

# INTERNATIONAL

## FAO HOLDS CONFERENCE TO SPUR FISHERY INVESTMENTS

World-wide action to stimulate capital investment in the fisheries of developing countries was recommended by FAO's International Conference on Investments in Fisheries, held in Rome, September 18-25. About 150 representatives of government, industry, banks, and universities in 42 countries wound up the 6-day meeting calling for national and regional meetings to secure foreign financing for fishery projects in developing countries.

### FAO Backing

Roy I. Jackson, FAO Assistant Director-General for Fisheries, promised full support. He said: "Where opportunities for promoting foreign-exchange-earning export industries exist, we would seek to interest private foreign investors, bilateral agencies and banks."

### Objectives

Oris V. Wells, FAO Deputy Director-General, stated that in most of the developing countries, for the next decade at least, "the major battle will still be fought on the food front." Despite improvements in the general world food situation, he warned that population increase in the developing world is still between 2.5% and 3% a year.

Wells said that fish can contribute greatly to fulfilling human protein requirements. In many developing countries, it is "the cheapest source of strategic animal protein." In these countries, and in those deriving important foreign-exchange earnings through fish exports, fisheries would be emphasized increasingly in national development programs.

Wells added: "To meet the demand for more fish, for fish of a better quality offered at reasonable prices, investment in fish catching, processing and distribution will have to be expanded. . . . Finance will have to be found for new and improved facilities at sea and on shore, for manpower training, resources, and technological research and development."

Wells expected the conference to go far in identifying investment opportunities and

proposing ways and means of exploiting them. It could evaluate techniques to promote improved investment planning, and ensure that scarce development resources were not squandered.

### Information Problems

The delegates agreed that private, government, and international capital is available for worthwhile fishery projects, but the question is how to bring capital together. They emphasized lack of information on conditions and opportunities for investment.

To bridge the 'information gap,' it was suggested that FAO organize national and regional meetings as a 'brokerage function' to promote development. FAO already assists industry and agriculture through its investment center, the FAO/Industry Cooperative Program and Legislation Branch.

### Clearing House

The delegates also suggested establishment of an 'international clearing house' to pinpoint opportunities and channel investments. Efforts must be made now to collect accurate information on investment opportunities, and scientific data on fishery resources--a prime requisite of good investment planning.

Representatives of international financial institutions stated that private financing was sound business, "not an adventure in altruism." They discussed opportunities for financing by private institutions and joint ventures into fishery enterprises.

### Rising Demand for Fish

The delegates agreed that sound opportunities for investment exist. World fisheries are expanding steadily to meet growing food demands. The need for more animal proteins, especially in developing areas, is growing. Consumption is expected to double in the next 20 years. This will assure producers a reliable market. Developing countries recognize fisheries as a potential new source of export earnings.

### World Fishery Bank Recommended

Creation of a world fishery bank to finance the industry, particularly in developing



countries, was recommended by B. M. O'Kelley, Chairman, Irish Sea Fisheries Board. He said bank should be part of a government-financed international fishery development corporation. It should be treated as an international industry, utilizing a "total industrial approach." The corporation would collect and disseminate marketing and technological information, and promote investments, particularly in less-developed areas. It would consult on investment problems, assist in identifying and promoting investment opportunities, and provide a "forum where investor and promoter could meet."

The suggestion was a fresh approach to "bridging the gap between the capital exporting countries and those less developed areas of the world where the populations live on the verge of starvation," Kelly said. Unlike industry or agriculture, fishing industry usually has trouble getting capital.

#### Other Suggestions

Prof. R. H. Barback of the U.K. said his government intends to increase overseas aid when the balance of payments situation improves. The aid would be given on a multi-lateral rather than a bilateral basis. Canada's L. J. Berube suggested that developing countries establish fishery cooperatives by forming state enterprises and transforming them into cooperatives once the share-owning fishermen acquire majority control.

#### Opportunities in Developing Countries

Several representatives from developing countries cited investment opportunities in their areas. L. Nhwani, a Tanzanian fishery officer, said his country, with a 500-mile coastline on the Indian Ocean, was fishing only one-tenth its potential. R. B. Williamson, chief fisheries officer of Malawi, noted Lake Nyasa's unexploited fisheries.

Mexico's A. Cervantes Delgado pointed out opportunities in Latin America. Fish is rarely eaten in many areas, despite the 'explosive' fishery development in countries like Peru.

Speakers emphasized need for developing marketing and distribution systems. One African speaker said that building a 20-mile road could mean difference between development and continued stagnation.

#### Future Plans

FAO intends to follow up the conference's work. It will hold one conference on the use of marginal fishery resources, like those in the Arabian Sea, and another on fishery education and training.



### HORMONES STIMULATE FISH GROWTH

Fish culturists have found a new answer to sexual sluggishness in fish: treat them with hormones. Hormones are glandular secretions regulating growth, reproduction, and other vital body functions in humans and animals. Introduced artificially, they act like naturally produced hormones. Dr. T. V. R. Pillay, who heads the Fish Culture Section of FAO's Department of Fisheries, says hormones are used to increase carp production in Taiwan, India, and other Asian countries where carp is commonly grown for food.

#### Carp

A tasty, nutritious fresh-water fish, carp comes in several species; some of the best known are the Indian and Chinese. An Indian carp, the Catla, grows to about 6 feet and 140 pounds. Carp is a herbivore, hardy, compatible with other fish, and ideal for pond culture.

#### Spawning

Dr. Pillay points out, however, that Indian and Chinese carp do not spawn in still waters. "They normally spawn only in running water, especially after a heavy rainfall. In countries such as India and Pakistan, . . . the Indian carp will breed in the rising waters of the flooding monsoons. In fact, farmers and fishermen in these countries build special ponds to trap the monsoon waters so as to recreate the conditions under which the fish will spawn."

#### Methods

Seeking an easier method, carp culturists have borrowed from medical knowledge by using hormones, both synthetic and natural, from the carp's pituitary glands.

Dr. Pillay explained: "The hormones are injected with a hypodermic needle into the shoulder or tail region of the fish. Normally,



two or three injections are given, both to male and female members of the species. The hormones stimulate the gland of the fish, inducing sexual maturation and spawning. Before injection, large fish may be treated with a tranquilizer to keep them calm and facilitate handling. The fish are placed in a tank containing water to which a mild tranquilizing chemical has been added. They may be laid in a special cradle to receive the injection.

"Since carp are very prolific--the larger females can lay millions of eggs during each spawning period--it is necessary to breed only a few fish to obtain the necessary number of fry for cultivation. The process is not expensive and adding hormones does not affect the fish's taste in any way."

#### Other Countries

Dr. Pillay says the process has been developed in a number of countries. In Brazil, it was used to breed local species. Fish culturists in Mainland China also are reported using hormones to stimulate reproduction.

Sopromising is the practice that FAO recently sponsored a Regional Seminar on Induced Breeding of Cultivated Fishes. The seminar, held in Calcutta, Cuttack, and Bombay, brought together culturists from 12 Asian and Far Eastern countries. Knowledge of hormone use might help boost fish production in those countries.



