

## INTERNATIONAL

# U.S. AND USSR AGREE ANEW ON SOVIET FISHING OFF U.S. MIDATLANTIC COAST

Barbara Lundy

In early December 1968, the U.S. and the USSR signed a new agreement on fisheries off the midatlantic coast of the U.S. It extends and modifies the one originally concluded in November 1967. The U.S. delegation, led by Ambassador Donald L. McKernan, Special Assistant for Fisheries and Wildlife to the Secretary of State, included advisors from sports fishing interests and commercial fishing industries, and state fishery officials from New Jersey, New York, Rhode Island, Massachusetts, and Maine.

The new agreement provides greater protection for scup (porgy), fluke (summer flounder), red hake, and silver hake (whiting), species traditionally of prime interest to U.S. sports and commercial fishing.

Under the 1967 agreement, a rectangular area of several thousand square miles, extending south of Long Island and Rhode Island, was closed to fishing by large vessels during January through March 1968. During the same 3 months for the next 2 years, 1969-1970, the closed area will be an elongated belt, roughly along the 50-100 fathom line, from Rhode Island to Virginia. This area, outside U.S. jurisdiction, encompasses a substantial part of the wintering grounds of all 4 species.

### THE AGREEMENT

Under the agreement, large Soviet vessels fishing in the area will continue to restrict their catches of the 4 species to the 1967 level, Mrs. Lundy is CFR Associate Editor.

which was considerably below the 1966 catch. For example, the Soviet catch of red hake declined from 25,722 metric tons in 1966 to 14,884 tons in 1967. Overall Soviet catch in the area declined from 131,075 tons to 47,086. Preliminary Soviet data indicate that her 1968 red-hake catch in the midatlantic area will be about 2,000 tons, and overall catch less than 50,000 tons.

Noting the significant reduction in Soviet fishing effort in the area, the U.S. agreed to permit the Soviet fishing fleet to continue to use 2 small areas within the U.S. 9-mile contiguous fishing zone off New Jersey and Long Island for loading operation; also, the U.S. will permit the Soviets to fish in a small area off Long Island during specified periods during the winter. These areas are unchanged from the 1967 agreement.

### U.S.-USSR Joint Research

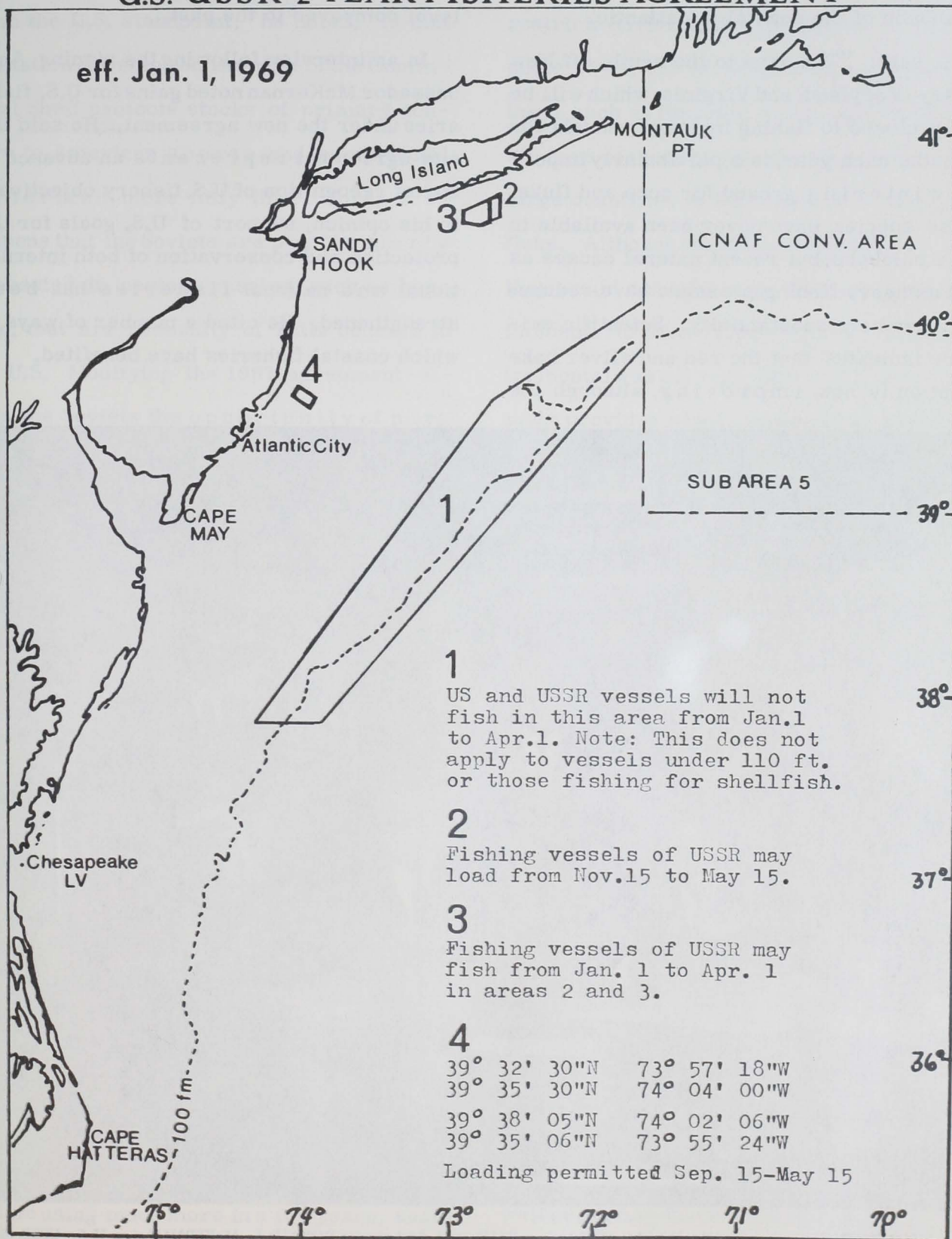
Scientists using research vessels from the U.S. and the USSR conducted joint surveys and research from the BCF Biological Laboratory at Woods Hole, Mass., in 1968. A number of factors affecting the midatlantic fisheries were evaluated during this cooperative scientific work, which contributed to the successful conclusion of the new agreement.

### AMBASSADOR MCKERNAN'S VIEW

Ambassador McKernan noted that the change in the area of the closed zone would

# U.S.-USSR 2-YEAR FISHERIES AGREEMENT

eff. Jan. 1, 1969



**1**  
US and USSR vessels will not fish in this area from Jan. 1 to Apr. 1. Note: This does not apply to vessels under 110 ft. or those fishing for shellfish.

**2**  
Fishing vessels of USSR may load from Nov. 15 to May 15.

**3**  
Fishing vessels of USSR may fish from Jan. 1 to Apr. 1 in areas 2 and 3.

**4**  

39° 32' 30"N	73° 57' 18"W
39° 35' 30"N	74° 04' 00"W
39° 38' 05"N	74° 02' 06"W
39° 35' 06"N	73° 55' 24"W

Loading permitted Sep. 15-May 15

especially benefit sports and commercial fishermen of the coastal midatlantic.

He said: "The area to the south, off New Jersey, Maryland, and Virginia, which will be newly closed to fishing by large vessels for 3 months each year, is a particularly important wintering ground for scup and fluke. These species have never been available in large numbers, but recent natural causes as well as heavy fishing pressure have reduced their numbers substantially. Scientific evidence indicates that the red and silver hake situation is now improving, although the

abundance of these 2 species is still at a low level compared to the past."

