The second series of cruises by the California Department of Fish and Game research vessel Nautilus in the coastal waters off central California from Bodega Bay to San Francisco was completed on December 14, 1962. The objectives of the cruises were: (1) to collect dungeness (market) crabs (*Cancer magister*) for growth studies by using traps and trawl, and (2) to study other aspects of the life history of market crabs.

Collections were made at selected stations from Bodega Head to San Francisco using a 10-foot beam trawl with 1-inch mesh net,



Cruises 62-N-2g, h, i, and 1-Crab by research vessel Nautilus, showing location of trawl and trap stations.

commercial-type crab traps, and 1-inch mesh crab traps. The crab traps were baited with squid and rockfish and fished overnight. Beam trawling was done at each station. Each tow lasted about 20 minutes and covered three-quarters of a mile. Exploratory beam trawling was accomplished at stations where traps were not set.

The captured crabs were calculated to be 18-20 months old (from time of hatching) and were in their 9th, 10th, and 11th instars. The maximum size attained by 20-month-old crabs is estimated as 133 millimeters (5.2 inches).

Growth of males and females was equal until July when the males began to outgrow the females. This growth differential was very obvious in September.

Maturity studies were conducted to determine the age at maturity. Females 81 to 140 millimeters (3.2-5.5 inches) were examined in August and September for ovary changes

and the presence of sperm. All females larger than 112 millimeters (4.4 inches) had ovaries that were developing color, indicating incipient spawning. Females smaller than 109 millimeters (4.3 inches) did not show color changes. Spermathecal examinations revealed that females smaller than 100 millimeters (3.9 inches) had not been fertilized, but 99 percent of the females larger than 108 millimeters (4.3 inches) had sperm in the spermatheca. From the September sample, it was determined that 77 percent of the females were 109 millimeters and less in shoulder width. From this sampling, it was concluded that maturation of developing eggs was occurring in only 23 percent of the female crabs in the fall of their second year of life, but 76 percent were fertilized in their second year.



Cans--Shipments for Fishery Products, January-November 1962

The amount of steel and aluminum consumed to make cans shipped to fish and shellfish canning plants during January-November 1962 was 6.1 percent above that used during the same period in 1961. Prior to 1962, the figures covered only tinplate cans, but beginning with January 1962 aluminum cans are included. Use of aluminum cans for packing fishery products is small.



A total of 2,845,030 base boxes of steel (tinplate) and aluminum were used in the manufacture of cans shipped to fishery plants during the first 11 months of 1962, whereas in the same period of 1961 (when only tinplate was reported) 2,680,951 base boxes of steel were consumed. The increase was due mainly to larger canned packs of Maine sardines, shrimp, salmon, and tuna during 1962.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14" x 20" size. The 1962 data are derived by use of the factor 21.8 base boxes per short ton of steel.



Central Pacific Fisheries Investigations

CLUES TO DISTRIBUTION OF YOUNG ALBACORE TUNA FOUND BY STUDY OF PREDATORS' STOMACHS:

As part of the albacore ecology program, staff members of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu have been routinely examining the stomachs of large fish landed at the Honolulu fresh fish markets and on cruises of the Laboratory's research vessel, the M/V Charles H. Gilbert, in order to monitor the occurrence of juvenile albacore. Although young tuna of other species have been successfully captured by midwater trawls, plankton tows, and dip-netting at night-light stations, these methods have not been successful in capturing juvenile albacore. At present, the most promising "collectors" of juvenile albacore appear to be the large pelagic fish which prey on them.

Since the inception of this project, a total of 12 juvenile albacore has been found. These were found in stomachs of predators caught in widely scattered locations, from 171°02' E. long. to the Hawaiian Islands, between 19° and 24° N. lat., in the North Pacific, and 178°46' E. to 162°45' W. long., between 06°32' S. and 15°35' S. lat., in the South Pacific. The discovery of these juveniles tends to corroborate past studies on the spawning of albacore, based on gonads, which indicated that albacore may spawn over wide areas in the North and South Pacific.

As would be expected of specimens found in stomachs, most of the juveniles were somewhat damaged by digestion. However, the specimens were easily recognized as scombrids by the body contours and the shape of the head. They were positively identified as albacore on the basis of a striking vertebral character which is definitive for albacore, plus other supplementary characters. This striking character is the unique laterally flattened shape of the haemal spine on the first caudal vertebra in the albacore. It is interesting to note that although in the past several investigators studied the morphology of the albacore in great detail, the diagnostic value of this character was not recognized by any of them. It is only relatively recently that this character has been used in identifying albacore, especially those occurring in stomachs, or predators. Albacore were identified as small as approximately 6 centimeters (about 2.4 inches) in fork length by this character.

Efforts to sample juvenile albacore by the examination of the stomachs of predators will be intensified. As more juveniles are recorded, major spawning and nursery grounds of albacore in the North and South Pacific may be located. Adequate sampling throughout the year will help elucidate the problems of seasonality of spawning and age and growth during the early stages of the albacore's life history.



Federal Purchases of Fishery Products

VETERANS ADMINISTRATION REQUIREMENTS FOR CANNED FISH FROM NEW PACKS:

Early in 1963 the Veterans Administration announced its estimated requirements of various

Veterans Administration Requirements for Canned Fish from New Packs		
Canned Products	Can Size	Quantity (Dozen Cans)
Salmon, red or sockeye	1 lb.	22,800
Salmon, red or sockeye, dietetic.	No. 1/2	8,700
Sardines	No. 1	4,800
Tuna, light meat, chunk, in vegetable oil	4 lbs.	6,300
Tuna, dietetic.	No. 1/2	8,900

ious canned food products, including fishery products.

Items listed are purchased by the Marketing Division for Subsistence, Veterans Administration Supply Depot, P. O. Box 27, Hines, Ill.



Gulf Exploratory Fishery Program

"OREGON" PARTICIPATES IN INTERNATIONAL SURVEY OF TROPICAL ATLANTIC:

The U. S. Bureau of Commercial Fisheries exploratory fishing vessel M/V Oregon (Cruise 84) left on February 4, 1963 for a 2-month cruise in international waters off the north-eastern coast of South America.

The Bureau's vessel will comprise one unit of the International Cooperative Investigation of the Tropical Atlantic (ICITA) investigation and will maintain radio contact with other vessels of the investigation, including the Bureau's newly acquired Geronimo, the

U. S. Coast and Geodetic Survey vessel Explorer, 2 vessels (the Chain and the Crawford) from the Woods Hole Oceanographic Institution, and oceanographic and naval vessels assigned to the ICITA by the Governments of Argentina, Brazil, Ivory Coast, Nigeria, Congo, and the Soviet Union.

In addition to ICITA participation, for which hydrographic investigations will be undertaken, objectives of the cruise are: (1) to make a preliminary assessment of the distribution and availability to bottom trawls of the food fishes of the Continental Shelf off the Guianas and northern Brazil; (2) to extend shrimp explorations southeastward on the Continental Shelf to longitude 40° W., and on to the Continental Slope along the Guianas; and (3) to obtain additional information on the surface schooling tunas of the Gulf of Mexico, Caribbean Sea, and southwestern North Atlantic.



Halibut

HEARING HELD ON PROPOSED JAPANESE FISHING IN EASTERN BERING SEA:

A joint United States Senate-House delegation held a hearing in mid-February at Seattle, Wash., on the proposal to open the Eastern Bering Sea to Japanese halibut fishermen. The North Pacific Fisheries Commission (United States, Canada, and Japan) in November 1962 voted to open this area to Japanese fishermen for the first time. The Congressional delegation also investigated the effects of Japanese fishing on the valuable Bristol Bay run of red or sockeye salmon. The hearing followed a special meeting of the Commission early in February in Tokyo on conservation regulations for the proposed Japanese halibut fishery.

The annual meeting of the International Pacific Halibut Commission (United States and Canada) in Petersburg, Alaska, January 29-31 also preceded the mid-February hearing at Seattle.



Industrial Fishery Products

U. S. FISH MEAL, OIL, AND SOLUBLES, PRODUCTION, JANUARY 1963:

Preliminary data on U. S. production of fish meal, oil, and solubles for January 1963 as collected by the U. S. Bureau of Commercial Fisheries and submitted to the

U. S. Production ^{1/} of Fish Meal, Oil, and Solubles, January 1963 (Preliminary) with Comparisons				
Area	Meal	Oil	Solubles	Homogenized ^{3/}
	Short Tons	1,000 Gallons	.. (Short Tons) ..	
January 1963:				
East & Gulf Coasts. . .	524	7	84	50
West Coast ^{2/}	1,485	39	1,251	-
Total.	2,009	46	1,335	50
Jan. 1962 Total	2,732	93	1,597	40

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

International Association of Fish Meal Manufacturers are shown in the table.