### FRENCH TAG TUNA IN EASTERN ATLANTIC

Scientists aboard the French research vessel 'La Pelagia' tagged albacore, *Thunnus alalunga*, between 37° and 51° N. latitude and between the Continental Shelf and 20° W. meridian (off western Portugal, Bay of Biscay, and southwest Ireland), from June 5 to October 30.

#### Plastic and Metal Darts Used

The tags are Floy Tag FT-1 (plastic dart) and WH FM 67 (metal dart). They bear a yellow plastic strip with the words "Institut Pêches Maritimes Paris France-Récompense."

#### Tag Recovery

All recovered tags should be returned to the Institut Scientifique et Technique des Pêches Maritimes, 59 Avenue Raymond Poincaré, Paris 16, France, with the following information: date and place recaptured, type of fishing, size (from end of snout to the caudal fin), and weight, if possible. Fifteen French francs will be paid for all tagged fish recaptured. (FAO, Aug. 1969.)



### 3 NATIONS SURVEY BARENTS SEA

Five research vessels--one British, 2 Norwegian, 2 Soviet--sailed on a joint expedition to the Barents Sea in late August. Their mission was to estimate abundance of the 1969 year-classes of cod, oceanperch, and herring in the Barents and northeastern Norwegian Seas; also, to assess the maximum sustainable yield for 1972-76. An oceanographic survey will be carried out in the southwestern Norwegian Sea.

#### Will Report to ICES

When the surveys have been completed, participating scientists will go to Norway to prepare a report for the International Council for Exploration of the Sea (ICES). (TASS, Aug. 25.)



### JAPAN AND SOUTH KOREA PLAN JOINT VENTURE

The Taiyo Fishing Co. of Japan and the Republic of Korea's government-owned Agriculture-Forestry-Fisheries Development Corporation are planning a joint fishery venture in South Korea. A joint company was scheduled to be established around the end of September. Taiyo will furnish the vessels, and the Development Corporation will construct a large processing plant.

#### Taiyo Trawlers Sought

Reportedly, Taiyo has been asked to provide three 500- to 900-gross-ton bottom trawlers and two 120-ton shrimp trawlers to be manned by South Koreans. They will fish in the Pacific, the North Atlantic, and on shrimp grounds off foreign coasts. ('Minato Shimbun,' Aug. 5.)





## CANADA

### PAIR SEINE NETTING PROVES GREAT SUCCESS

News of 5,000-10,000-pound catches of hake and sole in 1 hour has become commonplace around Prince Edward Island. These astounding results have been achieved by an entirely new technique, 'Canadian pair-seine netting.'

#### Similar to Spanish Pair-Trawling

The technique is similar to the 'pareja' pair trawling commonly used by large Spanish deep-sea trawlers in the north Atlantic. In the Canadian version, 2 110-hp. diesel engine 40-foot lobster boats tow a single net between them. The net is funnel-shaped, somewhat like a regular otter trawl, but with a higher vertical opening. Two winches, one on each boat, haul the net. The skippers, coordinating operations by radiotelephone, can make as many as 8 tows a day.

#### Inexpensive Conversion

Small-boat fishermen will find two great advantages in the new technique: the machinery and gear needed for vessel commission are relatively inexpensive, and the power

requirements are low compared to those of regular draggers. It also will enable lobstermen to use their boats during the many off-season months. Other low-powered inshore vessels also can use the techniques.

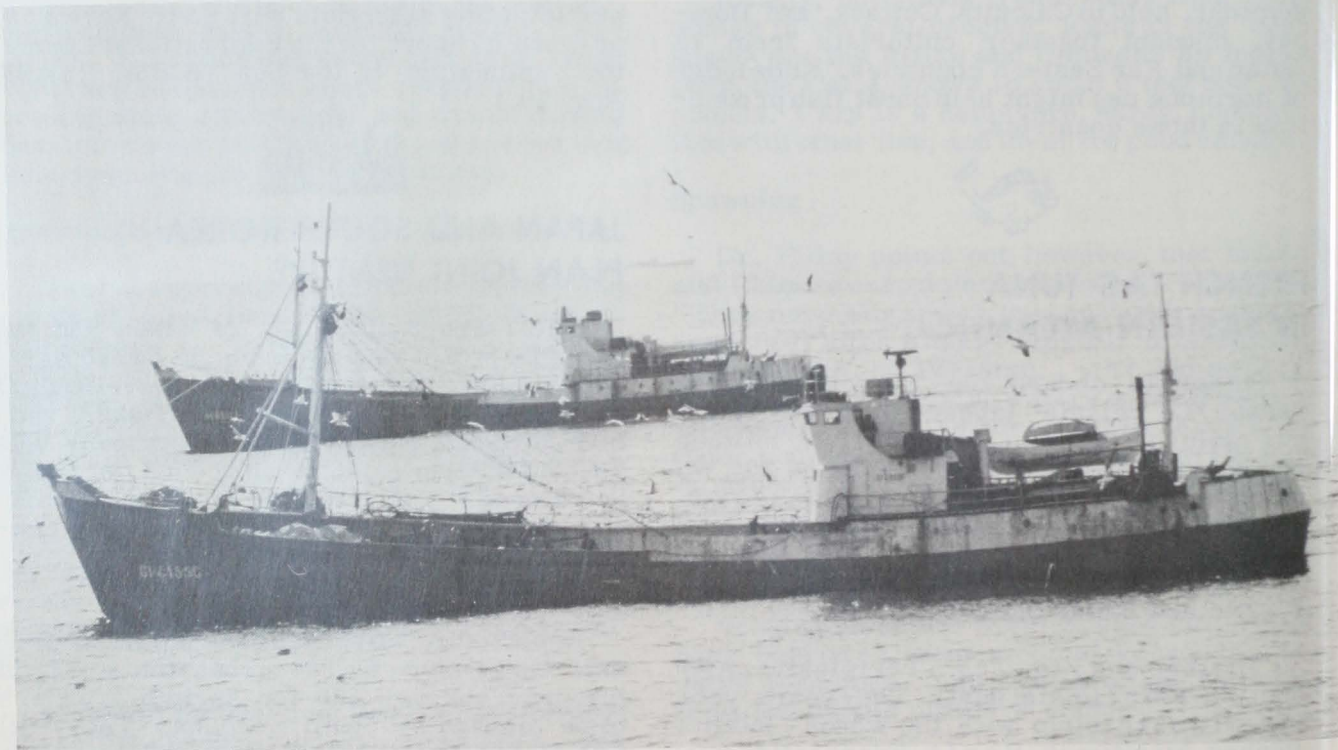
A full report, including machinery and gear specifications, and a description of the fishing method with diagrams, photographs, and catch records should be available shortly. (Dept. of Fisheries and Forestry, Sept. 12.)

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### FISHERIES MINISTER PROPOSES STRICTER SALMON LICENSING IN BRITISH COLUMBIA

The first phase of a scheme to limit salmon licenses in British Columbia (B.C.) became effective Sept. 6, 1968. It was intended to increase the earning power of salmon fishermen and permit better resource management.