In an interview following the signing, Ambassador McKernan noted gains for U.S. fisheries under the new agreement. He said the new agreement represents an advance in Soviet recognition of U.S. fishery objectives. In his opinion, support of U.S. goals for the protection and conservation of both international and national fisheries has been strengthened. He cited a number of ways in which coastal fisheries have benefited.



V. M. KAMENTSEV (left), First Deputy, Ministry of Fisheries, USSR, and Ambassador DONALD L. McKERNAN sign U.S. -USSR MID-ATLANTIC FISHERIES AGREEMENT attended by experts of the two nations.

● "The first, and most immediate benefit, from the U.S. standpoint," he noted, "is that limitation of fishing on the edge of the Continental Shelf protects stocks of primary concern to American sports and commercial fishermen more fully than before. It so happens that the Soviets are particularly interested in certain species, such as herring, that are presently of little concern to the U.S. Modifying the 1967 agreement allows the Soviets the opportunity of more herring fishing on the high seas. It allows our fishermen this opportunity as well.

● "The second important gain, from the U.S. point of view, is that a much clearer and more comprehensive program can be envisaged," Ambassador McKernan continued. "The Soviets have shown a willingness to cooperate, and to use their research ships to work with the U.S. in developing conservation programs. This cooperation will expand our research capacity without requiring more funds from the U.S. and will increase our knowledge of resources along our coasts. It also will enable us to formulate both national and international conservation programs for all our fishery resources, including those we are not using very much now, but probably will be using much more in a few years, such as herring.

● "Thirdly, the new agreement specifically restricts Soviet fishing on species of importance to us, but of absolutely no concern to them, such as flounder, soles, and flatfishes. We have feared the Soviets were harvesting large quantities of such species as scup and fluke. Although the 1967 agreement indicated they would not take these species, except as incidental to other fisheries, the definition of incidental was not very clear. The new agreement provides new language and new understanding about these fisheries. Incidental catch is explicitly defined; now their interpretation is the same as ours."

One U.S. long-range international fishery policy of particular concern is that some preference must be given to small coastal fishermen obliged to compete for the same stocks of fish with large distant-water fleets, the Ambassador noted. He added: "To a modest extent, and in a somewhat indirect way, the agreement does advance the U.S. policy towards getting recognition by an important fishing state of the concept that the coastal state, in some circumstances, must have preference in harvesting coastal stocks.

"The agreement, from the U.S. point of view, thus serves long-range interests, as well as solving short-term conservation problems of the fisheries of the midatlantic Bight."



## U.S. & JAPAN SIGN 2 AGREEMENTS

Representatives of the U.S. and Japan met in Washington, D. C., beginning Nov. 13, 1968, to discuss the future of two agreements: the Eastern Bering Sea King Crab Agreement, signed in 1964 and extended in 1966; and the Agreement of May 9, 1967, concerning Japanese fishing within the U.S. contiguous fishing zone and in adjacent areas off the U.S. Agreements were initialled on December 3. On December 23, 1968, the new arrangements--which will remain in effect until Dec. 31, 1970--were signed by Secretary of State Rusk and Ambassador Shimoda.

### King Crab

The new King Crab Agreement provides for a drastic 48-percent reduction in Japan's annual crab production, from 163,000 cases ( $\frac{1}{2}$ -lb. 48's) to 85,000 cases for 1969 and 1970. This measure is designed to arrest the serious decline in the king crab stocks and to assure that the resource will be available for harvest to U.S. fishermen. The agreement also provides for expansion of the existing pot fishing zone, and for Japan to conduct a prudent fishery for tanner crab.

### Fishing Off U.S.

Several major changes were made in the agreement relating to Japanese fishing operations off the U.S. coast. Japan agreed to prohibit its vessels from trawling at night during the first 12 days of the halibut season

in an extensive area in Areas 4A and 4B in the eastern Bering Sea. The purpose is to avoid damage to U.S. halibut fixed gear.

Japanese vessels will also refrain from operating in the area landward of the isobath of 110 meters between Grays Harbor and the mouth of the Columbia River (between 46°14' N. latitude and 46°56' N. latitude). This is a popular salmon sportfishing area.

Understanding was also reached on alleviating the fishing pressure on Pacific Ocean perch stocks off Washington and Oregon.

### New Loading Zones

In exchange for the Japanese concessions, the U.S. agreed to permit Japanese vessels to conduct loading operations in 3 additional localities. The existing 2 are off Kayak Island and Sanak Island. The new zones are off Forrester Island and near Marmot Island off Afognak Island in the Gulf of Alaska, and off Destruction Island, Washington.

The U.S. delegation was led by Ambassador Donald L. McKernan, Special Assistant to the Secretary for Fish and Wildlife, Department of State. It included Clarence F. Pautzke, Assistant Secretary for Fish and Wildlife, Parks, and Marine Resources, Department of Interior; H. E. Crowther, Director, Wm. M. Terry of BCF; and industry and State officials.

--L. M. Nakatsu

## UNDP/FAO Caribbean Project Explores for Snapper

The exploratory fishing vessel 'Calamar' conducted experimental trawl fishing between Trinidad and French Guiana from June 1967 to April 1968. Most of it was done in comparatively shallow waters, less than 20 fathoms, where the bottom was muddy or sandy or both.

Cruises in April-July 1968 extended trawl coverage to greater depths. Below 20 fathoms, the bottom is usually limestone or other calcareous material, so the trawl was fitted with rubber bobbins (rollers).

### Gear

The trawls, braided nylon with 4-inch stretched mesh, measured 52 feet on a headline carrying 26 8-inch floats, and 72 feet on a footrope with up to 27 14-20 inch diameter rollers. The 2 x 1 meter (6.6 x 3.3 foot) doors were fished with bridles and ground cables.

### Areas and Depths

The principal task was to find areas that might yield snapper. Coverage extended from French Guiana in the east to Tortuga Island, Venezuela, in the west. Over 90% of the 114 trawl drags were made between 20 and 70 fathoms.

### Catches

Catches were uniformly low, varying from 41 pounds/hour off Venezuela to 186 off Trinidad. Total marketable catch ranged from 7.1 pounds/hour off Guyana to 67.3 off Trinidad and Tobago. French Guiana yielded the highest percentage of snappers taken--38% of total catch--mostly lane snapper, *Lutjanus synagris*. The lowest snapper catches (2.6%) were made off Trinidad.

One unexpected catch was a bushel of scallops caught off Margarita Island, Venezuela. Shell width was about 3 inches and meats averaged 65/pint measure. Ordinarily the roller-rigged trawls used at the time would not be expected to take any quantity of scallops.

Other marketable fish caught were jacks (Carangidae), croakers (Sciaenidae), grunts (Pomadasyidae), goatfish (Mullidae), porgys (Sparidae) and, off Trinidad, moonshine (*Selene vomer*).

Invertebrates found in the catches were sponges, crabs and lobsters, jellyfish, corals, and various molluscs. Industrial species were various small sharks and rays (over 50%), cutlassfish, catfish, lizardfish, batfish, and others.



## UN's Caribbean Fishery Development Project

The United Nations has provided the sum of \$2,548,000, and 16 participating nations \$773,000, to help develop the fisheries of the Caribbean region. FAO is responsible for carrying it out.