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NEW USES FOR FISH OIL EXPLORED:

In order to promote greater use of fish oil in animal feeding, a U. S. Bureau of Commercial Fisheries animal nutritionist in late November and early December 1962 contacted representatives of corporations at Chicago and Cincinnati. Subsequently, he spent some time in Texas pointing out the values of fish products in livestock feeding to mixed-feed and livestock producers and studying the possibility of using fish oil in the huge cattle-fattening operations now being organized in the Western States.

A large producer of canned petfood, contacted at Chicago, now plans to experiment with fish oil in dogfood. The polyunsaturated nature of fish oil is expected to add to the glossiness of the dog's coat. If the experiments are successful, the concern will use fish oil in its commercial product, and doubtless other concerns will follow suit.

Some Texas mixed-feed producers use fish meal in liberal amounts in critical rations but, as a general rule, the level of utilization in that State is low, being only 2 or 2-1/2 percent even in critical rations. Several mixed-feed producers stated that they have never increased the level of fish meal in their mixed rations since the levels were lowered in response to the price rise that reached its peak in December 1958. Some feed producers feel that present prices of fish meal are high.

A special effort was made to determine whether or not fish oil can be used in the large-scale cattle-fattening operation now being started in the Western States. At present, heated fats are sprayed over hay just before it goes through a chopper, the fat serving to lubricate the chopper and reduce loss in the form of dust from 5 to only 1 percent of the hay. Off-hand, fish oil would appear to be superior for this use because it can be sprayed without heating. The polyunsaturated state of the oil would be no disadvantage because the chopped hay is consumed right after it leaves the chopper, and there would be very little opportunity for undesirable oxides to form. Specialists at a Texas college stated that they could see no reason why fish oil should not be tried in cattle feeding. A cattle feeder, to whom the college technologists broached the subject, agreed to use two tons of fish oil in feeding 100 head

of cattle if the oil was donated. The head of an animal science department in another Texas college agreed to carry out pilot studies on the use of fish oil in cattle feeding if the oil was supplied free.

The director of one of the smaller experiment stations in Texas is experimenting with menhaden oil at a level of 5 percent in broiler starter rations to be fed for a period of 5 or 5½ weeks. Following the starter ration, a finisher without fish oil will be fed. The objective of the trials is to find out whether or not undesirable flavors of poultry meat can be avoided when relatively high levels of fish oil are fed for a limited period of time.

The nutritionist of one Texas feed concern plans to use a blend of equal parts of menhaden oil and stabilize fat in poultry rations.

The Bureau's animal nutritionist was told by members of the staff of one southern university that since his visit last summer they have started experimenting with menhaden oil in grain rations for calves. At levels of 2½, 5, and 7½ percent, fish oil in the ration seems to be highly relished by calves, but at 10 percent there is some decrease in feed intake. No digestive disturbances or other unfavorable effects have been observed since the oil feeding was begun. No data on growth rates or feed efficiency are, as yet, available on these trials.

Note: See Commercial Fisheries Review, December 1962 p. 44.

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USE OF FISH OIL IN HIGHWAY CONSTRUCTION INVESTIGATED:

Possible use of fish oil in highway construction has been investigated by the Technical Advisory Unit of the U.S. Bureau of Commercial Fisheries. This investigation was initiated by questions from fish oil brokers who had heard of the possible use of fish oil in concrete and from fish oil producers and processors who were looking for improved outlets for byproducts, such as soap from alkali refining and stearine from cold pressing of fish oils. The use of fish oil in highway construction is based upon the need to increase the resistance of concrete to damage from repeated freezing followed by thawing with the heavy applications of salt used to reduce the hazard of winter driving under ice and snow conditions.

Highway builders have found that the best defense against serious surface scaling and structural breakdown of concrete under freeze-thaw conditions is the entrapment of many fine air spaces properly sized and distributed in the concrete. This is accomplished by entraining air bubbles in the concrete during the mixing. The size, distribution, and stability of these bubbles in the wet concrete is controlled through the use of an additive called an air-entraining agent, which is either mixed in the cement at the mill or used in solution as an admixture at the concrete mixer. Fish oil or its soaps can be used as such an air-entraining agent. In the early development of air-entrainment in concrete, fish oil figured prominently, but was dropped for economic reasons about 1940. Since that time both the techniques of air-entrainment and the price of fish oil relative to the currently used products have shifted toward easing the entry of fish oil into this market. The dominant products in this market today are neutralized pine resin and organic salts of sulfonated hydrocarbons. Prices are reported from a low of 5.5 cents a pound of solid material before neutralization in carload lots f.o.b. southern states to a high range of 65 cents to a dollar per gallon of solution. These solutions may contain from 8 to 25 percent of air-entraining agents and are intended for addition at the concrete mixer.

The market for air-entraining agents today for highway construction and for masonry cements amounts to about 10 million pounds per year. This market is even further expanded by the movement of air-entrainment into other applications such as dam construction, canal linings, and even into general structural concrete. The improved handling characteristics in pouring of the fresh air-entrained concrete

compared to regular concrete are extending the use of air-entrainment rapidly.

The first step in putting fish oil or fish-oil soaps into this market would be by having performance tests conducted by a cement laboratory regularly inspected by the U.S. Bureau of Standards. Satisfactory performance in these tests would open the way to evaluation of fish oil products by the U.S. Bureau of Public Roads and by the various state highway departments.

The market for air-entraining agents for concrete could serve the fish oil industry in the following ways: (1) to broaden the base of the fish-oil market and act as an aid in buffering against price drop such as was experienced in 1962, (2) to utilize soap stocks resulting from alkali refining of fish oil, and (3) to provide an improved market for stearine obtained in the cold pressing of the oil.



Inventions

NEW FISHING REEL WITH "HYDRAULIC" BRAKE PATENTED:

The drag on a new fishing reel is provided by a manually operated recirculating hydraulic pump in place of the conventional friction brake. The drag is adjusted by regulating the flow between the input and output side of the pump. The inventor claims that the device requires no maintenance over a long life period. It is made of metal or plastic and said to be simple, reliable, and inexpensive. (Patent Number 3,034,604, U. S. Patent Office Classification Number 188-90, granted Stanley B. Holmes, 1126 19th St., Santa Monica, Calif.)

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NEW PLASTIC COATING FOR FISH LURES PATENTED:

A new patented fish lure accessory consists of narrow strips of adhesive coated plastic sheet material that can be applied to any conventional lure. The inventor claims that it can be made in any color, is waterproof, and does not affect the action of the lure. The adhesive portion has a backing material which is peeled off prior to use. The plastic material can be made in long sheets that can be folded or rolled. Suitable portions for various lures are then simply torn off. (Patent Number 3,021,632, U. S. Patent Office Classification Number 41-10, granted Leslie J. Gombar, 12591 Glenfield, Detroit 13, Mich.)



Irradiation Preservation

MULTIPLE-IRRADIATED HADDOCK FILLETS EVALUATED FOR QUALITY:

To determine if treating fresh skinless haddock fillets with multiple doses of ionizing radiation at a ten-day interval affects the organoleptic quality, experiments have been conducted by the U.S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester, Mass.

Initially, skinless haddock fillets were irradiated at dose levels of 50,000, 150,000, and 250,000 rads.^{1/} At the end of ten days storage at 33° F., the fillets were again irradiated with two additional series of dosages.

Difference tests were conducted on the fillets immediately following the final application of irradiation, and at ten-day intervals thereafter for a period of 30 days.

The difference tests indicate that haddock fillets receiving multiple dosages can be held

PROPOSED FISHERY PRODUCTS IRRADIATOR PILOT PLANT

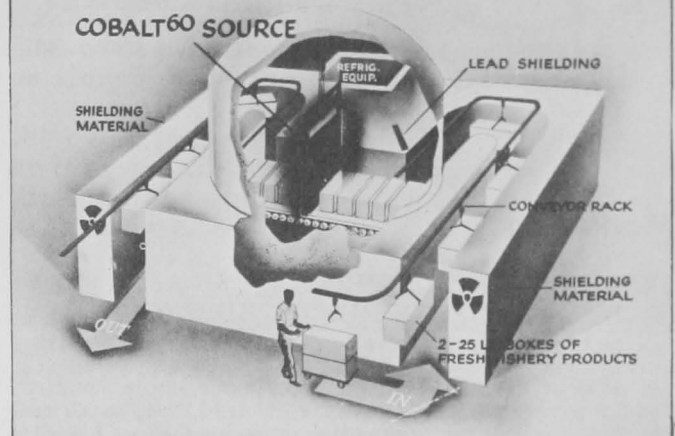


Fig. 1 - Drawing of the proposed marine products irradiator scheduled to be constructed in Gloucester, Mass., by the Atomic Energy Commission and operated by the Bureau of Commercial Fisheries personnel.

at storage temperature of 33° F., without spoilage, for 30 days. There was not signifi-

RADIATION PRESERVATION OF SEAFOOD

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF COMMERCIAL FISHERIES



FRESH SEAFOOD ON ICE
WILL KEEP ABOUT 14 DAYS

IRRADIATION
WILL DOUBLE THIS
KEEPING TIME AND
INCREASE
FRESH FISH SALES

HIGH QUALITY
FRESH FISH
WILL REACH



INLAND MARKETS

COOPERATIVE AEC & BCF INDUSTRY GOVERNMENT-INDUSTRY STUDIES

TECHNOLOGICAL RESEARCH
WILL ENABLE YOU TO EXTEND YOUR
MARKETS FOR FRESH FISH BY

- selecting suitable species
- determining optimum radiation levels
- establishing maximum storage time at different storage temperatures
- providing for FDA wholesomeness clearance
- testing and selecting packaging materials
- conducting economic feasibility analysis



Fig. 2 - Exhibit demonstrating the usefulness of radiation preservation of seafood.

cant difference in the scores after 10 and 20 days of storage.