Regulations expected to reduce fleet size and production costs divided B.C. salmon vessels into 3 categories: 'A' for those producing annually over 10,000 pounds, or a



Spanish pareja trawlers harvesting large codfish on easterly side of Georges Bank, Feb. 27, 1968.



## CANADA (Contd.):

landed value of C\$1,250; 'B,' producing less than 10,000 pounds; and 'C,' mostly for trawlers and crab boats not normally geared to fish salmon.

## Fleet Size Cut

By June 15, 1969, the regulations had served to cut the fleet from 7,548 licensed in 1968 to 6,977--5,844 in category 'A,' 1,003 in 'B,' and 100 in 'C'. Net worth of the fleet in 1968 had been \$87 million; though smaller in 1969, its value had risen to \$95.6 million.

## Other Phase I Changes

Under Phase I, the fleet added 255 newly built boats (already under construction on Sept. 6, 1968); 160 vessels that would have been 'A' did not renew their licenses; 70 'A' vessels were retired and replaced with new ones, and replacements were approved for 45 lost at sea.

## Proposed Phase II Regulations

On Sept. 3, 1969, the Minister of Fisheries and Forestry, Jack Davis, proposed new regulations for Phase II. Under these, B.C. salmon fishermen would be hard pushed to keep their vessels in category 'A,' license fees would be higher, and a percentage of the landed catch value would be collected for predator control.

## Phase II Proposals

- 1) To retain an 'A' license, vessel production must be equivalent to \$20,000 for 4 consecutive years (\$5,000 yearly average).
- 2) After 1971, if average annual production for any 4-year period falls below \$5,000, the vessels drops into category 'B'. It will be frozen in 'B'. (Even if production improves, it will not be allowed to return to 'A'.)
- 3) An 'A' vessel must be retired before a new one can be built.
- 4) Any new vessel introduced into the fishery must assume an 'A' production.
- 5) Any vessel not reporting landings for 2 consecutive years will not be licensed in any category.

## Fishermen Informed in Advance

When Phase I was announced, the initial cut-off was based on production prior to Sept. 6, 1968. Under Phase II, fishermen would be informed in advance how much production would be required to maintain 'A' license.

## New License Fees

Under Phase I, the minimum license fee was \$20: \$10 for commercial fishing vessel registration, \$5 for salmon fishing validation, and \$5 for personal fishing license.

Under Phase II, the minimum would be \$25: \$10 for vessel registration and \$15 for salmon. Beginning in 1970, 1% of the landed catch value would be collected for use in controlling such predators as dogfish. This collection will increase by 1% of landed value in each of following 4 years, up to a maximum of 5%.

## Further Fleet Reduction Expected

The Minister said he expected the new proposals to knock about 50% of the present 'A' vessels down to 'B' and leave about 2,000-2,500 in 'A'. This class produces well over 80% of total salmon landings. (Dept. of Fisheries & Forestry, Sept. 3; CFR, Feb. & Mar. 1969.)

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NEWFOUNDLAND LANDINGS  
IN FIRST-HALF 1969

Total Newfoundland landings for first-half 1969 were 499 million pounds, substantially more than the 456 million landed in same period 1968. However, a comparison of data for the first 2 quarters 1969 reveals that increases in first quarter were significantly high than in second.

## Lobsters and Cod Decrease

While landings of many fish increased, landings of cod, the major Newfoundland species, dropped markedly. The lobster harvest also decreased. Closing Placentia Bay for several weeks during the second quarter, because of pollution, probably caused these decreases. Greenland turbot landings also decreased despite the new sales campaign launched in the U.S. The capelin decrease probably was due to reduced demand.

## Increased Species

Increased landings of 5 species that did not warrant mention in 1968--lumpfish, mackerel, trout, mussels, and scallops--prove Newfoundland fishermen are willing to fish for previously unexploited species. Crab landings increased sharply, probably because of the new crab-processing facilities at the Bonavista Cold Storage Company. (U.S. Consul, St. John's, July 30.)

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## CANADA (Contd.):

GOVERNMENT BUYS SALT COD  
FOR FOREIGN RELIEF

The government was slated to buy a million pounds of salted cod, worth about C\$365,000, from east coast suppliers for Canada's food relief program in developing countries.

This purchase would clear remaining 1968 stocks, and even take part of this season's production. Suppliers were to deliver the fish to Montreal between the 8th and 14th of October.

## Salt Cod Highly Valued

Relief organizations consider dried salted fish a prime food because of its high protein value. Canada has provided substantial quantities in the past 2 years and may provide more later this year. (Dept. of Fisheries & Forestry, Oct. 8.)

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CONFERENCE ON AUTOMATION &  
MECHANIZATION SLATED

In a rapidly changing fishing industry, the introduction of ultrasophisticated catching and processing equipment, and the advanced operating and maintenance skill such equipment demands, raise many problems. These problems will be studied at a Conference on Automation and Mechanization in the Fishing Industry (CAMFI) in Montreal, Feb. 3-6, 1970.

## Main Objectives

The structure of Canada's fishing industry is undergoing drastic changes in response to increasing competition from other fishing nations, and the problems of growing capital investment and productions costs. The main objective of the conference is to show how to meet these challenges and to improve pay and working conditions.

## To Aid Industry Modernization

Participants who can contribute to modernization of the industry will represent government, industry, science, engineering, and business. More than 40 will present papers on the application of automation and mechanization and on related subjects, such as new management techniques. They also will discuss the automated and mechanized equipment, the present new processes and production techniques, or those that will become operational within the next 5 years.

The conference has been planned to benefit the fishing industry, fishing-vessel builders, and producers of the machinery, systems, and equipment required on vessels and in shore-based plants. (CAMFI, Aug. 7.)

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## OCTOBER WAS FISH PROMOTION MONTH

October was National Fish 'n' Seafood Month in Canada. Due to heavy summer fishing, fishery product inventories usually peak in October, making it an opportune time for a promotional campaign.

As its contribution, the Department of Fisheries and Forestry distributed recipe-photo releases to newspaper editors and food publicists. A 4-minute sound-track, color film, 'Take a Pack of Frozen Fillets,' was sent to the television stations; a new recipe booklet, with the same title, was released nationally. Special short scripts were provided for radio food commentators.

## Home Economists Helped

The Department's home economists, who constantly test and develop fish recipes, supplied a number of newly tested, quantity recipes to restaurants and institutions. They appeared on radio and TV throughout the country to demonstrate fish preparation. They assisted in local fishing industry-sponsored activities. (Dept. of Fisheries and Forestry, Ottawa, Sept. 8.)





# EUROPE

## USSR

### PROPOSES DAM TO PROTECT AZOV SEA

The Azov Fisheries Research Institute (AZNIRKH) has proposed damming the Kerch Strait to protect and conserve the rich fishery resources in the Azov Sea. The Strait, 25 miles long and 2-9 miles wide, connects the Azov and the Black Seas. It will take 5-6 years to complete the project at a cost of 150 million rubles (US\$165 million).