The project has 3 objectives: 1) to find pelagic (open-sea) fish and to determine the best methods of catching them; 2) to train fishery officers and fishermen; and 3) to develop fish facilities and marketing techniques.

The first 2 goals may be achieved by the UN vessels 'Calamar,' 'Alcyon,' and 'Fregata.'

The marketing part of the project is being studied by the Economics Section headquartered at Bridgetown, Barbados. UN observers report: "Retail selling in the markets is primitive, packaging generally nil; ice-producing plants are insufficient, and cold chambers generally non-existent." The staff of the Economics Section often tries to persuade governments to invest in fish processing and conservation facilities.

UN specialists believe that government support is vital to balanced development of wholesale and retail marketing. They maintain that facilities to preserve and process fish must be established to even out the temporary gaps between demand and supply.

### May Encourage Private Investment

Like other projects of a "pre-investment" character, this UN project aims in the long run to attract private investment capital.

However, to date, only the jumbo-prawn industry has attracted large-scale investment. It came from the U.S. In Guyana, for example, 75 prawning boats provide prawns to a well-equipped processing and freezing plant.



Fig. 1 - The processing plant of the American "Seafoods Guyana Company." Here, jumbo prawns are washed in chilled water. Then they are put in cardboard boxes and stored in cold chambers. Some lots are shelled to meet customers' requirements. Prawns are shipped to U.S. in a refrigerated ship.



Fig. 2 - Fish market at New Amsterdam, Guyana. The fish are snappers and snooks. This market is scheduled to be replaced in a couple of years by a modern center. It will be built with Canadian aid of \$185,000.



Fig. 3 - M. Lionarons, head of Surinam's Fisheries Department, examines small fish and shrimps drying in a village on Surinam River.



Fig. 4 - The UN vessels have tried live-bait fishing for tunny. To do this, the bait must be caught first. The vessels come into a different anchorage each evening and fish with a blanket net slung from outriggers.

The fish are attracted by a powerful electric light in the traditional technique of Mediterranean lampara fishing. The stick-held blanket net used for fishing for live bait is retrieved by using a small dinghy. The light attracts the fish over the net. (FAO/H. Menjaud)



## Greenland-Faroese Agreement on Fishing Rights

In early October 1968, Faroese fishermen were granted the right to fish in certain areas of Greenland's 3-mile zone and to continue operating their own shore stations to process catches. Such an agreement probably will not be necessary again because June 1967 legislation opened Greenland fisheries to equal entry by all Danish citizens regardless of residence. (U.S. Embassy, Copenhagen, Oct. 1968.)



## France Building Shrimp Trawlers for Greece

Evangelistria Fishing Co. of Greece has ordered 2 shrimp trawlers from a French shipyard. They will be about 82 feet long overall, 22 ft. broad, draw slightly over 8 ft., be fitted with 390-hp. main engines and 85-hp. auxiliaries, and have 3,900 cu. ft. freezing holds.

The fully equipped steel trawlers are to be delivered in April 1969. ("Alieia," Sept. 1968.)



## Yugoslav Experts Visit Soviet Union

In early 1968, a group of Yugoslav freshwater fishery experts toured Soviet scientific institutes from Leningrad to the Crimea.

They called at the Ukrainian Fisheries Institute at Kiev, which employs about 100 professionals who are studying hybridization, poly-culture, feeding, thermal water culture, etc., and demonstrate the application of new methods.

### Extensive Tour

The group also visited the Soviet's largest hatchery at Gorjackii Kliuch, which produces up to 250 million fingerlings a year. At VNIRO, in Moscow, they discussed acclimatization and hybridization studies.

The Belorussian Fisheries Institute at Minsk was included in the tour. Belorussia has the lowest fish prices in the USSR, and earns a 5% return on capital invested in fishery enterprises.



## Salmon Tag Returned by Soviet Scientists

A salmon tagged by Oregon Fish Commission biologists off Port Orford in September 1967 was captured on the high seas north of Heceta Bank, about 33 miles off the Alsea River mouth, by the Soviet research vessel 'Oghon' on August 8, 1968. The tag and pertinent biological information were forwarded to the Commission's Astoria research headquarters by the Pacific Research Institute of Fisheries and Oceanography in Vladivostok.

The Oghon has conducted extensive fishery research off the U.S. Pacific coast and has been a regular visitor off Oregon in recent years.

The Oregon State Fisheries director said the Soviet report of the tag recovery is in keeping with current exchanges of scientific information between U.S. and Soviet fisheries biologists.



## EEC Fisheries Policy Still in 'Proposed' Stage

The European Parliament generally endorsed the European Economic Community (EEC) Common Fisheries Policy on Oct. 24-25, 1968. The Parliament, an advisory body within EEC, must be consulted on all EEC actions. Power of approval, however, lies with the Council of Ministers, and they have not taken final action. Therefore, the EEC Common Fisheries Policy is still only "proposed." Endorsement by the European Parliament is important in that it reflects the general feeling of countries concerned.



## EUROPE

### West Germany

#### GOVERNMENT SUPPORT FOR FISHING INDUSTRY CHANGED IN 1968

Government support for the fishing industry changed significantly in 1968. Total outright aid increased 1.7% to about DM 30.2 million (DM 4,004 = US\$1). Because unspent funds from previous appropriations were available, aid granted on a loan basis was reduced from DM 12.2 million in 1967 to DM 1.7 million in 1968. However, the government was permitted to make advance commitments of up to DM 4.5 million.

Subsidies on diesel fuel used by luggers and cutters, granted since 1951 and totaling DM 2.7 million in 1967, were discontinued in 1968.

#### Exvessel Subsidies Replaced

Structural and consolidation aid increased from DM 7 million to DM 9 million; it was granted under a new policy in 1968. Previous support had been given through exvessel subsidies based on quantity, type, and grade of fish landed. This was discontinued, although money was provided to cover commitments made under the old system.

The 1968 appropriation was simply the first part of a 3-year DM 27 million program. Approximately DM 16.6 million will be used to help scrap 30 trawlers, 26 luggers, and about 200 cutters. Scrapping premiums will be allowed at the rate of DM 400 per gross ton for trawlers, and DM 600 per gross ton for luggers and cutters.

The remaining amount, slightly over DM 10 million, was slated to be used to: (1) convert "fresh fish" trawlers to partial or full freezer trawlers; (2) instal fish-meal plants on stern trawlers; (3) instal mechanical fish discharging devices on fishing vessels; (4) construct cutters with a minimum overall length of 36 feet, and (5) establish producer organizations.

#### Research and Service Vessels

Nearly 4.6 million marks were provided to complete a vessel for policing and protecting fisheries. A small sum was appropriated to begin planning a new research vessel.

#### Loan Aid

No provision was made in 1968 for new construction loans for trawlers and luggers because previous appropriations had not been fully used. The DM 4.5 million authorized for this will not be disbursed until 1969. Loans, not to exceed 25% of the total cost of a vessel, will be a maximum DM 1.5 million per vessel. Minimum interest on the 14-year loans will be 4%.

#### Government-Controlled Sales Promotion

After August 1, 1968, the legally required contributions from the fishing industry, dealers, and importers for fish sales promotion were increased to DM 0.20 per 100 kilograms. The fishing industry has promised to contribute additional funds to the joint advertising fund now that dealers and importers must contribute more.