$1/\text{Rad}$ —The quantity of ionizing radiation which results in the absorption of 100 ergs per gram of irradiated material at the point of interest.

Note: See Commercial Fisheries Review, February 1962 p. 43.



Marketing

EDIBLE FISHERY PRODUCTS MARKETING PROSPECTS, SPRING 1963:

The United States domestic catch of fish and shellfish during 1962 amounted to 5.2 billion pounds with an ex-vessel value of about \$385 million, up 2.0 percent in quantity and 5.8 percent in value from the catch in 1961. Fish and shellfish for human consumption comprised about 2.6 billion pounds of the 1962 catch, up slightly from 1961. The remainder was used for the manufacture of industrial products, bait, and animal food. The 1962 catch was the second largest domestic catch, being surpassed only by the record catch of 5.3 billion pounds in 1956.

Supplies of fish and shellfish during the early spring months of 1963 should be slightly more plentiful than in the



comparable 1962 period because of larger frozen inventories. Cold-storage holdings of edible fishery products on January 1, 1963, totaled 218.1 million pounds, about 33.1 million pounds more than a year earlier. Adequate stocks of most varieties of canned fishery products were on hand at the beginning of 1963. Fresh fish landings which are seasonally light during the winter months should increase with the arrival of spring weather when most commercial fisheries begin full operation.

Imports of most edible fishery products into the United States during 1962 were greater than in 1961. Continued high imports are expected early in 1963. Exports of edible fishery products during 1962 were generally higher than a



year earlier, except for canned and frozen shrimp, canned sardines, and fresh or frozen oysters.

Retail prices of fishery products in 1962 averaged about 4 percent higher than in 1961. They increased during last summer, decreased a little in early fall, then increased again slightly at the end of 1962. Prices should remain at the year-end level during the early spring months of 1963, but probably will soften slightly toward the end of that period.

This analysis appeared in a report prepared by the Agricultural Marketing Service, U. S. Department of Agriculture in cooperation with the Bureau of Commercial Fisheries, U. S. Department of the Interior, and published in the former agency's February 1963 issue of The National Food Situation (NFS-103).



National Aquarium

PLANS EMPHASIZE RESEARCH AND EDUCATIONAL ROLE FOR PROPOSED AQUARIUM:

The proposed National Fisheries Center and Aquarium for Washington, D. C., "will emerge as one of the world's foremost aquatic biological research centers as well as providing a self-supporting visitor attraction combining entertainment and education," the Secretary of the Interior stated on December 10, 1962.

His remarks followed several weeks of advance planning and consultation out of which a preliminary picture of the Center is beginning to emerge. Final plans for the Center will take about 18 months to complete and it is estimated 2 years will be required for construction.

The Interior Secretary emphasized that 18 months of engineering and architectural planning will be required even after initial funds have been appropriated for the project authorized by the 87th Congress. Authorized cost of the project is \$10 million, to be amortized over a 30-year period by modest admission charges.

Some suggestions which will be presented to the Center's advisory board, required by the Congressional authorization, were:

1. The Center would display more than 1,000 species of fish, amphibians, and invertebrates in natural surroundings such as huge indoor and outdoor pools providing viewing from different levels, including an undersea panorama. Included in preliminary discussions are provisions for providing a trout

stream, discharging into a bayou accommodating bass, as well as outside facilities for seals, sea lions, walrus, sea elephants, and sea otter. Other specially-designed facilities would be provided for tropical fish.

2. The Fisheries Center will provide unequaled facilities and specimens for aquatic research, which would include studies on genetics and selective breeding, nutrition, marine diseases, experimental ecology, behavior of aquatic organisms, antibiotics produced by marine animals, and new food sources from the sea, all designed to complement research activities of the Department's Fish and Wildlife Service.

Other areas of research will be provided for graduate students in marine subjects, plus provisions for educational motion pictures and seminar rooms to be made available to the public as well as for fisheries groups and meetings.

The Secretary stated he was hopeful that the actual architectural design would be determined by requirements for exhibits, research facilities, traffic patterns, etc. His advisors have been most emphatic on the point that rather than design a building and then fit the exhibits and other facilities into it, the reverse procedure should be utilized for maximum efficiency.



North Pacific Exploratory Fishery Program

ABUNDANCE OF ADULT HAKE AND EFFICIENCY OF PELAGIC TRAWL TO BE INVESTIGATED:

M/V "John N. Cobb" Cruise 58: An investigation of the relative abundance of adult hake and the catching efficiency of the Cobb pelagic trawl was the objective of a cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb which began on February 25, 1963. The area of operations will be in waters between Point Conception, Calif., and Cedros Island, Mexico seaward to about 300 miles.

Prior to departure of the John N. Cobb, cooperating research vessels Black Douglas and Alaska used plankton nets and small mid-water trawls to pinpoint areas having an abundance of hake eggs and larvae. If concentrations of eggs and larvae are found to co-

incide with predicted abundance, the Cobb pelagic trawl will attempt capture of spawning adults at standard stations along California Cooperative Oceanic Fisheries Investigations lines 80 through 120 (Point Conception to San Diego up to 200 miles offshore) as time and weather permit. Effort will be concentrated between lines 80 and 100. In the event that significant numbers of eggs and larvae are not found to coincide with predictions, the station pattern will be altered accordingly.

Whenever relatively large concentrations of adult hake or other pelagic species are encountered, the programmed station pattern will be interrupted to allow simulation of commercial fishing operations employing Cobb pelagic trawls constructed of conventional webbing and unconventional monofilament webbing. In addition, a British Columbia-type herring trawl will be fished to test its efficiency relative to capturing rates of Cobb pelagic trawls.

A recently installed sonic telemeter will be used at all times to determine the depth of the trawls.



Oceanography

COMMERCIAL FISHERIES BUREAU ESTABLISHES OCEANOGRAPHIC INSTRUMENTATION PROGRAM:

An Oceanographic Instrumentation Program was established about the latter part of 1962 at the U. S. Bureau of Commercial Fisheries Biological Laboratory, Washington, D. C.

The four areas of the program are: (1) The coordination of oceanographic instrumentation developments within the Bureau of Commercial Fisheries; (2) development, testing, and evaluation of new instruments for the Bureau, either directly or in cooperation with industry, nonprofit research organizations, other Bureau Laboratories, and Federal and State agencies; (3) effecting liaison with other government Bureaus by participation on panels and committees of the Interagency Committee on Oceanography and other groups concerned with oceanographic instrumentation; and (4) servicing of instruments for the Bureau's Biological Laboratory.

Of the four areas, major effort will be expended in areas (1) and (2). The Bureau's requirements for oceanographic instruments will be continuously reviewed. The program will provide information as to instrumentation developments, and will maintain a compilation of those instruments required for use by Bureau activities. It will recommend priority for allocation of funds, both to meet the requirements and to develop regional instrumentation capability, and will publish newsletters, proposal reviews, and reports necessary to accomplish this. The development functions will be coordinated with those of other agencies. Contracts will be left to industry to develop instruments to meet the specialized requirements of the Bureau, and to aid in extending industry's capabilities to produce instruments for the Bureau and for the oceanographic community in general.

* * * * *

ADDITIONAL OCEANOGRAPHIC INSTRUMENTATION TO BE ADDED TO COAST GUARD VESSELS:

The U. S. Coast Guard is authorized by recent Congressional legislation to conduct oceanographic research from its many facilities--weather ships, ice breakers, offshore towers, patrol cutters, and other coastal installations of the Coast Guard.