### Increasing Salinity Threatens Fish

The future of the Azov fisheries is in jeopardy, according to AZNIRKH scientists. They fear that about half the freshwater runoff from rivers flowing into the Azov will be diverted for agricultural and industrial use by 1980. A diversion of this magnitude would increase salinity up to 16-18 grams of salts in each kilogram of water, a concentration too great for sturgeon, pike-perch, Azov roach and bream to withstand. Their foraging grounds would be reduced to a small area in Taganrog Bay, at the mouth of the Don River, forcing them to migrate to the Black Sea. The projected dam, regulating the influx of Black Sea water, would control salinity and conserve these commercially valuable species.

### Value of Fishery

In 1968, the commercial yield of pike-perch and bream, spawning naturally in the Don flood plains (50 days in spring), amounted to 30,000 metric tons; the commercial yield of all fish-culture enterprises around the Azov was only 3,000 tons. The scientists claim that the Azov's high productivity can be maintained only if the Don spawning grounds remain intact, and the Azov foraging grounds are preserved.

### Dam Specifications

AZNIRKH has proposed a dike encompassing a 440-meter spillway dam with 22 metal-gated openings, ensuring a water flow of 10,000 cubic meters a second. A lock 260 meters long and 38 meters wide would be provided for ship passage.

### Other Problems

The AZNIRKH scientists warn that damming the Kerch Strait will solve only part of the problem of decreasing freshwater runoff.

An unanswered question is how to supply the slats and other chemicals needed for evolution of feed organisms and fish reproduction. ('Vodnyi Transport,' Sept. 2.)

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### DEEP-WATER TRAWLING TAKES ANTARCTIC COD

The USSR has begun commercial exploitation of "Notothenia", a species of cod found only in Antarctic waters. Unable to survive temperatures above 6° C. (42.8° F.), it lives at a depth of 300 meters (984 ft.). Its average length is 60-80 centimeters (23-31 in.). Notothenia flesh is delicate and tasty.

### New Freezer-Trawler Used

The fishery is conducted by the Northern Fisheries Administration's Murmansk trawler fleet. A recent arrival, the processing trawler 'Skazochnik Andersen' has been averaging 10-20 metric tons per haul. ('Vodnyi Transport,' Aug. 21.)

The Danish-built 'Skazochnik Andersen' is a 'Skryplev'-class vessel of about 4,700 gross tons. This class combines processing freezers and stern trawlers.

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### VESSEL SEEKS SHRIMP OFF AFRICA

Anticipating a shrimp expedition scheduled to leave the Baltic port of Klajpeda on September 12, the medium trawler 'Skakhtersk' (Western Fisheries Administration) has been scouting commercial shrimp concentrations "off the coast of Africa" (presumably Mauritania, Senegal, and Guinea).

### Using Echo Sounder

The vessel is equipped with an 'Omar' echo sounder, the first time Omar has been used to locate shrimp concentrations. Operating at high frequency, Omar can reveal fish concentrations down to 200 meters (650 ft.); operating at low frequency, to 400 meters (1,300 ft.). Working frequencies are 150 and 25.5 kilocycles a second. Skakhtersk also carries a new echo sounder, 'Zvuk-100M.' ('Vodnyi Transport,' (Aug. 23, 1969, and 'Sudostroenie,' No. 9, 1967.)



## USSR (Contd.):

In the past, Soviet shrimp catches from West African waters have been exported to the U.S. via the Canary Islands.

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## CARP AND PIKE BRED IN RESERVOIRS SUPPLIED WITH THERMAL WATER

A reservoir near Moscow is being supplied warm water by an electric power station. Fish raised in the reservoir have yielded 380 metric tons per hectare (2.47 acres), 600 times the yield of conventional fish-culture ponds. Their breeding areas were staked out with metal or synthetic fiber nets.

## Allows High Growth Rate

The warm water prevents the reservoir from freezing over, even during the most severe winter. Roes of carp, pike, and other fresh-water fish can be started in special incubators in early spring. During the winter, 'insignificant' amounts of phytoplankton and other feed cause carp yearlings to grow 10%. ('Ekonomicheskaja Gazeta,' No. 34, Aug. 1969.)

No time period for measuring growth rate was given. Such growth would be remarkable in winter, when carp and other fresh-water fish either grow very little or not at all.

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## ARTIFICIAL CULTURE OF SEA CUCUMBERS &amp; SCALLOPS BEGINS

Artificial culture of sea cucumbers in the Bay of Peter the Great, off Vladivostok, has been slated by the Soviet Pacific Research Institute for Fisheries and Oceanography. The Institute also plans to expand artificial culture of scallops in the same area. ('Vodnyi Transport,' Aug. 19.)

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## BATHYSCAPHE USED TO STUDY BEHAVIOR OF FISH IN TRAWL NETS

Soviet researchers studied the behavior of fish (horse mackerel and sardinella) in trawl nets in the Gulf of Mexico, January-April 1968. The 'Muksun' towed a bathyscaphe

(Atlant-1) at 30-60 meters (98-197 feet) during daylight hours. No artificial light was used.

Fish were observed schooling ahead of the trawl opening. Some entered the net; some moved away in the direction of the trawl faster than trawl speed, 2.06-2.21 meters per second--at a rate of about 20 fish per cubic meter in area of trawl square. Fish inside the bag escaped the net at a rate of 40-50 per cubic meter. Entry into and exit from the trawl net were orderly while the trawl was open. Fish caught inside the trawl as it closed tried to escape through the meshes.

## Factors Affecting Fish Behavior

Both visual and nonvisual stimuli appear to govern fish behavior near trawl nets. In turbid waters, or at night, the lateral line (a sensing organ) appears to control the fish's behavior, although luminescent organisms may reveal the nets.

Trawls with 150-millimeter and 100-millimeter wing meshes yielded almost identical catches. ('Rybnoe Khoziaistvo,' No. 7.)

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## FINDS JAPANESE ACOUSTICAL DEVICES UNSATISFACTORY

The Far-Eastern Fisheries Administration bought 21 acoustical gear-monitoring and fish-locating devices from Japan in 1968. Some of these had been made by Furuno. The devices, installed on the BMRTs 'Samarga,' 'Chernopiatko,' 'F. Krainov,' 'Tret'iskova,' 'Kazakhstan,' and 'Taishet,' were used in midwater trawling for Pacific hake.

## E. German Devices Better

Soviet experts claim the Japanese devices compare unfavorably with similar East German devices. They suggest that the latter be used on new Soviet fishing vessels. ('Rybnoe Khoziaistvo,' No. 7, 1969.)

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## PURSE SEINING WITH ELECTRIC LIGHTS MAY BE DEVELOPED

A recent article in the official organ of the Fisheries Ministry indicates that the Soviets may be developing large-scale Pacific her-ring purse seining with electric lights.



## USSR (Contd.):

Little is known about herring behavior under electric light, but experience seems to indicate that the species reacts positively. One Soviet purse seiner, on a fishing trip off Magadan (Okhotsk Sea), caught 10 metric tons in 1 haul using electric lights. ('Rybnoe Khoziaistvo,' No. 5, 1969.)