### Denmark

#### RED TIDE KILLS MARINE LIFE ON WEST COAST

In early October 1968, dead and dying fish, birds, and marine invertebrates were found along Denmark's west coast from Hirtshals to Esbjerg. Fishermen were especially concerned because of the large number of dead cod. Danish Fisheries and Marine Research Division biologists found a bloom of 'Gymnodinium,' the minute toxin-producing alga that caused the red tide off Florida several years ago. This was the first time this type of alga had been found in North Sea plankton samples. By mid-October, die-off reports had stopped. The algal bloom had developed under abnormally warm and calm conditions. With the arrival of cooler weather and some wind, it appeared to peak and then decline. Although many fish died, biologists believe no great catastrophe occurred.

#### Mussels Unaffected

During October, a large blue mussel (Mytilus edulis) fishery normally begins in the

## Denmark (Contd.):

southern part of the affected area. Countless tests of mussels from the area showed no indication of toxicity, allaying doubts that they were unsafe to eat.

## Eel Mortality Caused by 'Red Sickness'

Eel mortality was high in 1968. Heaviest loss was in the western part of the Limfjord, very close to the North Sea coast where dead fish had been observed. This raised speculation that the same causative agent was involved. The biologists said, however, that the eel loss resulted from an especially virulent attack of 'red sickness,' a common eel disease caused by a well-known bacterium, and that eel mortality was unrelated to the red tide. (U.S. Embassy, Copenhagen, Oct. 16, 1968.)



## Netherlands

FIRM MARKETS  
NEW SHRIMP PEELER

A new shrimp-peeling machine that handles about one a second is being marketed by N. V. Maschinenfabriek, B & S Bedrieven, v.d. Woerdt, Hengolo. It separates the shrimp and turns them in the right direction for peeling. Spoiled shrimp, or those not turning in the proper direction, are rejected and returned to the supply hopper, or carried out on a separate conveyor belt. This leaves only the best shrimp to be processed under the most hygienic conditions.

## Designed for 'Crangon'

The machine was designed specifically for 'Crangon,' small brown shrimp processed in large quantities in the Netherlands. It also may be used for the small northern shrimp, *Pandalus borealis*. (U. S. Embassy, Copenhagen, Nov. 1968.)



## Norway

CANNED FISH PRODUCTION  
AND STOCKS

The brisling season normally ends about mid-October. In fall 1968, fishing was not good, and the final 1968 pack was expected to be below average. Because of a fairly good carryover from the previous season, stocks may last until the 1969 pack is available, but this can vary from firm to firm. Exports were at about the 1967 level.

## Sild Sardine Supply Unsatisfactory

Sild sardine supplies were not satisfactory, either in quantity or size. Exports exceeded production, depleting stocks about 3%. September 1968 stocks were expected to last about 3 to 4 months, but some items were in short supply. The main packing season should have built stocks gradually over the next months, maintaining supplies through the closed season beginning Feb. 1, 1969.

## Kipper Situation Desperate

The kipper situation was desperate; stocks were nearly exhausted. Normal packing was still about 5 months away; shelf space and distribution would be lost in practically all markets, unless stocks could be replenished from North Sea herring in the meantime.

## Anchovy Production Delayed

Anchovy production should have started by September, the normal period, but manufacturers deliberately delayed because the unusually mild weather would have caused premature ripening.

## Crab Production Low

Crab production was still below 1967's pack at the same time. High temperatures and smooth seas were partly responsible for poor catches.

## Insufficient Herring

Unfavorable weather hampered Iceland herring fishing, and landings were insufficient to cover requirements.

## Mackerel Catches Good

Mackerel catch was very good. Mackerel production during first-half 1968 amounted to about 50,000 cases, slightly below 1967. The main packing season is in autumn. An estimate of 1968 production will be available at year's end. ("Norwegian Cannery Export Journal," Oct. 1968.)



## USSR

### SCHEDULES FISHERY RESEARCH THROUGH 1975

The Soviet Academy of Sciences' Scientific Council on Hydrobiology, Ichthyology, and Exploitation of Biological Resources of Water Bodies met in Moscow in early 1968. The Ichthyology Commission of the Fisheries Ministry and the Hydrobiological Society held sessions at the same time. This large gathering of fishery scientists planned industrial and scientific research projects as far ahead as 1975.

#### Research Planned

The Council planned coordinated research for the biological use of natural and technological warm waters. The scientists discussed the future of biological exploration in the Black Sea; underwater hydrobiological exploration in the Barents Sea and Antarctica; artificial breeding of marine organisms; research on technical hydrobiology (protection against encrusting organisms, wood-borers, and other harmful organisms); water pollution in Lake Baikal; and fresh water in Siberia.

#### Research Projects

The Ichthyology Commission submitted these research projects: (1) coordination of scientific fisheries research for 1966-1970; (2) biological research on inland fisheries for 1968-1970; (3) research on the development and exploitation of warm water fisheries for 1968-1970; (4) research plan for increasing the productivity of inland water bodies for 1970-1975. The Central Administration for Inland Fishing and Fish Culture and the Ichthyology Commission have developed a research project on the acclimatization of fish and invertebrates in inland waters.

P. A. Moiseev, of the Research Institute of Fisheries and Oceanology (VNIRO), reported on ocean fishery resources. He estimated the present annual yield at about 60 million tons. He feels that it could be 90 million, if pelagic fisheries are expanded, and insists that any further expansion of Soviet high-seas fisheries must be based on this. ("Voprosy Ikhtiologii," 1968.)



## Iceland

### CURRENCY DEVALUED AGAIN IN 1968

On Nov. 11, 1968, Iceland devalued the kronur by 35.2%. The U.S. dollar is now worth 88 kronur. The reason given for devaluation was that exports had decreased 45% since 1966 because of falling world prices for fish products--mainly herring oil and meal.



## United Kingdom

### U.K. PUTS 10% TARIFF ON FROZEN-FISH FILLETS

On Nov. 6, 1968, Britain announced a 10% tariff on frozen-fish fillet imports from European Free Trade Association (EFTA) countries. The government was concerned about pressure on the domestic market caused by the growth of these imports. Austria, Denmark, Portugal, Norway, Sweden, Switzerland, and the U. K. are EFTA members. (Reuters, Nov. 6, 1968.)



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## St. Pierre-et-Miquelon Fish Market Deteriorates

A general deterioration of the fish market has seriously affected the economy of St. Pierre-et-Miquelon. Fishermen's subsidies will have to be increased, though the entire industry already is subsidized.

The US\$20 million transshipment port construction, including dredging the harbor bottom to 20 feet below its present level, is expected to take 2 or 3 years. Because all heavy building equipment must be shipped in from Canada, and rented for dollar currencies, construction has been very slow.

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Shellfish left on a beach in Southern Chile. They must be well closed and alive when harvested. They are raked often to prevent them from burrowing down and escaping. (FAO/S. Larrain)

## LATIN AMERICA

### Mexico

#### MEXICAN-SPANISH COD-FISHING VENTURE IN NORTHWEST ATLANTIC

Two Spanish vessels have landed the first 'bacalao,' or salt cod, caught in the Northwest Atlantic under a Spanish-Mexican agreement. Five hundred tons arrived at the Gulf port of Coatzacoalcos in late October 1968. Mexico hopes her own vessels eventually will produce enough salt cod to replace traditional imports from Norway and other countries.