The Coast Guard operates 32 vessels which are assigned to Pacific and Atlantic Ocean weather stations. It is planned to outfit those ships with oceanographic instruments for continuous full-scale observations. The Coast Guard cutter *Casco*, based at Boston, Mass., is the pilot installation. Another installation was completed at the Coast Guard shipyard at Curtis Bay, Md., on December 15, 1962.

Such installations include an oceanographic laboratory, deep-sea oceanographic winch,



The Coast Guard cutter, *Casco*, one of the vessels on which oceanographic instruments were installed.

wave-height sensor, salinometer, Nansen bottles, surface temperature probes, and other equipment for measuring physical and chemical properties.

The Boston-based Coast Guard cutter *Casco* will serve as a test for the inaugural program from January 1 through July 1, 1963.

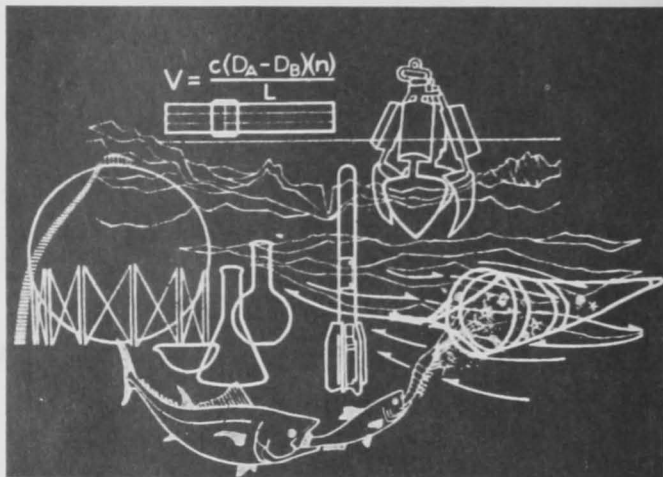
During Fiscal Year 1964, the Coast Guard hopes to outfit 8 to 12 additional weather ships. As new and more modern sensors and equipment are developed they will be added to the weather ships. (National Oceanographic Data Center Newsletter, December 31, 1962.)

Note: See Commercial Fisheries Review, February 1962 p. 102.

* * * * *

NATIONAL OCEANOGRAPHIC INSTRUMENTATION CENTER ESTABLISHED:

A new Oceanographic Instrumentation Center at Washington, D.C., was dedicated on January 18, 1963. It is located in the same



Artist's concept of the studies to be aided by the newly established Oceanographic Instrumentation Center.

building as the National Oceanographic Data Center.

The need for better testing and calibrating of oceanographic instruments has been recognized for some time but adequately equipped and staffed facilities have not been available. The Interagency Committee on Oceanography Panel on Instruments and Facilities appointed a Committee to study the need for an Instrumentation Center. The Panel concluded, and it was the recommendation of the Interagency Committee on Oceanography to the Federal Council of Science and Technology, that a test and calibra-

tion facility was definitely needed, if not overdue. The Panel also indicated that because of the anticipated increase in oceanographic work, a facility on both the East and West Coast would ultimately be required. Meanwhile, it was agreed that the Navy Oceanographic Office should establish a Center to function as a prototype for the National facility. The Commander of the U. S. Naval Oceanographic Office was able to obtain funds for the complete renovation of 40,000 square feet of Building 160 at the Naval Station, Navy Yard Annex, Washington, D. C. (formerly the Naval Weapons Plant) into a proper and fully equipped installation. Construction work started in July 1962.

The new Center will provide facilities and staff for carrying out a broad program of development, testing, calibration and evaluation of oceanographic instruments. It will also provide advice and assistance to agencies and activities on oceanographic instrumentation matters as called upon. In addition, the Center will serve as a clearing house for information on the oceanographic instrument development program.

The Center contains engineering facilities for laboratory and contractual development, test and evaluation, and maintenance of instruments. New instruments now under development include improved electronic bathythermographs, shipboard wave recorders, shipboard survey instruments, submerged buoy systems, and sound velocimeters.

To carry out this engineering program, the Center is being equipped with pressure test vessels, shock and vibration test equipment, tensile test facilities, pressure and temperature tanks, additional reversing thermometer calibration equipment, a 60-foot clear water instrument test tower, and a small craft for environment testing in local waters. (National Oceanographic Data Center Newsletter, December 31, 1962.)



Oregon

SCUBA DIVING MORE EXTENSIVELY USED FOR UNDERWATER OBSERVATION:

The increasingly popular sport of SCUBA diving is being more extensively used by personnel of the Oregon Fish Commission. Over

20 staff members are trained in the use of such gear.

SCUBA refers to "self-contained underwater breathing apparatus." The equipment is of the popular navy frogman type--rubber or "wet" suit for insulation, face mask, oxygen tank with breathing tubes, and swim fins. It differs from the diving suits with long air lines extending down from a floating station above the diver, in that the air supply is self-contained and the outfit is much less cumbersome.



SCUBA divers have learned many things about fish and fishing.

SCUBA is applied successfully on a variety of Commission projects where underwater observation is desirable. The initial work was done in connection with fish passage at hydroelectric projects and certain construction works of the Commission. Underwater inspections of the Brownlee Reservoir net on Middle Snake River helped materially in evaluating that controversial fish-collection facility. At WALTERVILLE Canal on the McKenzie River and Willamette Falls near Oregon City, Commission divers have taken part in cooperative periodic operations with industry which were designed to move fish past obstructions at critical times. Assistance with the installation of water-control facilities at the outlet works of Wahkeena Rearing Pond in the Columbia River gorge, and of fish racks in hatchery streams are other notable examples where SCUBA diving is being used effectively in Commission programs.

A more recent use of SCUBA diving was in the study of juvenile salmon behavior in reservoirs, conducted early in 1963 in North Fork Reservoir on the Clackamas River, and Lake Simtustus, behind Pelton Dam on the Deschutes River. Because young salmon are generally found in the streams, knowledge of their behavior as they pass through reservoirs seaward is of great importance in evaluating many fish passage problems.

Personnel of the Oregon Fish Commission also used SCUBA gear during the summer of 1962 for underwater observations of spring chinook in the Wilson, Trask, and Salmon

Rivers to gather needed data on location of adult resting pools, determination of juvenile rearing areas, and enumeration of fish seen. Underwater photographs were made during some phases of the work. Spring chinook are found in deep holes during the summer as they wait for fall freshets to signal movement to their spawning beds. Observation from the bank, because of limited visibility, does not give a complete picture of run-size and survival conditions. Juvenile salmon are not readily visible in swift water, thus SCUBA observations are of great value in that type of work.

Another important project was the pilot study of natural rearing of silver salmon in Hall and Schutpeltz Lakes of the Tenmile Lakes system on the southern Oregon coast near Coos Bay. By using SCUBA gear, Commission personnel are learning the habits of planted fry and some of the factors which might limit production in lakes of this type.

Besides the lake and stream work, the Pacific Ocean is explored quite often by marine biologists. Interest in taking red abalone commercially from the southern Oregon coast prompted Commission personnel to observe the abundance of those large shellfish to determine if they occurred in commercial quantities. So far, SCUBA divers have found the relative numbers of abalone, even offshore, not to be of a size sufficient enough to warrant a commercial fishery. SCUBA work has also been done in connection with offshore oil explorations to determine by actual observation of seismic explosions what the effect is on marine life.



Oysters

CHESAPEAKE BAY OYSTER DEATHS DUE TO MSX DECLINED IN 1962:

The head of oyster disease research at the Virginia Institute of Marine Science, told the Fifth Annual Shellfish Mortality Conference on January 29, 1963, that deaths due to MSX declined during 1962 in marginal areas of Chesapeake Bay, although the range of the dreaded oyster disease remained the same as in 1960 and 1961.

"Pocomoke Sound and Bayside of Eastern Shore creeks were replanted without serious losses in 1962," he reported. "The disease decline in these areas may be due to the loss

of large beds in adjacent areas which sustain the concentration of the disease and enable its reinfestation into the marginal areas."

He indicated that incidence and mortality continued at high levels in Mobjack Bay and at Tillage's ground just above York River Bridge in 1962. He added that tray oysters suspended in the York off the Institute's pier showed variable but mostly light MSX activity, and late summer infections formerly noted failed to occur among those oysters in 1962.

In the James River, MSX declined from a level of 30 to 40 percent in late fall and winter to zero incidence in late April 1962, according to the Virginia scientist. New infections were scarce in the summer of 1962, and incidence remained low as late as December 1962. James River seed, including Brown Shoals, is essentially free of MSX infections for the 1962-1963 planting season.

"There is strong indication that decimation of oysters in Hampton Roads by MSX has affected setting in the James River seed area," he stated. "Spatfall was extremely light in James River for 1961 and 1962. This may be due to the depletion of oysters at Hampton Roads, which in turn may be brood stock for the James River seed."