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FISHERIES MINISTER PROMOTES  
'MINCED FISH'

At a luncheon in Moscow, Fisheries Minister Ishkov and VNIRO Deputy Director Moiseev predicted a 100,000-150,000 metric ton annual minced-fish production in the 'immediate future.' Guests were served 26 different dishes prepared from minced fish.

## Processed At Sea

Prepared from cod, hake, pollock, and snapper, the minced fish is wrapped in plastic bags and frozen at sea. It maintains a 'fresh fish' quality for 6-8 months. Since the average trip for a Soviet fishing vessel from port to fishing grounds is about 4,000 miles, most catches are processed at sea. Introduction of this new minced fish product could increase tremendously the output of edible fishery products. ('Vodnyi Transport,' Aug. 8.)



## DENMARK

FIRST-HALF 1969 LANDINGS  
DROP BELOW 1968 RECORD PERIOD

Danish landings during the first 6 months of 1969 were running about 18% behind the record 1968 production.

Landings for fish meal and oil were down 24% due to poor weather early in the year. About 80% of the landings are used for meal. The fishery began in early January last year; this year's did not really begin until April. The season has not been as good and, even if the remainder of the year should be unusually good, the loss can not be made up. The drop in catch has caused a marked drop in production. Exports of fish meal amounted to 62,434 metric tons in first six months of 1969 (75,025 tons in first-half 1968).

## Cod

Cod, the principal species used in export fish blocks, was about 9% below 1968. Danish exporters again have entered the U.S. market in great volume. Exports had dropped last year because of a U.S. price drop. Prices again are near former levels; about half the cod fillet production probably will be marketed in the U.S. Danish exporters are optimistic, U.S. consumption appears to be increasing, and there is some evidence of a decline in the Northwest Atlantic cod fisheries.

Landings of Principal Species--Jan.-June 1968-1969			
	January-June		Calendar Year 1968
	1969	1968	
	..... (Metric Tons) .....		
Plaice . . . . .	21,956	20,492	50,242
Cod . . . . .	59,087	64,914	107,390
Haddock . . . . .	2,911	2,732	5,789
Herring for consumption . . . . .	25,371	19,924	49,259
Salmon . . . . .	747	849	2,089
Norwegian lobster . . . . .	377	504	1,737
Deepwater shrimp . . . . .	2,406	3,215	5,175
Other foodfish . . . . .	22,752	23,532	61,058
Industrial fish . . . . .	410,664	533,392	1,159,000
Total . . . . .	546,271	669,554	1,441,739

## Other Species

While cod fillets have been Denmark's principal export to the U.S., exporters are succeeding in marketing more plaice fillets. Denmark has large supplies of these and now is less able to market them effectively in England. Plaice landings increased by 7% this year. Landings of Norwegian lobster and shrimp, items in great demand in Europe, decreased during first-half 1969.

In all probability, the catch will continue to run below last year's, when weather permitted the greatest number of fishing days ever experienced. Should prices for cod fillets continue near present levels, or increase by a cent or two as some exporters anticipate, the added incentive would attract greater effort to the fishery. This would cause the catches to rise and more cod to be diverted from other uses. (U.S. Embassy, Copenhagen, Sept. 12.)

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## FAROESE CATCH DECLINES FURTHER

The 1968 Faroese catch declined more than 7,000 metric tons (4.41%) from previous years. The catches have declined steadily since 1962--to date, a total loss of 35,000 metric tons.



## DENMARK (Contd.):

Both Greenlandic and Faroese waters yielded considerably poorer catches than before. The decrease was noted especially in the line-and-trawl fishery--although there was a 50% increase at one point in spring due to favorable weather and more vessels fishing.

## Demersal Catch

Icelandic fishing areas no longer influence the demersal catch: only 5% of the demersal catch was taken off Iceland; the largest catches were made off Greenland. In 1968, demersal catch was 47.8% of the total; it had been 62% in 1967. The Newfoundland bank fishery has shown little growth since 1968, barely over 1,000 metric tons.

## Herring Fishery

The herring fishery failed completely for gillnetters; power bloc trawlers were more successful. But total catch was still less than in 1967. The fishery failed entirely in home waters; catch declined 13,000 metric tons. No herring were caught off Iceland.

Trawler landings of fresh fish in Denmark more than doubled--15,392 metric tons compared to 6,318 in 1967. Foreign-vessel landings increased slightly.

## Utilization &amp; Production

As in previous years, only a small part of the catch was canned. Fish meal production rose slightly. Dried-cod production rose more than 1,000 metric tons. Spiced-herring production was the smallest in 16 years. Herring-oil production rose to more than 4,000 metric tons. ('Børsen', July 24.)

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## HIGH-SEAS SALMON FISHING INCREASES

About 30 Danish vessels caught around 350 metric tons of salmon off the coast of Norway from April to June (25 vessels and 140 tons for same period 1968). About 100 Norwegian vessels took part this year, catching about 400 tons (100 tons in 1968).

## The Greenland Salmon Fishery

Last year, early reports had indicated that 20 vessels were going to fish salmon

off Greenland; only about 9 actually went. Preliminary reports have indicated that more will try this year. Industry sources reported as many as 30 cutters being readied. Some are new and larger refrigerated vessels. The season is expected to continue into early December.

Encouraged by recent high-seas fishing successes, one vessel operator was planning to visit Japan in September. He hoped to learn more about methods of fishing tuna, swordfish, and porbeagle, with an eye to fishing off the Canary Islands. To enter this fishery, Danish fishermen would have to go only one-fourth the distance they cover going to Greenland. Should this materialize, it would take some pressure off the salmon. (U.S. Embassy, Copenhagen, Sept. 12.)

\* \* \*

## MINIMUM PRICES TO BE ESTABLISHED

In answer to a long-standing demand, Denmark passed a law in June 1969 establishing a system to fix minimum prices for first-hand sales of unprocessed fish landed in Danish ports. These minimums are to be established for cod, plaice, mackerel, and herring.

## Industry &amp; Government Unable to Agree

The Fisheries Minister, after negotiating with a committee of industry representatives, will determine minimum prices of fish for human consumption and fish for meal and oil. The committee, established August 11, has not been able to reach agreement. The system meets the wishes of most fishermen, who have run a system of their own for the last 2 years; but it fails to meet demands of many others, particularly from Esbjerg, for direct subsidies. The Minister, supported by 2 fishermen's unions, has resisted such demands.

## Fishermen Dissatisfied

The fishermen are dissatisfied with the existing situation because expenditures for gear and equipment have been unusually heavy, catches have been down, and prices have been disappointing. (U.S. Embassy, Copenhagen, Sept.)





## NORWAY

### BRISLING CATCH IS SMALLER THAN EXPECTED

The good brisling season expected this year did not materialize. When fishing started on May 22 catches were reasonably good in the northern areas. In the southern areas that normally provide the bulk of the catch, the yield was disappointing. Things may have improved when areas where brisling had not yet met the required specifications were opened to fishing.

### Pack and Stocks

Up until June, all the packers' raw material demands had been met--both the direct processing, and for deep-freezing in shore-based plants and on freezing vessels. By mid-June, brisling receipts had yielded about 160,000 cases. Total pack--brisling and sardines--was slightly in excess of same period 1968, but stocks were about 15% short.