#### Local & Foreign Markets

Several months ago, 'Empresa Bacaladera Mexicana, S.A.,' a Mexican company financed largely by Spanish capital, built a 4-million-peso (US\$320,000) processing plant at San Bartolo, Naucalpan, near Mexico City. The plant will clean, cut, and finish drying the salt cod landed. At first, the bacalao would be distributed only in Mexico. After Christmas, when it is in great demand, it was to be exported to other Latin American countries. Direct production of salt cod by Mexican-based vessels should cut about 25% from the traditional price of 35 pesos per kilo (US\$1.27 a lb.).

The two vessels, manned by Spanish crews on the first trip, took 5 Mexican fishermen each on a second. If Empresa Bacaladera exercises its 1-year option to buy the vessels, they probably will have all-Mexican crews within two years. (U.S. Embassy, Mexico, Nov. 6, 1968.)



### Peru

#### BUILDS FIBERGLASS PURSE SEINERS

Five 93-foot, 440-ton-capacity, fiberglass purse seiners are being built by Maestranza y Astillero Delta, S.A., Callao, and Dynamarc Corp., Costa Mesa, Calif. They will catch anchovy for the fish-meal industry. More may be built, depending on the success of the first 5. Dynamarc personnel are in Peru supervising construction. (U.S. Embassy, Lima, Nov. 1968.)

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### Cuba

#### INCREASES FISHING FLEET

East Germany is building 5 Atlantik-class stern trawlers for Cuba; the first was scheduled to be delivered by the end of 1968. East Germany is building 15 other stern trawlers, 45 meters (147.6 ft.) with 7-metric-tons-a-day fish-meal production capacity; 5 will be delivered in 1969, 10 in 1970. Two 550-ton hold capacity freezer barges will be delivered by 1970.

Most of the 90 fishing vessels Cuba has ordered from Spain should be operating in 1970. Three freezer trawlers were delivered in 1968.

#### Fleet Landings

All the vessels will join 'Flota Cubana,' Cuba's high-seas fishing fleet. Fleet landings increased from 5,200 tons in 1966 to 20,100 tons in 1967. Catch was expected to reach 26,000 tons in 1968, and it is expected to rise to 40,000 in 1970.

#### New Fishing Methods

Cuba has been testing new fishing methods in the Gulf of Mexico. Daily catches up to 10 tons have been made fishing sardines with electric lights and dragnets. Commercial-scale purse seining is planned for 1969. Catches will be transferred to special vessels at sea, so factory ships will not have to return to port every 12 to 15 days when holds are full.

#### Fish-Meal Production

Cuba plans to expand fish-meal production in 1969. Two plants will be built, one of these in Cienfuegos.



### Chile

#### FISHERIES SCHOOL SPURS DEVELOPMENT

Chile's Fisheries Development Institute is playing an important role in providing the technical background necessary to develop the nation's fisheries. The work of the

## Chile (Contd.):

UN-supported institute covers all aspects of the fishing industry: Northern Chile--anchoveta; Central--demersal fish; and Southern--shellfish.



Figs. 1 & 2 - At Puerto Montt, Southern Chile, fishermen pull their boats up on the beach so villagers can buy the fresh fish over the side.



Fig. 3 - Fisherman brings tuna catch ashore from small boat. (FAO/S. Larrain)

In Southern Chile, the institute concentrates on the problems of catching, storage, and shipment to markets.

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#### COST OF SHIPPING FISH MEAL TO U.S. RISES

On Jan. 1, 1969, the cost of shipping fish meal from northern Chile to U.S. and Canadian west coast ports went up \$4 a metric ton, unless exporters were able to find cheaper means of loading. Shippers may pay \$36 a ton, or load the meal themselves and pay \$29 a ton. Rates for Peruvian shipments to west coast ports are unchanged, and rates to U.S. Atlantic and Gulf ports are not affected. A U.S. handling charge of \$3.60 a ton applies to all meal shipped to west coast ports; handling costs are absorbed in shipments to Gulf and Atlantic ports.

#### High Loading Costs Responsible

The new rate replaces a hotly contested one. The latter was set by the Latin American Pacific Coast Steamship Conference on Sept. 7, 1968. The Conference raised the rate to \$36 a ton, without giving exporters the chance to arrange their own loading. Chilean fishmeal exporters claimed discrimination because Peruvian rates were not increased.

Chile (Contd.):

Carriers claimed higher loading costs in Chile--about \$7 a ton, compared to \$2.60 in Peru--necessitated the increase. The U.S. Federal Maritime Commission has approved the new rate.



## British Honduras

### THE FISHING INDUSTRY

The entire coast of British Honduras is sheltered by a series of reefs, keys, and islands that form a barrier reef second in size only to the Great Barrier Reef of Australia. Surrounded by waters rich in marine life, the people of British Honduras have a long and renowned tradition of seamanship, fishing, and boat building.

There are 2 fisheries: the traditional one supplying the domestic market, and the export fishery less than 10 years old. For the most part, they depend on the same fishermen and boats.

The domestic market is supplied by a fleet of small sailing boats fishing principally with hook and line. Many have outboard motors, a few are inboard powered. Catches are landed at the public markets in Belize City, and other coastal and island towns, or sold directly to the consumer on the beach or at wharves. The most popular species are snappers and groupers. Fish is much more important in the local diet than it is in neighboring countries.

#### Spiny Lobster Fishery

Spiny lobster, the first export fishery developed, is still the most important. The fishery is regulated strictly with seasonal catch limits, closed seasons, and gear restrictions. A tagging program has been instituted, and tag returns have begun to show a migration pattern. Fishermen keep detailed log books showing their daily catches.

Lobsters are taken by 3 methods: The most important is the lobster trap. An unusual derivative of the trap--an old oil drum modified by a sort of fyke entrance built in one end--is fairly common. A fyke is a long

bag fish net. No bait is used. The lobsters apparently enter in search of a dark hiding place. The third method is skin diving with spears or gaffs. A few lobsters are taken with dip nets and night lights.

#### Shrimp Fishery

A shrimp export fishery began in 1966, when good resources, principally pink shrimp, were discovered by a Republic of Honduras-based company doing exploratory fishing. Granted a permit to operate in British Honduras, the company is building a packing plant in Big Creek. The company is served by 6 privately owned trawlers. All are U.S. flag vessels licensed to fish in the Republic of Honduras. During 1966 and 1967, the trawlers operated from Guanaja, Honduras, and transported their catches to a temporary plant in Belize City. The shrimp, packed in the usual 5-pound cartons, are not sorted for size until they arrive in the U.S. Fin fish also are packed and frozen, either whole or as fillets. When the Big Creek plant is completed, the Belize City plant will continue to pack fin fish.

The best season for shrimp is during the first few months of the year; it declines after May.

Exports of Fishery Products From British Honduras

	Pounds Exported				
	1963	1964	1965	1966	1967 (Prelim.)
Lobster Tails, Frozen . . . . .	345,361	403,000	431,500	387,900	316,610
Conch Meat, Frozen . . . . .	86,310	120,900	78,900	135,900	376,350
Fish, Frozen . . .	167,892	64,600	111,000	162,900	258,397
Fish, Dry salted, Smoked . . . . .	71,123	31,900	49,300	46,000	46,606
Shrimp, Frozen . .	-	-	-	23,100	225,301

Most of the dry, salted, and smoked fish is exported to Guatemala and Honduras; practically everything else goes to the U.S. Lobster exports have leveled off, even declined, but recently opened operations on the southern coast should increase shipments. The rapid increases in frozen fish and conch exports are expected to continue to the point where they will exceed lobster on a volume basis. However, the extremely high prices commanded by lobster tails will keep them in first place in value for a long time to come, unless the rapidly developing shrimp fishery, also based on a high-priced product, continues to grow.