It was pointed out that significant planting has not occurred this year in Chesapeake Bay, Hampton Roads, the lower York River, and the lower Rappahannock River. Production, yields, and profits have been excellent in the low-salinity areas above these infested sections. Use of limited quantities of MSX-infected seed in low salinity planting areas has caused no known losses. Commercial oystering continues on seaside of Virginia's Eastern Shore with few losses to MSX, and future prospects appear excellent.

Discussing other oyster diseases, the scientist indicated that the fungus parasite Dermocystidium was absent from Mobjack Bay and the lower York River, although it remains active in all high salinity areas where populations of oysters exist.

The conference on shellfish diseases was held at the Oxford, Md., Laboratory of the U. S. Bureau of Commercial Fisheries from January 28 to 30, 1963. Biologists and research administrators from marine laboratories along the Atlantic, Pacific, and Gulf coasts meet annually in that conference to

consider problems as associated with the recognition, study, and control of oyster diseases.



Pollution

MARINE SCIENTIST DISCUSSES PESTICIDES:

The conflict between various resource interests over the use of chemical pesticides was recently pointed out by a scientist who is in charge of the Ecology-Pollution Department of the Virginia Institute of Marine Science.

Speaking at Gloucester Point, Va., January 23, 1963, he said, "There are over 12,000 brand name formulations of more than 200 basic chemical pesticides on the market today, and over a billion pounds of the products are sold annually. These include insecticides, herbicides, fungicides and nemacides... . Insects are perhaps man's greatest challenge on earth. Of the 2 million or more species, less than 10,000 are considered injurious, but these inflict an estimated 4 billion dollars worth of damage in the United States annually. Also, control procedures must frequently be changed because the insect pest has developed a resistance to the older insecticide."

But he pointed out that the potent chemicals in use today destroy beneficial species as well as pests. Frequently it is necessary to apply chemical agents over large areas to control an invasion of a pest species. The effective life of different control agents may vary from a few days to a decade or more. Insecticides may be washed off the treated areas and destroy aquatic resources. In many areas during the 1950's, some of the most toxic and long-lived insecticides were employed in salt-marsh mosquito and sand fly control programs. The result was wholesale destruction of marine life. Warm-blooded animals including man are not immune to the toxic effects of the chemical agents.

Emphasizing the need for discretion and serious thought in regard to pesticide applications in order to restrict the damage and to prevent future problems and hazards, he said, "The Institute is aware of the necessity for the use of pesticides for the efficient production of farm, garden, and aquatic food products. We do, however, urge that all the

available knowledge be utilized in reaching decisions that may have an affect on other natural resources. It should be further understood that in many cases we do not have knowledge complete enough to make really careful decisions. Thus, more research and a cautious attitude is necessary... . Costs cannot be the major deciding factor in pesticide applications."

Discussing the prospect of eliminating the problems caused by insecticide use, he said that research on biological controls and resistant species must be accelerated. The necessity for chemical control will persist, but additional information about the effect of pesticides on the total environment can reduce damage to non-pest organisms.

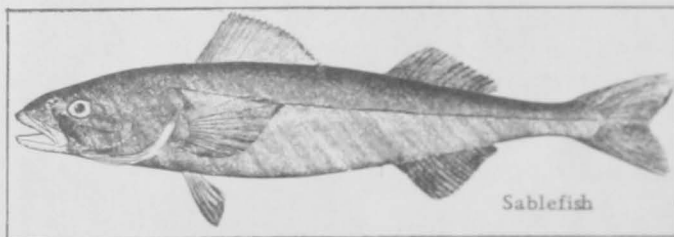


Sablefish

SABLEFISH TAGGED IN WASHINGTON STATE RECOVERED BY JAPANESE VESSELS:

Japanese fishing vessels operating in the Bering Sea in 1962 caught three sablefish tagged and released in Washington State coastal waters in 1955 and 1956. Recovered in the vicinity of the Pribilof Islands, Alaska, as nearly as can be determined, the fish had traveled about 2,000 miles. The first fish was taken 6 years and 42 days from the date of its release in Holmes Harbor, Wash. The second fish roved the North Pacific for 7 years and 53 days before being captured, while the third fish was out 6 years and 101 days.

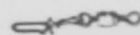
The fish were tagged with both Peterson and spaghetti tags. The yearly rate of growth



Sablefish

for the two sablefish for which there was complete data was just over 3 centimeters.

Washington State biologists tagged 890 sablefish in 1955 and 659 sablefish in 1956. A total of 143 sablefish tagged in those years have been recovered, mainly in coastal waters of Washington State and British Columbia, Canada.

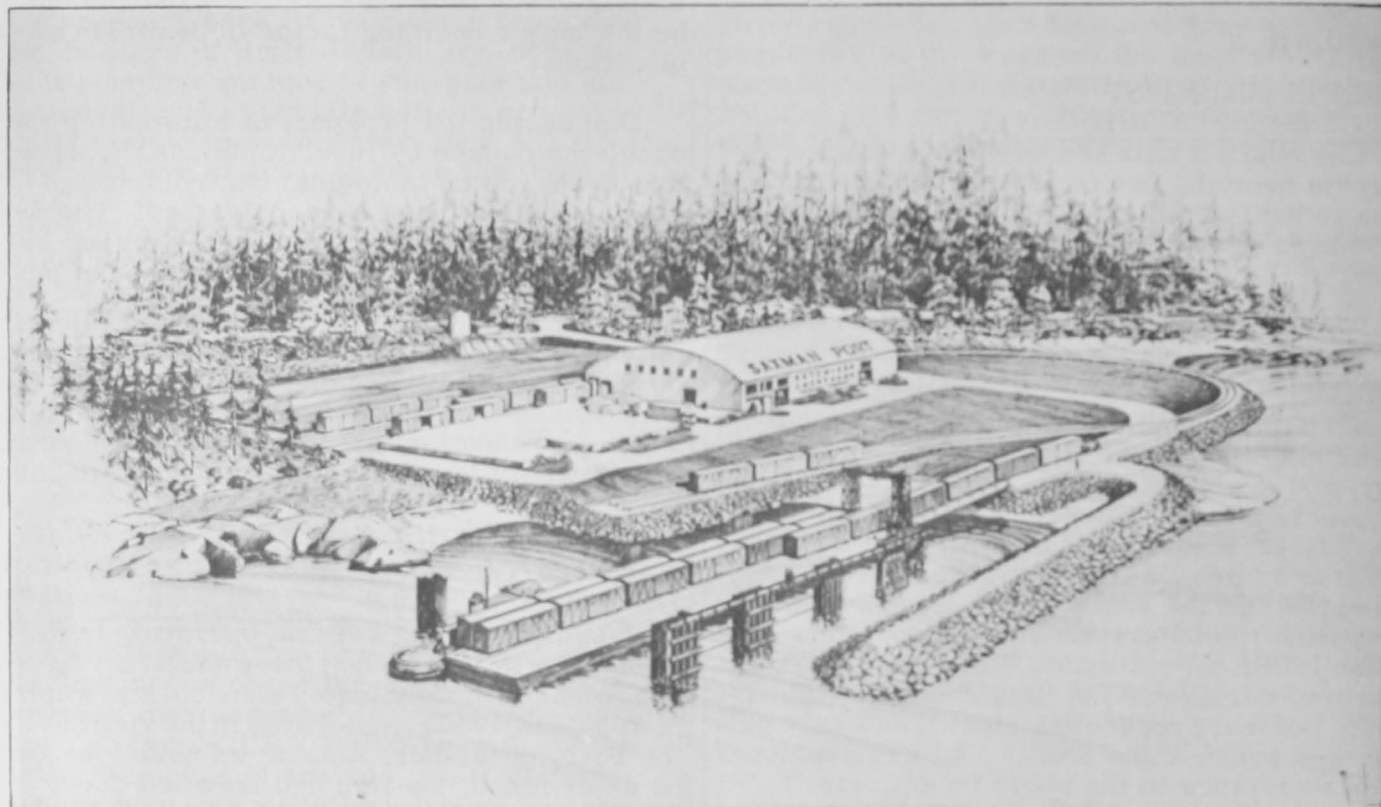


Transportation

NEW RAIL-BARGE FREIGHT SERVICE TO S. E. ALASKA VIA PRINCE RUPERT, B. C.:

A new freight terminal began operating in Saxman, Alaska (near Ketchikan), the latter

Shipments by United States suppliers to the Saxman terminal of less than carload weight will be billed to Chicago, Ill., for consolidation to carload lots and movement to Prince Rupert, B. C., by rail. According to reports, the new Saxman service will reduce freight



Artist's drawing of freight terminal in Saxman, Alaska.

part of February 1963. The terminal has truck and ferry connections to all cities in Southeastern Alaska. Rail connections to the lower 48 States are provided by a barge service between Saxman, Alaska, and Prince Rupert, B. C. The barge, which has a capacity of 20 carloads, was scheduled to begin once-a-week trips on February 13, 1963. The barge trip takes 11 hours. On arrival at Saxman, freight cars will be switched from the barge to a covered warehouse for unloading and distribution.