	1967	1968	1969
	. . . . Cases (100 $\frac{1}{4}$ cans) . . . .		
Brisling . . . . .	186,000	176,000	138,000
Sild . . . . .	410,000	485,000	419,000
Kippers . . . . .	122,000	108,000	111,000
Soft herring roes . . . . .	42,000	30,000	17,000

### Summer Herring

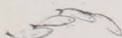
The fleet was prepared for the summer herring expected in waters near Bear's Island. A modest 15,000 barrels a few years ago, this year's target had been boosted to around 200,000 barrels in response to industry's demand for raw material to process into gafflebiter and similar products. Fishing was scheduled to start July 1, 10 days earlier than in 1968. (Norwegian 'Canners Export Journal,' July 1969.)



## ICELAND

### INCREASES SALMON HATCHERY

Salmon breeding is to be stepped up in Iceland's 10 fish hatcheries. During 1969, about 200,000 fry will be planted in the rivers and lakes. Obstacles have been cleared from some to make them more accessible for spawning. ('Atlantic and Iceland Review,' No. 2, 1969.)



## FRANCE

### FISHING FLEET DWINDLES

The French fishing industry is in trouble. Landings in 1968 were down 2% from 1967. Finfish fell 7%, and cod 11%. Wholesale turnover declined 0.2%.

### Tonnage Decreases

During 1968, 98 fishing craft were laid up. This meant active vessel tonnage dropped 22,000 tons, about 10%. Under France's Fifth Plan, new vessels were to be added to the fleet at a rate of about 20,000 tons a year. But new vessels aggregated only 11,400 tons in 1967--and a mere 3,800 tons in 1968.

### Exports Shrink, Deficit Rises

The negative balance of trade in fish and fish products has persisted. In 1968, imports increased 16% while exports decreased 11%. Only 13% of running costs were covered. The industry's deficit was about US\$127 million, 5 times more than a decade ago. ('Fishing News,' London, June 13.)

\* \* \*

### SUBSIDIES GRANTED TO DRIED COD INDUSTRY

The government has granted a US\$280,000 subsidy to FOMOR, the organization responsible for cod exports. FOMOR claims the subsidy is necessary because of cod stocks accumulated in the drying plants during 1968.

The accumulation, resulting from a drop in market prices, amounted to about 13,000 metric tons on December 15, 1968. It increased shortly afterwards, when 31 distant-water trawlers landed another 15,000 tons.

### Subsidizes Export Drive

The subsidy is to help FOMOR make a real drive for increased exports at a time when neither trawler owners nor fish dryers can finance it. Already, they are unable to maintain the existing export level without government help because foreign competition is quoting lower prices on the world market. ('World Fishing,' London, July 1.)





## UNITED KINGDOM

### DOGFIISH IS BECOMING POPULAR

Some fishermen and biologists are losing their dislike of the small sharks known in Britain as "rock hounds." It seems that dogfish can fetch fairly high market prices. Early this year, at Billingsgate, small skinned dogfish brought 21-26 U.S. cents a pound, while the larger ones sold at 26-29 cents.

#### Increasing Rates

British dogfish catches have increased steadily since 1960. Scottish 1966 landings were almost 5,000 long tons, compared to a mere 1,000 tons in 1954. Dogfish catches in England and Wales also have increased; their combined landings will top 6,000 tons. This means that U.K. fishermen catch over 24 million pounds a year.

#### May Need Conservation

Despite good demand for these "mini-sharks," fishery experts are concerned about declining stocks. It is believed that British catches have reached their peak, and the introduction of conservation measures has been suggested. This would be strongly challenged by many fishermen. If dogfish becomes more popular in many markets, its value will increase.

#### Popular in Europe

Fish-and-chip shops absorb large quantities. European fishmongers sell substantial quantities of dogfish steaks. Some Norwegian, German, and French connoisseurs consider it a table delicacy.

There are 4 species of dogfish in British waters; one is very rare. The spurdog, or piked dogfish, and the lesser spotted dogfish are the most common. These are the ones usually found in deep-sea trawling nets. ('Fish Trades Gazette,' May 31.)

\* \* \*

## WHITE FISH AUTHORITY RAISES INTEREST RATE

The White Fish Authority has announced rates of interest on loans made after August 23.

Loans for fishing vessels, new engines, nets and gear:

Less than 5 years-- $10\frac{3}{8}\%$  ( $\frac{1}{4}\%$  increase).

More than 5 but less than 10 years-- $9\frac{5}{8}\%$  ( $\frac{1}{8}\%$  increase).

More than 10 years but less than 15 years-- $9\frac{3}{8}\%$  (no change).

More than 15 but less than 20 years-- $9\frac{3}{4}\%$  ( $\frac{1}{8}\%$  increase).

Loans for processing plants:

Less than 5 years--11% ( $\frac{1}{8}\%$  increase).

More than 5 years but less than 20 years-- $10\frac{3}{4}\%$  (no change).

The rates on loans made before August 23 are unchanged. ('Fish Trades Gazette,' Sept. 6.)



## GREECE

### FOREIGN TRADE TRENDS

In 1968, Greece imported 31,702 metric tons of fishery products worth US\$12.9 million. In 1967, she had imported 28,962 tons worth US\$11.5 million.

Fishery exports in 1968 dropped from 1967; however, 1968 export value was slightly greater because of higher prices for fresh and frozen fish. ('Alieia,' July 1969.)





# LATIN AMERICA

## MEXICO

### FISHERIES DECLINED IN FIRST-HALF 1969

Mexico's fisheries declined 1.4% in first-half 1969 from first-half 1968. Oyster production increased markedly (47.4%), sardines 56.4%, and fish meal 58%, but shrimp was off 14.8% and anchovy 86.9%.

Fish Production, Jan.-June 1967-69			
Species	1969 <sup>1/</sup>	1968	1967
. . . . . (Metric Tons) . . . . .			
Shrimp . . . . .	12,478	14,643	16,164
Oysters . . . . .	17,718	12,018	10,316
Sardines . . . . .	22,063	14,107	14,709
Anchovy . . . . .	1,488	11,325	10,000
Mackerel . . . . .	4,531	4,259	3,692
Grouper . . . . .	2,854	2,136	1,812
Abalone . . . . .	1,154	1,463	1,003
Lobster, spiny . . . . .	590	485	766
Other . . . . .	34,830	42,427	33,395
<b>Industrial Products:</b>			
Kelp . . . . .	15,337	14,381	10,001
Fish Meal . . . . .	8,517	5,390	5,035
Other . . . . .	2,102	2,814	2,533
Total . . . . .	123,662	125,448	109,426

<sup>1/</sup>Preliminary figures.

Shrimp exports (principally to the U.S.) were valued at 227 million pesos (US\$18.16 million), down 12.4% from 1968. Shrimp dropped to 9th place in export value--after cotton, sugar, corn, coffee, tomatoes, petroleum products, fruits, and sulphur. Only continued high prices kept shrimp from falling even lower.

### Record May Improve

Since the Gulf Coast's best production months were still ahead, this downward trend in production and exports may still reverse. (Regional Fisheries Attaché, U.S. Embassy, Mexico, Sept. 13.)