## British Honduras (Contd.):

### Sport Fishing

Tourism is expanding in British Honduras. Much of the attraction lies in calm, protected waters that teem with game fish and are among the clearest diving waters in the world. Several small hotels on the keys cater to fishermen and skin divers and operate boats for their use. In Belize City, several boats operated by former commercial fishermen make regular sport-fishing trips. These well-outfitted boats offer something that cannot be matched in most places--a guarantee that customers will catch fish every day.

### Scientific Research

The Fisheries Section of the Department of Agriculture is responsible for development

and conservation of the fisheries. Like its counterparts in other Caribbean countries, it is undermanned. However, FAO has supplied a biologist and a technologist in recent years. A fishery research vessel is being built in a local boatyard with a grant from the British government. The 36-foot 'Panilurus Argus,' named for the most common species of spiny lobster, was scheduled to be completed in 1968. The Bliss Foundation has provided a Marine Biological Station on the sea front in Belize City.

British Honduras is a fertile field for every kind of marine research. Real opportunities await qualified scientists who wish to pioneer in tropical research under excellent working conditions.



## WHAT IS THE CONTINENTAL SHELF ?

Officially, United States laws define the continental shelves as the seaward extension of the coast to a depth of 600 feet; this limit is set for the purpose of granting mineral rights, including oil drilling. The edge of the continental shelf, where the bottom begins to slope steeply, most commonly is found at depths between 360 and 480 feet.

At the time the shelf received its name, it was thought to be essentially flat; now geologists know that the continental shelf has basins, ridges, and deep canyons. Compared to the deeper ocean floor, however, the relief is gentle; hills and basins on the shelf usually do not exceed 60 feet.

The continental shelf width varies from practically nothing to several hundred miles. The shelf along the east coast of the United States is many times wider than that along the west coast. If all the continental shelves of the world are included, the average width is approximately 40 miles.

The shelf slopes gently, at an average drop of 12 feet per mile, from the shore to the continental slope. In contrast, the grade of continental slopes is 100 to 500 feet per mile.

About 7 percent of the ocean is underlain by continental shelves. These are the areas where intensive mineral exploration is now being conducted. ("Questions About The Oceans," U.S. Naval Oceanographic Office.)

## ASIA

### Japan

#### COLD STORAGES ARE PLANNED TO STEADY TUNA PRICES

The Federation of Japan Tuna Fisheries Cooperative Associations (NIKKATSUREN) has agreed to build and operate cold storages at the tuna ports of Yaizu, Chimizu, and Misaki to support tuna price stabilization. Tuna, primarily yellowfin, will be stored when the domestic market is oversupplied and be released when the market improves.

Two methods have been proposed: one is to store catches on a consignment basis, the other to purchase them. In the case of consignment, NIKKATSUREN would obtain government loans for vessel owners to defray operating expenses until the catches were sold. At Yaizu, small cold storages will be built at first and operated experimentally for one or two years. ("Suisancho Nippo," Nov. 16, 1968.)

\* \* \*

#### FACES COMPETITION FROM NEW U.S. TUNA PRODUCT

The tuna industry is concerned with the growing penetration of its U.S. canned-tuna-in-brine market by a new U.S. product--canned tuna in vegetable broth. The U.S. packer, who began marketing it in summer 1968, has conducted extensive promotional sales in Chicago and Philadelphia, two major consumer centers for the Japanese product. The packer is planning to expand sales in New England, another major Japanese market.

#### Threat to Market

The Japanese interpret this as an attempt to win over their canned-tuna-in-brine consumers. Japanese packers would not be able to compete with large U.S. promotional sales, and trading firms could not keep selling at loss just to retain their U.S. market. ("Suisan Tsushin," Nov. 7, 1968.)

\* \* \*

### U.S. REJECTS MORE YELLOWFIN TUNA

The Japan Frozen Foods Exporters Assoc. is trying to cope with increasing U.S. rejections of frozen yellowfin tuna. During October 1968, U.S. packers rejected over 600 tons because of greenness or darkness in the meat after cooking. Japanese shippers had already lost more than US\$278,000. The claims, running as high as 45% of shipments and averaging 13%, were the second highest since 1959. Then, U.S. packers rejected 40% of Japanese shipments from west Africa. Claims of 3-5% are usually settled between shipper and packer. Because of the enormous quantities rejected recently, and heavy losses suffered by Japanese suppliers, the Association planned to contact California canners to discuss use of green meat and settlements of claims.

#### Green Meat

In recent shipments, green meat was found primarily in large yellowfin tuna (over 100 lbs.) from the western Indian Ocean. While export tuna are inspected in Japan, fish taken in different areas become mixed in the shipments, making sampling very difficult. The Japan Frozen Food Inspection Corp. has developed a method of predetermining which tuna are likely to develop green or dark meat. It is reported to be 100% accurate, but problems still exist because 4-5 workers need an entire day to test 100 fish. ("Suisan Keizai Shimbun," Nov. 13, 1968.)

\* \* \*

#### ADVISES FIRM NOT TO FISH E. PACIFIC YELLOWFIN TUNA

The Fisheries Agency has decided not to license Taiyo Fishing Co.'s purse seiner 'Hayabusa Maru No. 3' (275 gross tons) to fish in the eastern Pacific yellowfin tuna regulatory area. Taiyo had planned to send the vessel before the end of 1968. The Agency refused because purse seining there would have created excessive competition with long-liners already fishing there. Introducing purse seiners into the regulatory area would have required Japanese participation in the Inter-American Tropical Tuna Commission as a member rather than observer. And, purse seining would have increased Japanese

## Japan (Contd.):

tuna catch in the eastern Pacific, substantially affecting export prices--and perhaps led to U.S. imposition of quantitative restrictions on Japanese tuna imports.

## Taiyo Will Appeal

The ban was not issued as a mandatory measure. It advised Taiyo not to send Hayabusa Maru while the Agency was studying Japan's distant-water purse-seine fishery. Some industry observers claimed that the Foreign Ministry, sensing considerable U.S. uneasiness over the planned entry, recommended the Agency's action. Despite the advice, Taiyo and several other firms plan to appeal for early authorization to purse seine in the area. ("Katsuo-maguro Tsushin," Nov. 21, 1968.)

\* \* \*

## YAIZU FISH LANDINGS DECLINE

In October 1968, landings at the major tuna port of Yaizu totaled 9,528 metric tons worth US\$5.11 million. This was a drop from Oct. 1967 of 1,048 tons, or 10% in quantity, and \$377,000 in value. Landings of all tuna species fell. Jan.-Oct. 1968 landings were 12,855 tons worth \$54.6 million. ("Kanzume Nippo," Nov. 11, 1968.)

\* \* \*

## PRICE OF SAURY FOR BAIT SOARS

A steadily shrinking saury catch pushed bait saury prices up to US\$554-580 a short ton at Misaki in early October 1968. Bait saury prices averaged around \$328 a ton for 12 count per kilo (2.2 lbs.). Outside of crew expenses, the cost of bait was the largest operating expense for Misaki-based tuna vessels.