Distribution from the warehouse will be made by truck using the new Alaska Ferry System to all cities in Southeastern Alaska, and including Wrangell, Juneau, Petersburg, Sitka, Haines, and Skagway. Charges for warehouse handling and distribution to ultimate destination were under consideration and were to be furnished before operation started.

costs (estimated to average 40 percent) between Southeastern Alaska and those United States points which now have parity rates to Prince Rupert, B. C., versus Seattle, Wash.

The Saxman terminal was built with the assistance of Area Redevelopment Administration funds.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, JANUARY 1963:

Item and Period	1963	1962	1961	1960	1959
..... (1,000 Lbs., Heads-Off)					
Total landings, So. Atl. and Gulf States:					
March	-	3,317	4,754	4,098	2,950
February	-	4,125	3,910	3,785	3,227
January	5,000	3,828	5,686	5,401	4,310
December	-	8,530	6,538	7,097	8,716
January-December .	-	105,100	91,396	141,035	130,659

(Table continued on following page.)

Item and Period	1963	1962	1961	1960	1959
..... (1,000 Lbs., Heads-Off)					
Quantity canned, Gulf States^{1/}:					
March	-	94	38	128	93
February	-	263	98	223	135
January	510	536	199	289	308
December	-	2,050	889	977	1,278
January-December ..	-	25,277	15,793	28,594	24,679
Frozen inventories (as of end of each mo.)^{2/}:					
March 31	-	16,607	31,345	23,232	24,893
February 28	-	19,012	37,612	29,063	27,555
January 31	-	21,328	37,842	34,332	30,858
January 1	31,577	28,372	19,755	40,913	37,866
November 30	-	27,500	20,668	37,264	37,334
October 31	-	21,315	17,811	31,209	33,057
September 30	-	12,843	13,361	24,492	26,119
Imports^{3/}:					
March	-	9,658	10,347	8,545	8,492
February	-	10,599	8,932	7,657	7,481
January	4/	12,907	12,338	8,596	8,238
December	-	15,798	15,442	12,411	10,611
January-December ..	-	141,384	126,268	113,418	106,555
. (¢/lb., 26-30 Count, Heads-Off)					
Ex-vessel price, all species, Gulf Ports:					
March	-	80.9	56.0	56.3	67.6
February	-	78.9	53.5	51.8	69.6
January	5/86-93	76.3	52.5	49.4	70.9
December	-	77-90	75.2	54.2	48.4
November	-	78-93	73.5	54.0	46.2
Aug., Sept., & Oct. .	-	88-100	68.3	52.4	45.8
May, June, & July .	-	83.1	54.5	58.1	54.0
Wholesale price for froz. domestic brown species (5-lb. pkg.) at Chicago, Ill.:					
March	-	94-95	69-71	65-68	81-85
February	-	93-95	69-71	65-67	82-87
January	102-106	91-94	69-71	64-66	86-88
December	-	101-109	91-92	68-70	64-66
November	-	105-110	89-92	69-73	60-65
Aug., Sept., & Oct. .	-	108-118	76-91	64-73	59-64
May, June, & July .	-	96-104	67-75	72-77	62-76

^{1/} Pounds of headless shrimp determined by multiplying the number of standard cases by 33.
^{2/} Raw headless only; excludes breaded, peeled and deveined, etc.
^{3/} Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
^{4/} Not available.
^{5/} Range.
 Note: Data for 1963 and 1962 are preliminary. January 1963 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



United States Fisheries

COMMERCIAL FISHERY LANDINGS, 1962:

United States commercial fishery landings in 1962 reached a near record of 5.2 billion pounds with an ex-vessel value of \$385 million. The value was \$12 million more than the previous record set in 1958, and \$23 million above the 1961 value. Shrimp was again in first place as the most valuable single fishery.

According to statistics compiled by the U. S. Bureau of Commercial Fisheries, the 1962 landings were below the record of 1956, but somewhat higher than in 1961. Although the increase in domestic landings and in imports of edible fishery products brought the total supply of fresh, frozen, and canned products up to the highest point in history, the United States per capita consumption remained at 10.7 pounds, the same as in 1961. This is attributed primarily to the increase in population, and gains in stocks of frozen and canned fish.

United States Commercial Fishery Landings of Certain Species, 1962 and 1961		
Species	1/1962	1961
... (1,000 Lbs.) ...		
Anchovies	2,600	7,712
Cod, Atlantic	47,000	46,591
Crabs:		
Blue	146,600	152,758
Dungeness	8,500	4,592
King	50,000	43,412
Haddock	134,100	133,597
Halibut ^{2/}	39,900	40,024
Herring:		
Maine	158,000	54,463
Alaska	32,000	49,465
Industrial fish, Maine & Mass. ^{3/}	42,700	42,200
Mackerel:		
Jack	90,900	97,606
Pacific	44,600	44,110
Menhaden	2,236,300	2,314,677
Ocean perch, Atlantic	122,500	132,062
Oysters, all species	56,000	62,300
Pollock	17,100	21,406
Salmon	315,000	310,412
Sardines, Pacific	14,800	43,169
Scallops (meats)	24,100	27,461
Shrimp (heads-on)	190,600	174,494
Tuna	307,300	325,804
Whiting	86,100	100,729
Total all above items	4,166,700	4,229,044
Other ^{4/}	1,071,300	954,956
Grand Total	5,238,000	5,184,000

^{1/} Preliminary.
^{2/} Dressed weight.
^{3/} Excludes menhaden.
^{4/} Includes landings for species not listed.
 Note: Finfish generally converted to round weight, crustaceans to weight in the shell, and mollusks reported in meats only.

The major part of the 1962 landings consisted of industrial or non-food fish. Industrial fish landings were 2,661 million pounds, 84 million pounds more than the food-fish landed during the year.



Heading of shrimp aboard a fishing vessel.

The 1962 herring landings by Maine fishermen were far short of a record but were nearly three times the 1961 total. Landings of king crab caught off the coast of Alaska set a record of 7 million pounds more than the previous year. North Atlantic groundfish landings were lower in 1962. Cod and haddock landings were about the same as in 1961 but ocean perch and pollock declined from the previous year.

Landings of Pacific sardines dropped sharply in 1962 while shrimp landings were 17 million pounds more than in 1961.

The 1962 salmon pack was slightly lower than in 1961 but the amount of tuna packed set a new record with one million cases more than the previous year. Domestic tuna landings were somewhat lower than in 1961 but record imports of frozen tuna for canning in United States plants boosted the pack to the new record.



U. S. Fishing Vessels

AUTOMATED STERN TRAWLER-PURSE SEINER "NARRAGANSETT" LAUNCHED:

The launching of the Narragansett on January 10, 1963, at Warren, R. I., gave the United States its first commercial stern trawler. The prime feature of the revolutionary 83-foot vessel is an automated over-the-stern net-handling system. The vessel was



Artist's drawing of the new stern trawler-purse seiner rigged with an automated over-the-stern net-handling system.

also designed for purse seining and scallop dredging. It can be converted to either method of fishing in less than a day. Following her trial runs, the vessel will probably work initially as a trawler.

The Narragansett represents an effort by private industry to meet foreign competition by using the technical know-how of the United States. The vessel was built by a firm of

naval architects and shipbuilders in Warren, R. I. It was the aim of the firm to create a vessel to compete with European vessels from the standpoint of cost as well as efficiency. To achieve their goal, the firm used the latest mechanical equipment and unique methods of vessel assembly.

It is also hoped that the vessel's bad weather fishing ability may lead to a 5-day work-week for the fishermen. This together with good living conditions and improved working conditions should make fishing a more profitable and comfortable occupation for the Narragansett's crew.

Note: See Commercial Fisheries Review, May 1962 p. 32.