\* \* \*

### DECLINE EXPECTED IN WEST COAST SHRIMP FISHERY

The 1969/70 west coast shrimp season opened September 15. Both industry and government are pessimistic, expecting a continuation of last season's diminished catch. Measured by exports, the 1968/69 catch dropped 35%; it is not expected to recoup this season.

### Reasons for Decline

Various reasons are given for the decline: unfavorable climatic and oceanographic conditions, aging vessels, and poor management. A further decline will be hard on an industry that needs new vessels and must finance them with earnings from shrimp sales.

Industry representatives now seeking foreign capital for new shrimp trawlers may be successful. (U.S. Embassy, Mexico, Aug. 15.)

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### SHRIMP RESEARCH CONDUCTED ON WEST COAST

The Directorate General of Fisheries, in cooperation with the fishing industry, has begun intensive shrimp resource studies on Mexico's west coast. Eight shrimp vessels have been provided by shrimp cooperatives, and 2 by private owners. A systematic plan of studies, designed by the Mexican National Institute for Research in Fisheries Biology, began on July 17.

### The Operation

An area from Rio Colorado to Teacapan, south of Mazatlan, has been divided by a line at Rio Mayo. Two boats in the northern half and 2 in the southern are fishing about parallel to the coast, sampling the stocks at 4 depths. Two other boats are working intensively in each of 3 specially selected limited areas. The vessels use normal fishing gear and each carries a biologist and a fishery technician.

### Special Work Done

The coastal research will be supplemented by special work, including shrimp marking, in the areas' estuaries and lagoons. Oceanographic observations from two fishery inspection vessels should further supplement the work. The total effort is expected to add considerably to the knowledge of the distribution, identity, composition, and dynamics of the shrimp stocks--and of certain valuable finfish stocks.



## MEXICO (Contd.):

## Research Goals

The cooperatives and boat owners are meeting all vessel operating costs and part of the research costs. The research may help government and industry to understand better the west coast shrimp and fish resources, and lead to increased and more-stable production (U.S. Embassy, Mexico, Sept. 3.)

\* \* \*

SHRIMP VESSELS TO GET  
NEW REFRIGERATION PLANTS IN U.K.

Over 100 Mexican shrimp vessels are to get new refrigeration plants. The plants, to be installed in Great Britain, will cost US\$4.8 million.

The new plants will ease distant-water operations, better shrimp quality, and improve catch preservation during long trips. The catch will be cooled in 2 seawater tanks, and then stored in cold-storage rooms at 0° C. (32° F.) ('Børsen,' June 18.)

\* \* \*

FISH MEAL PLANT AND SARDINE  
CANNERY ARE BUILT IN GUAYMAS

Construction of a fish meal plant and a sardine cannery has begun in Guaymas, Sonora.

The fish meal plant, Industrializadora de Productos Marinos, S.A., will be Mexico's largest. It will have an hourly capacity of 18 metric tons of raw fish, or a potential daily output of 70-80 tons of fish meal. Equipped with rebuilt U.S. machinery and designed with U.S. advice, the new plant should be completed by the end of the year. Intended to exploit the Gulf of California sardine and anchovy resources, it should substantially reduce Mexican fish meal imports (51,683 tons in 1967).

## The Cannery

The cannery, Empacadora del Pacifico, S.A., will have a daily capacity of 30 to 40 tons of raw fish. Although primarily for sardines--tuna and shrimp may be included when appropriate. Substantial amounts of sardines have been caught around Guaymas.

They have been headed and gutted locally, and shipped, fresh in ice, to be canned in Ensenada. The new cannery should eliminate most, if not all, of this long, expensive routing.

## Private Operators

The two plants, financed entirely by private Mexican capital, not by Banco Nacional de Fomento Cooperativa (BANFOCO). BANFOCO acquired most of the fish-processing plants on Mexico's West Coast in 1967.

The plants will employ more than 300 persons. Refrigeration and storage facilities will be expanded to accommodate the new plants.

## Shrimp Port Diversified

Guaymas fishing circles hope that the diversification in this nearly exclusive shrimp port will help to offset bad shrimp seasons like the one in 1968/69. (U.S. Embassy, Mexico, Sept. 13.)

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## VERACRUZ FISHERIES

In first-half 1969, Veracruz landings rose 6% in quantity and 22% in value over same period 1968.

The new director of the Centro Nacional de Ciencias y Tecnologías Marinas (Veracruz Marine Science and Technology Center), a Japanese-Mexican marine biologist, Dr. Luis Kazuga, has announced an ambitious program to improve the fishing industry. Mexican fishing interests in Veracruz are conducting considerable fishery experimentation and instituting technical improvements in hopes of increasing operational efficiency and production. Japan is furnishing much technical assistance, and Spain is cooperating.

## Net Installations Studied

For several months, Japanese specialists have been offering instruction in modern fishing techniques to local fishermen and to those from the Puerto Piloto Pesquero (PPP) in Alvarado. One of their projects is a feasibility study of permanent net installations along the coast. Before placing the nets, the Japanese will assist local fishermen in studies of the area's currents and marine life.



## MEXICO (Contd.):

The first experiment, with a Japanese-built stationary net, produced promising results in late March. Placed about 2 or 3 kilometers off the coast of Mocambo during the spring mackerel run, it produced a catch worth US\$40,000. A larger net, valued at \$60,000, installed at the same location on July 1, caught 2 tons of fish worth \$480 on the first day. Plans to instal other nets have been postponed until the Japanese can study the technique's effectiveness.

## 'Bacalao' Cod Fishery

Between November 1968 and April 1969, Mexican and Spanish fishermen caught 80 tons of cod in the northwest Atlantic. Under a Spanish-Mexican agreement, the Mexicans are to take over operation of the Spanish-built boats as soon as the Mexicans have acquired sufficient capability.

The cod were landed in Coatzacoalcos and shipped to Alvarado for initial processing. The fish were then taken in refrigerated trucks to Mexico City to be made into bacalao (salt-cod) by Empresa Bacaladera Mexicana S.A. de C.V. The company has established operations in Coatzacoalcos partly because of high labor costs in Veracruz, and partly because the port of Veracruz lacks the facilities to load fish directly from vessels into refrigerated trucks. Coatzacoalcos is 325 kilometers south of Veracruz, and 750 kilometers from Mexico City.

## Cooperatives Planned

The Governor of Veracruz plans to establish 5 fishing cooperatives in various parts of the state to improve the marginal operations of individual fishermen. Thirty-five fishermen in the Boca del Rio area already have formed the first cooperative. The Banco de Fomento Cooperativa (BANFOCO) will provide funds to build a 70-ton refrigerated warehouse and to buy equipment. The Cooperatives will receive technical assistance from, and sell their catches through, the PPP in Alvarado.

## Vessel Construction

Astilleros de Veracruz, S.A. (AVSA) has several new contracts to build shrimp boats. Venezuela has ordered 10 small boats at a total cost of US\$124,000. Iran has contracted

for 15 boats at US\$108,000 each. AVSA laid the keel of the last of 15 shrimp boats previously ordered by PPP on June 17, and delivered the third completed one on the same day. AVSA hopes to deliver all 15 by the end of the year, but it is doubtful that more than 8 will have been completed by then.