## Good Bait

Saury is good tuna bait because of its odor and blue glow. But the high cost and small size--around 15 count--available for bait may force longline operators to substitute less expensive squid and mackerel. Tuna fishermen are very particular about bait quality. Some will leave a boat if the owner has not bought enough good saury for a trip. The use

of less desirable bait could cause disputes between vessel owners and crews. ("Suisan Keizai Shimbun," Nov. 20, 1968.)

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## SAURY CATCH DROPS TO RECORD LOW

The saury fishery started well in early August 1968 but began to slow after September. It was feared that the 1968 catch might drop to an unprecedented low. By the end of October, catch was 113,379 metric tons, down about 59,000 tons from the 1967 period. This was about one month's catch in 1962, when landings peaked at 483,000 tons.

150,000 Tons in 1968

The 1968 season's total catch should be around 150,000 tons, compared with 210,000 in 1967. This sharp decline created a severe bait saury shortage for tuna fishermen and pushed prices up around US\$128 a short ton in one month. Canned saury production also was expected to sink to a record low in 1968. ("Kanzume Nippo," Nov. 11, 1968.)

\* \* \*

## RESEARCH VESSEL TRAWLS OFF PERU AND CHILE

The 2,539-gross-ton research vessel 'Kaiyo Maru' departed Japan Nov. 5, 1968, on an exploratory cruise to the waters off Peru and Chile. Her purpose is to investigate the region's potential for trawling. Fourteen scientists, headed by Dr. Doi, Tokai Regional Fisheries Research Laboratory, were aboard.

The vessel was scheduled to call at Honolulu, depart there Nov. 20, and trawl off Callao, Peru. A call at Valparaiso, Chile, around mid-January 1969 was scheduled before trawling off Chile. Then the vessel will proceed to Papeete, Tahiti, about Feb. 26, 1969, to collect specimens with a setnet and fish for tuna with a seine net. She will return to Tokyo March 17, 1969. ("Suisan Keizai Shimbun," Nov. 7, 1968.)

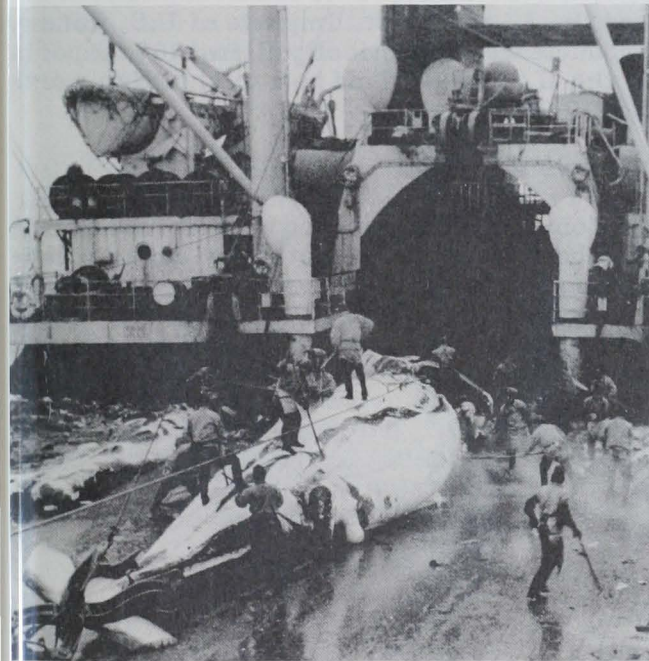
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## SENDS WHALING FLEETS TO ANTARCTIC

Three Japanese fleets are whaling in the 23rd Antarctic season, which began Dec. 12,

## Japan (Contd.):

1968. Japan has been assigned a national catch quota of 1,493 blue whale units (BWU) for the 1968/69 season. The other two whaling countries, the Soviet Union and Norway, were assigned quotas of 976 and 731 BWUs. Overall catch quota was set at 3,200 BWUs. Because of the depressed whale-oil market, Norway, pioneer in Antarctic whaling, did not send a fleet. ("Suisan Keizai Shimibun," Nov. 22, 1968.)



Cutting up whale aboard a Japanese whaling mother ship in Antarctic.



## Philippines

### PLANS TO INCREASE FISH PRODUCTION IN 1969

The Philippine Fisheries Commission estimated that 1,310,000 metric tons of fish were needed in 1968 for nutrition. It also estimated 1968 production would be only 856,000 tons. The 454,000-ton deficit was covered, in part, by an estimated \$15 million worth of imported fishery products. The Commission has a 4-year program (1968-72) to increase production.

The Commission has estimated that nutritional requirements for fishery products increase 3% annually, roughly the same rate as

population increase, and that annual fish production will increase 6%. If the percentage increases remain the same, the deficit would not be overcome until 1991. The Commission hopes the Philippines will be self-sufficient in fish products by 1972.

### FY 1969 Program

The program for Fiscal Year 1969 (FY 1969) seeks to increase production by 115,000 metric tons from these sources:

Commercial fishing	47% - 54,000 metric tons
Municipal fishing	22% - 25,000 " "
Brackish water fishing	17% - 20,000 " "
Freshwater fishing	14% - 16,000 " "

Commercial fishing is the catch from vessels over 3 tons. Municipal fishing, from coastal waters, is catch used for sustenance rather than commerce.

Increased yield of fish per hectare and catch per vessel will be emphasized in FY 1969 because this approach will provide quicker results. Only limited efforts will be made to increase fish-pond area or the number of vessels. A major program to stock inland waters with fingerlings, mostly bangos and carp, should increase fish harvest 7,500 tons from freshwater ponds, and 8,500 from inland waters.

### To Train Technicians

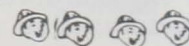
The Commission also plans to train 541 technicians to provide technical assistance for 1,000 commercial fishing vessels (about 33% of those in greater Manila area), build fish preservation and processing establishments, develop 17,000 hectares of fish ponds, and aid fishing villages.

Other projects planned for FY 1969 are more ice plants, cold-storage facilities, and a fish market and fishermen's port for the greater Manila area. The Commission also intends to improve research, fishery administration, and fishery-law enforcement.

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### TUNA LONG-LINER IN ATLANTIC

The tuna long-liner 'Dianne,' 240 gross tons, is fishing albacore tuna off the Azores under a cooperative agreement with a Puerto Rican packer. The vessel, based at Sao Vicente, Cape Verde Islands, was averaging 3.5-4 tons a set. ("Shin Suisan Shimibun," Nov. 18, 1968.)



## Singapore

### THE FISHING INDUSTRY

Singapore was a fishing village when Sir Stamford Raffles acquired it for the East India Company in 1819. Under British rule, it turned quickly to other pursuits and has never been the fishing center that its geographical location might suggest. Even today, as the present government boosts fish processing as a means to cut food imports and to earn export dollars, coastal fisheries are increasingly threatened. The rapid industrialization of land-short Singapore is destroying fish and shrimp ponds, and driving marine life from traditional fishing grounds. In the years ahead, catch from local waters will be severely affected by additional oil refineries, and other industries, at newly filled coastal sites.

#### Commercial Landings

The majority of landings are made by foreign vessels. Over half the landed fish are from West Malaysian waters; fishing in Indonesian waters is still risky for Singaporean and Malaysian boats. The gradually increasing number of Singapore boats reflects government pressure to put locally owned craft under the national flag. Construction of new units for the fleet is insignificant in relation to the total in operation.