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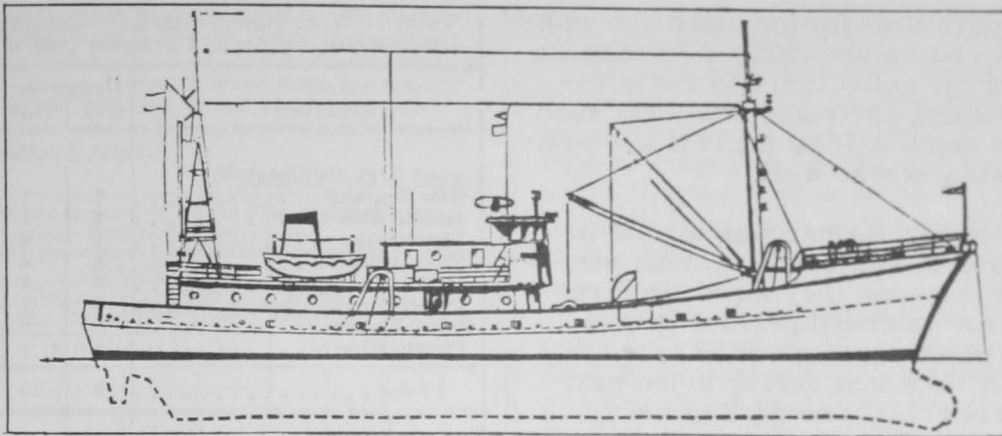
CONTRACT LET FOR NEW PACIFIC OCEAN FISHERY RESEARCH VESSEL:

A \$1,049,935 contract for construction of the M/V Townsend Cromwell, the U. S. Bureau of Commercial Fisheries new combination fishery-oceanographic research vessel, has been awarded to the McDermott Shipyard of Morgan City, La., the Interior Department announced on December 11, 1962. The vessel, to be completed in about a year, will be based in Honolulu, Hawaii.

The vessel is named for the late Townsend Cromwell, a Bureau of Commercial Fisheries oceanographer who discovered what is now known as the Cromwell Current in the Pacific Ocean. This current may be compared to a subsurface river flowing eastward along the Equator.

The Townsend Cromwell will be 158 feet 6-inches long and will have a 33-foot beam. It will have a bulbous bow with viewing ports to permit underwater observation of fish, and cameras will be used to record the behavior of fish for further study.

Shallow draft of the research craft will permit the investigation of coastal areas for tuna bait fish resources. It will carry a variety of winches and other equipment for standard oceanographic work on currents, temperature, and other properties of the sea. A chemical laboratory will facilitate the completion of analysis aboard ship. Other equipment will permit a variety of experimental fishing methods, including the use of long lines, midwater trawls, gill nets, and live bait. The vessel will be operated by the U. S. Bureau of Commercial Fisheries Biological Laboratory in Honolulu.



Outline of the research vessel, Townsend Cromwell, showing the Iniu bulb (under water at the bow) which will increase speed.

Its two Diesel engines, with variable pitch propellers, will permit the wide range of speed necessary for fishery and oceanographic research. Speed can be reduced and maintained at half a knot for plankton net trawling or it can be increased as desired to a 12-knot cruising speed. The vessel will have a range of about 10,000 miles.

The Cromwell Current, which has an estimated volume about 500 times that of the Mississippi River, was discovered in 1952 when Cromwell and others noted that drift buoys with deep drag moved in an opposite direction from those that were strictly surface buoys. The current's core is about 330 feet below the surface and its speed is approximately three knots. Cromwell, a native of Boston, Mass., was killed in 1958 in an airplane crash in Mexico.

* * * * *

SEINE SKIFFS CARRIED ON TUNA PURSE SEINERS NEED NOT BE LICENSED:

The question has arisen as to whether certain boats called "seine skiffs," which are carried aboard large fishing vessels, need to be licensed as fishing vessels of the United States.

The boats in question are described as large, heavily built, flat-bottomed, seine skiffs with straight sides of considerable beam. There are two sizes in general use. One measures 28 feet over-all with a net tonnage of about 7 tons and the other measures 30 feet over-all with a tonnage of about 10 net tons. The skiffs are carried on board large fishing vessels and are used in setting tuna purse seines. The seine skiff is put overboard from the fishing vessel only to hold

the end of the net while it is being set in a circle around a school of fish. The seine skiffs are also used as lifeboats for the fishing vessel.

The U. S. Bureau of Customs, in a January 23, 1963, letter to the Director, U. S. Bureau of Commercial Fisheries, concluded as follows:

"... Since the seine skiffs involved are used only to set the seine nets and are not used in any way with the catching of the tuna, it is the Bureau's opinion that they are not engaged in the fisheries or any other trade. Consequently, there is no affirmative requirement for the documentation of the seine boats described whether or not they measure more than 5 net tons. This decision, however, shall not be construed as a precedent applying to any vessels other than those described.

"The Collectors of Customs at San Francisco, Los Angeles, and San Diego, California, are being notified of the Bureau's ruling in this regard."

* * * * *

WEATHER CONDITIONS REPORTED BY RADIO WHILE ON TUNA FISHING TRIPS:

Four tuna purse-seiners operating out of California fishing ports have been outfitted with radio frequency 8805.6 kilocycles, which will permit them to communicate by voice directly with the U. S. Bureau of Commercial Fisheries radio station located on the campus of Scripps Institution of Oceanography, La Jolla, Calif. The vessels are the Coimbra, Corsair, Jo Linda, and Cylle V. A.

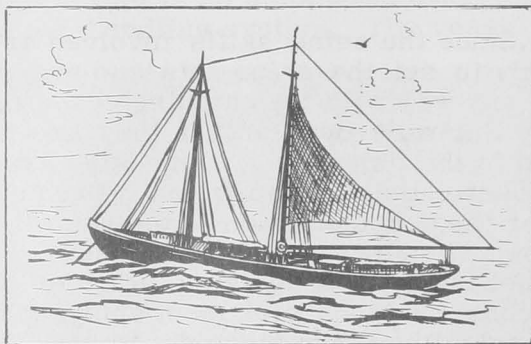
Weather conditions are being reported routinely as the vessels travel to the fishing

grounds. Temperatures for inclusion in monthly temperature charts are derived from those reports. Plans for collection and radio reporting of additional environmental data such as thermocline depth will be made if the communication system works well.

The U. S. Weather Bureau was unable to get radio reports of weather from tuna vessels in the past because they were often required to wait for extended periods before commercial circuits were clear to take traffic. Because of time lost during those waiting periods, particularly on days of heavy fishing activity, the vessels were reluctant to give weather reports. Activation of the tuna vessel radio frequency now eliminates the waiting time and may stimulate cooperation on the part of all vessels.

DOCUMENTATIONS ISSUED AND CANCELED, DECEMBER 1962:

During December 1962, a total of 12 vessels of 5 net tons and over were issued first



Cod-fishing schooner at anchor.

Table 1 - U. S. Fishing Vessels--Documents Issued and Canceled, by Tonnage Groups, December 1962

Gross Tonnage	Issued ^{2/}	Canceled ^{3/}
(Number).....	
5-9	3	5
10-19	3	9
20-29	-	3
30-39	-	1
40-49	4	3
60-69	-	1
70-79	-	1
110-119	1	-
160-169	-	1
250-259	1	-
Total	12	24

^{1/}Includes both commercial and sport fishing craft. A vessel is defined as a craft of 5 net tons and over.
^{2/}There were no redocumented vessels in December 1962 previously removed from records. Vessels issued first documents as fishing craft were built: 7 in 1962; 1 in 1961; 1 in 1960; 1 in 1956; and 2 prior to 1951. Assigned to areas on the basis of their home ports.
^{3/}Includes vessels reported lost, abandoned; forfeited, sold alien, etc.
 Source: Monthly Supplement to Merchant Vessels of the United States, Bureau of Customs, U. S. Treasury Department.

Table 2 - U. S. Fishing Vessels^{1/}--Documentations Issued and Canceled, by Areas, December 1962 with Comparisons

Area (Home Port)	December		Total	
	1962	1961	1962	1961
(Number).....			
Issued first documents^{2/}:				
New England	1	1	28	33
Middle Atlantic	1	1	3	12
Chesapeake	2	6	43	75
South Atlantic	1	4	47	47
Gulf	4	6	110	100
Pacific	3	2	130	149
Great Lakes	-	-	5	12
Puerto Rico	-	-	2	2
Total	12	20	368	430
Removed from documentation^{3/}:				
New England	4	2	24	20
Middle Atlantic	5	3	39	34
Chesapeake	-	-	23	28
South Atlantic	-	-	38	30
Gulf	6	7	104	103
Pacific	8	7	111	112
Great Lakes	1	-	22	14
Hawaii	-	-	3	-
Puerto Rico	-	-	1	-
Total	24	21	365	341

^{1/}For explanation of footnotes, see table 1.

documents as fishing craft, as compared with 20 in December 1961. There were 24 documents canceled for fishing vessels in December 1962 as compared with 21 in December 1961.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, DECEMBER 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in December 1962 were down 15.4 percent in quantity and 13.5 percent in value from those of the previous month. There was a general seasonal decline in imports in December. Imports were down substantially for groundfish fillets, frozen tuna other than albacore (decline mostly from Peru), canned tuna in brine, and frozen shrimp (decline mostly from Mexico). The decline was partly offset by an increase in imports of swordfish fillets, frozen albacore tuna, canned sardines not in oil (increase mostly from South Africa), and lobsters from Canada.