#### Catch Utilization

Nearly all the commercial catch, retailing fresh or frozen, is consumed locally. One plant, employing 300 workers, includes such Chinese-type products as shark's fin soup and sauced shrimp in a wide range of canned products for export. Otherwise, fish processing is minor, although a shrimp-freezing operation began in early 1968. The commercial catch landed supplies less than a fifth of all fish eaten. No statistical record of catch by species, or processing by product type, is maintained except in very general terms.

#### Consumption

Annual per-capita fish consumption is high, just over 60 pounds in 1967, about 5 pounds above the 1960-65 average. Besides providing protein to a rice-eating population, fish is acceptable to the various diets of Singapore's multireligious society; it is consumed in

many forms alien to non-Asian tastes. Tuna, however, is not popular, although local waters contain several species.

#### Foreign Trade

In 1967, fish made up 5.6% of the value of all food and live-animal imports. Malaysia was the chief supplier, except for the more exotic items--sea slugs, shark's fins, etc. These are valued as much for their supposedly therapeutic effect as for their taste appeal and, traditionally, come from Mainland China and the Middle East. Imports of U.S. fishery products were practically nil in 1967; exports to the U.S. were limited to shellfish worth US\$90,000.

#### Vessels and Gear

Conversion to powered vessels, mainly the purchase of outboard motors by coastal fishermen, has accelerated slightly in recent years. Construction of modern, long-range units is limited. Coastal fishermen in Singapore, Malaysia, and Indonesia object to trolling as they do to drive-in-net fishing, a Japanese technique. The larger vessels long-line for pelagic fishes, profiting from the Singapore consumer's varied tastes, which include barracuda, horse mackerel, and shark.

#### Employment

Although the latest census showed fishery employment had dropped to 3,700 in 1965, it did not include fish-pond operators fishing carp and other freshwater fish; also, it omitted coastal fishermen using long-lines with fewer than three hooks. It is estimated, therefore, that 4,000 to 4,200 persons regularly gain their living from fishing and fish processing. Fishing enjoys little prestige among the Chinese. The number of Chinese fishermen probably will continue to decrease but there maybe some increase in the processing force, mostly female.

Singapore has a research station, but it still lacks a practical training center like the one at Penang in Malaysia. Greater effort will have to be made if Singapore is to have a corps of efficient fishermen able to use modern techniques to harvest the oceans.



## India

### PLANS TO DEVELOP KERALA STATE FISHERIES

The central government was expected to approve a US\$2.6 million fishing development plan for Kerala State. Ice plants, processing plants, and 18 fish harbors are planned. Thirty-one deep sea trawlers, to fish shrimp, tuna, and perch, are to be purchased over a 2-year period. The development is expected to yield 10,000 metric tons for the domestic market, and an unspecified amount for export. ("Seafood Trade Journal," June 1968.)

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### DEEP-WATER SHRIMP FOUND OFF KERALA COAST

In early 1968, Indo-Norwegian Project (INP) trawlers discovered a bed of deep-water shrimp in 150 to 200 fathoms off Quilon. Processors and exporters are hoping these grounds will provide commercial quantities.



Women and girls packing shrimp at a deep-freeze plant in Cochin.

From 1958 to 1963, the University of Kerala's Oceanography Department surveyed Kerala's Continental Shelf at 150 stations over an area of 4,800 square miles. Large numbers of Penaeopsis philippi and Penaeopsis rectacutus were collected from stations beyond the 100-fathom line. P. philippi was found occupying an almost continuous bed near the 100-fathom line; the maximum intensity was between Cochin and Calicut. P. rectacutus, less abundant than P. philippi, was found in quantity only in the deeper stations.

The University's collections were predominantly Penaeopsis, while INP catches were mostly Parapandalus and Hetrocarpus.

## Need for Future Surveys

Now that INP has found these new commercially exploitable grounds, India should intensify offshore surveys to find the raw materials for an industry that is operating below capacity. ("Seafood Trade Journal.")



## Taiwan

### PUSHES LARGE FLEET BUILDUP

Taiwan is planning a 5-year fishing fleet expansion program to increase annual production from 458 metric tons to about 800,000 tons in 1972. It hopes to build 155,000 gross tons by 1972 for 5.85 billion yuan (US\$146.3 million); 139,000 tons will be for distant-water fisheries. Construction loans will be obtained from the World Bank, domestic banks, the Latin American Fund, Asian Development Bank, and Japan.



A full view of 'Chung Hsin 32,' a steel hull otter trawler of 150-ton class launched in August 1959.

### Foreign Firms Profit

To prevent the outflow of profit to foreign firms now handling the transportation of catches, sales, and ship supplies for local vessels, the government will establish the China Marine Trading Public Corp. to handle these services. The agency will start operating as soon as 30 million yuan (US\$750,000) is available. ("Shin Suisan Shimben Sokuho," Nov. 9, 1968.)





Sardine fleet in Agadir, Morocco.

## AFRICA

### Sudan

#### MOTHER-OF-PEARL INDUSTRY GROWS

An industry initiated with United Nations help has given some Sudanese an alternative to fishing as a source of income. The Mohamed Qol camp in the Donganab Bay area is the center of a mother-of-pearl industry. The camp's inhabitants, the coastal Haden-dowa people, used to depend exclusively on fishing for a livelihood.

#### Supplies Button Factory

The mother-of-pearl shells are the main source of raw material for a button factory at Port Sudan, 100 miles south.

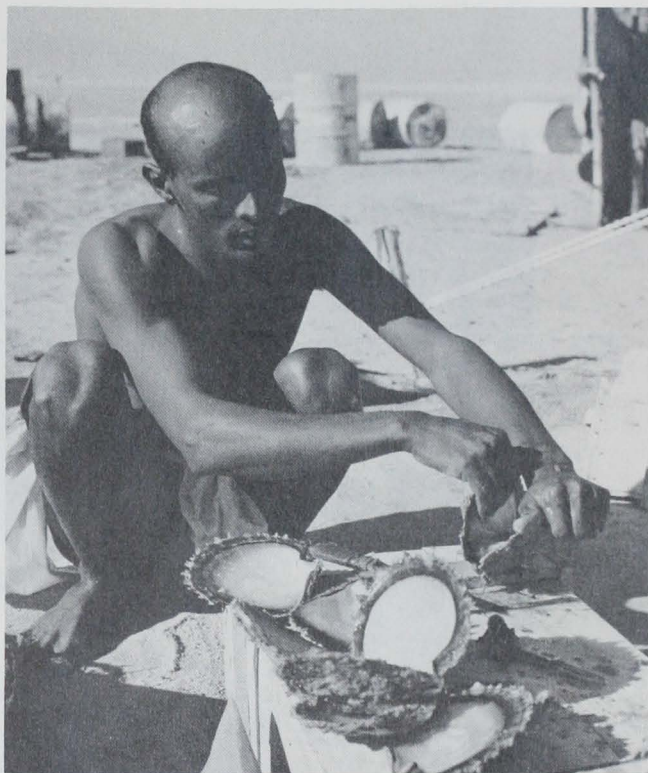


Fig. 1 - Divers in Donganat Bay show mother-of-pearl shells. The 2 shells commercially valuable are the Trochus and Mother-of-Pearl used primarily in manufacturing buttons. With UN help, Sudan is trying to introduce better methods of collecting shells and stricter grading.

Fig. 2 - a & b - At Mohamed Qol camp, a fisherman cleans mother-of-pearl shells he has just brought ashore from the cultivation beds in the Red Sea. With a companion, he builds a mound behind him.





Fig. 3 - Sorting shells at button factory. (UN photos)