Compared with the same month in 1961, the imports in December 1962 were down 1.0 percent in quantity. The value of the imports in both months was the same. There was a sizable increase in the December 1962 imports of groundfish fillets, frozen tuna other than albacore (increase mostly from Japan and British West Africa), and canned sardines not in oil. But imports were down for frozen albacore tuna (decline mostly from Japan), canned tuna in brine, and canned sardines in oil.

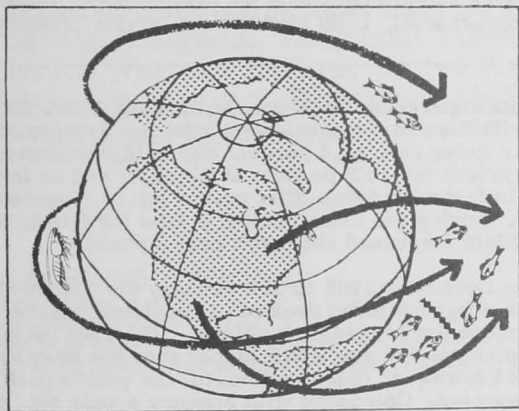
In the year 1962, imports were up 14.0 percent in quantity and 19.1 percent in value as compared to those in 1961. The greater increase in value was because of the higher prices which prevailed in 1962 for most imported fishery products. Most fishery products were imported in greater

quantity in 1962 and imports were up substantially for fish blocks or slabs, frozen tuna (increase mostly from Japan and Peru), canned sardines in oil and not in oil, frozen shrimp, and sea scallops. Imports were down for the following products: haddock fillets, fresh and frozen salmon, canned salmon, canned tuna in brine, canned bonito and yellowtail, and canned crab meat.

U. S. Imports and Exports of Edible Fishery Products, December 1962 with Comparisons								
Item	Quantity				Value			
	Dec. 1962	Dec. 1961	Jan.-Dec. 1962	Jan.-Dec. 1961	Dec. 1962	Dec. 1961	Jan.-Dec. 1962	Jan.-Dec. 1961
	. (Millions of Lbs.)				. (Millions of \$)			
Imports:								
Fish & Shellfish								
Fresh, frozen & processed ^{1/} . . .	86.5	87.4	1,169.7	1,026.5	31.3	31.3	397.4	33.8
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen). . . .	4.8	4.6	35.6	28.5	2.1	1.3	16.0	13.4

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

Exports of processed fish and shellfish from the United States in December 1962 were up 37.1 percent in quantity and 5.0 percent in value from those in the previous month. In December, there was a large increase in exports of the lower-priced canned mackerel and canned sardines not in oil, as well as a modest increase in exports of canned salmon. But there was a decline in exports of canned shrimp.



Compared with the same month in 1961, the exports in December 1962 were up 4.3 percent in quantity and 61.5 percent in value. A sharp increase in exports of the higher-priced canned salmon in December 1962 was almost offset by a decline in exports of the lower-priced canned squid.

Processed fish and shellfish exports for the year 1962 were up 24.9 percent in quantity and 19.4 percent in value from those in 1961. Exports of the lower-priced canned squid (principally to Greece and the Philippines) showed the greatest increase in 1962. Exports were also up for canned mackerel, canned salmon, and canned sardines in oil. But there was a small decline in exports of canned shrimp, (decline mostly in exports to Canada and the United Kingdom) and canned sardines not in oil (decline mostly in exports to the Philippines). Although not covered in the table, exports were up for frozen salmon, and were down for frozen shrimp (decline mostly in exports to Japan) and shucked oysters (principally to Canada).

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA:

The quantity of tuna canned in brine which could be imported into the United States during the calendar year 1962 at the 12½-percent rate of duty was 59,059,014 pounds (about 2,812,334 std. cases of 48 7-oz. cans). Any imports in excess of the quota were dutiable at 25 percent ad valorem.

Imports of tuna canned in brine during January 1-December 31, 1962, amounted to 54,483,996 pounds (about 2,594,476 cases), according to preliminary data compiled by the Bureau of Customs. This was 4,575,018 pounds (217,858 cases) less than the quota. The imports in 1962 were 3.1 percent below the 56,252,179 pounds (2,678,675 cases) imported during January 1-December 30, 1961.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, JANUARY 1963:

Wholesale prices for edible fish and shellfish (fresh, frozen, and canned) in January this year rose 0.8 percent from December 1962 due mainly to higher ex-vessel prices for fresh haddock, and an increase in prices for both fresh and frozen shrimp. Severe weather on the New England fishing banks continued to curtail the groundfish landings at Boston, and new supplies of imported frozen shrimp were held up due to labor trouble on the docks. Compared with the same month last year, prices this January were generally higher for fresh and frozen whole and processed fish and shellfish which more than compensated for a moderate decline in canned fishery products prices.

The drawn, dressed, and whole finfish subgroup index in January 1963 was up 3.1 percent from the preceding month and sharply higher (25.1 percent) from January a year ago. Higher ex-vessel prices for fresh haddock on the Boston market were largely responsible for the increase from December 1962 to January this year. From January a year ago to this January, the drawn haddock price increased by



Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, January 1963 with Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes (1957-59=100)			
			Jan. 1963	Dec. 1962	Jan. 1963	Dec. 1962	Nov. 1962	Jan. 1962
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					121.9	120.9	118.3	115.2
<u>Fresh & Frozen Fishery Products:</u>					130.0	127.6	123.7	112.4
<u>Drawn, Dressed, or Whole Finfish:</u>					137.2	133.1	120.8	109.7
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.21	.18	162.9	143.8	87.2	78.1
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.43	.43	128.1	127.1	129.6	110.4
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.96	.97	134.5	135.2	134.5	120.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.71	.69	106.0	103.0	100.7	110.5
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.54	.54	88.5	88.5	88.5	92.5
<u>Processed, Fresh (Fish & Shellfish):</u>					130.4	128.5	124.0	117.9
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.57	.58	137.2	139.6	99.6	87.4
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	1.09	1.05	127.2	123.1	121.9	110.2
Oysters, shucked, standards	Norfolk	gal.	7.88	7.88	132.8	132.8	130.7	132.8
<u>Processed, Frozen (Fish & Shellfish):</u>					117.5	116.4	120.7	105.5
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	103.9	100.1
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.37	.37	107.0	107.0	107.0	96.7
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.34	.34	117.5	117.5	118.3	115.7
Shrimp, lge. (26-30 count), brown, 5-lb. pkg.	Chicago	lb.	1.05	1.03	123.9	122.2	128.7	108.5
<u>Canned Fishery Products:</u>					108.0	109.4	109.4	120.4
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	24.75	25.50	107.9	111.1	111.1	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.75	11.75	104.4	104.4	104.4	107.9
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	4.50	4.50	101.6	101.6	101.6	116.2
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.31	9.31	119.4	119.4	119.4	157.9

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.

108.6 percent, frozen dressed halibut rose 16.0 percent, and frozen dressed salmon was up 11.6 percent.

The fresh processed fish and shellfish subgroup index this January increased 1.5 percent from December 1962 and was up 6.0 percent from January a year ago. An increase of 3.3 percent or about 4 cents a pound in fresh shrimp prices at New York City was responsible for the increase in the index from December 1962 to this January. During the same period, prices of fresh haddock fillets at Boston were down slightly and the fresh shucked oyster price was unchanged. As compared with January 1962, haddock fillets this month were higher by 57.0 percent and fresh shrimp prices were up 15.4 percent.

The January 1963 processed frozen fish and shellfish price index rose less than 1 percent from the preceding month because of a 1.4-percent increase in frozen shrimp prices at Chicago. Wholesale prices for frozen fillets

were unchanged from December to January 1963. Compared with the same month a year ago, the January 1963 subgroup index rose 11.4 percent due to higher frozen shrimp prices (up 14.2 percent at Chicago) and an increase in frozen haddock fillet prices (up 10.7 percent at Boston). During the same period, prices for frozen ocean perch fillets increased about 1/2 cent a pound.

From December 1962 to this January the canned fishery products subgroup index declined 1.3 percent because of lower prices for canned pink salmon. The 1962 pack of canned pink salmon was much higher than the previous year and a downward price revision for the year's pack was not unexpected. Compared with January a year ago, the canned pink salmon price index this January was lower by 11.6 percent. Lower prices this January for canned Maine sardines (down 2.4 percent) and other items in the subgroup resulted in a 10.3 percent drop from January a year ago.



As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States--now and in the future.