BANFOCO is drawing up a new US\$2.4 million contract for AVSA and a shipbuilding firm in Tampico to build 50 shrimp boats for PPP. If the contract goes through, PPP will have a fishing fleet in several years capable of fully using its facilities. (Reg. Fish. Attaché, U.S. Embassy, Mexico City, Aug. 16.)



## PERU

## FISH MEAL OUTPUT &amp; EXPORTS, JAN.-JULY 1967-69

Fish meal production was low in July because fishing was restricted to the southern port of Ilo. Exports were high; most went to the U.S. and western Europe.

The 1968/69 anchovy season closed May 31, 1969. The 1969/70 season opened September 1. Sources reported average catches of 35,000 metric tons a day. If the catch continued at this rate, September fish meal production would be about  $\frac{1}{3}$  below the September 1969 production of more than 257,000 tons.

Fish Meal Production &amp; Exports, Jan.-July 1967-1969

	1969	1968	1967
	. . . . . (Metric Tons) . . . . .		
Production . . . . .	1,011,111	1,048,873	1,029,766
Exports . . . . .	1,234,130	1,255,190	883,398
Stocks on hand July 31 . . . .	139,714	361,977	504,818

## New Rules

The Instituto del Mar had not established a quota for the new season by Aug. 21, although a quota of 8.5 million tons and a closed season or "veda" in Jan.-Feb. had been recommended. No fishing will be permitted on Saturdays and Sundays. Also, fishing will be suspended at any port where half, or more than half, of the fish caught is less than 12 cm. long. (Sociedad Nacional de Pesqueria, Circ. 2180, Aug. 21.)





## ECUADOR

### TUNA PRODUCTION & EXPORTS DECLINED IN 1968

Tuna, Ecuador's most important fishery, seems to experience alternating good and bad years. In 1968, the tuna catch declined 10% from the 1967 record of 20,100 metric tons. This accounted for about 60% of overall reduction in exports of fish and fish products in 1968. About 90% was bonito, Euthymus pelamais, nearly all caught within 20 miles of shore.

Tuna Production & Exports, 1966-68			
	1968	1967	1966
	. . . . (Metric Tons) . . . .		
Landings (live wt.) . . . . .	18,202	20,127	11,968
Exports, frozen tuna . . . . .	6,884	9,941	5,019
Exports, canned tuna, bonitos, skipjack, etc. . .	1,600	2,500	1,700

### 65 Pole Boats

The fleet remained relatively static--about 65 pole boats (none over 20 tons) and 6 small purse seiners. Two of the purse seiners are the only tuna vessels equipped with brine tanks.

### Frozen Tuna To U.S.

Eighty percent of tuna export is shipped frozen, the remainder in 24-lb. institutional canned packs (mostly 1- or 4-pound cans). All frozen tuna is shipped to the U.S., primarily to Puerto Rico. About 90% of canned tuna, packed in brine, is shipped to U.S., the remainder goes to other countries. Some shipments made to Brazil are packed in soybean oil in  $\frac{1}{2}$ -lb. cans; the cans and oil are imported from U.S. Ecuador levies tax of 4 centavos (about  $\frac{1}{5}$ ¢ U.S.) a pound on frozen tuna exports. (U.S. Consulate, Guayaquil, Sept. 2.)

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### 1968 SHRIMP CATCH & EXPORTS SET RECORDS

The 1968 shrimp catch was 6,101 metric tons, a record for Ecuador. About 70-80% was medium and large white--primarily Penaeus occidentalis, with some P. stylirostris and P. vannamei. These were headed at sea. The remainder was small titi,

Xiphoneneus, pomada, Protrachypene precipua, and some tigre, Trachypeneus byrdi, T. favea, T. similus pacificus. These were landed heads-on, unpeeled.

### Most Caught in Guayaquil Gulf

Most shrimp are caught in Gulf of Guayaquil; the rest within 10 miles off Playas and Manat. The season lasts 12 months. The deep-water red shrimp, P. brevirostris, still eludes local fishermen. In time, the large vessels probably will find and exploit the beds.

### Shrimp Fleet

Industry sources estimate the fleet has expanded from 174 boats to 195. Catch per boat has dropped despite record catch.

About 75 boats are 65 feet long or longer, mostly wooden hulls, and cost about \$35,000 to build. Only two have steel hulls. Each is 75 feet long and was built in Ecuador for about \$125,000.

### Brine Refrigerated Tanks

About 70% of the fleet, including almost all larger vessels, have refrigerated brine tanks. Average trip time for larger vessels is about 2 weeks; the smaller boats, operating off Manta and Playas, return to port daily.

Shrimp Production & Exports, 1966-68			
	Catch Live Wt.	Exports	
		Value	Quantity
	Metric Tons	US \$1,000	Metric Tons
1968	6,600	2,144.7	2,900
1967	6,000	2,229.0	2,700
1966	5,300	1,953.7	2,400

### Exports

Nearly all the processed shrimp is exported to the U.S. It is shipped in 5-pound cartons, ready for market. The Ecuadorean government levies an export tax of 19 centavos (about 1 U.S.¢) per pound. (U.S. Consulate, Guayaquil, Sept. 2.)





# ASIA

## KOREA RAISES ISSUE OF JAPAN'S IMPORT RESTRICTIONS

S. Korea requested a broad reappraisal of Japanese tariff policies and import restrictions at the Japan-S. Korea Trade Conference in Tokyo, August 19-21.

Hoping to halt a growing imbalance of trade, Korea asked Japan to lower import duties on more items, reduce tariffs on 27, and eliminate certain other import restrictions. She also asked for more favorable regulations on laver imports and marketing, and reduction or elimination of tariffs on nonedible seaweed, squid, and salted sea urchin. Japan conceded only the 5% duty on certain types of nonedible seaweed.

### Objects to Laver Import Restrictions

S. Korea objects particularly to the import procedures for dried laver. (In 1968, dried laver accounted for 51.6% of the value of all her marine-product exports to Japan.)

Japan permits Korean laver imports only between April and September. Furthermore, the sale price is not established until shipments have been completed and quality determined. Korea called this discriminatory and inconsistent with cordial commercial relations. Japan replied that her domestic producers must operate under the same system (30% of Japan's coastal fishermen harvest laver) and refused to change the procedures.

Item	1968	1967
	. . . . . (US\$1,000) . . . . .	
<b>Fresh or Frozen:</b>		
Tuna and skipjack . . . . .	1,145	1,142
Spanish mackerel . . . . .	2,489	2,623
Shrimp . . . . .	2,867	2,769
Other . . . . .	4,147	4,056
<b>Dried, Salted or Smoked:</b>		
Sea urchin roe . . . . .	880	1,357
Squid . . . . .	1	1,317
Other . . . . .	420	380
<b>Fish Preparations</b> . . . . .	804	2,510
'Kanten' . . . . .	761	3,553
Dried Laver . . . . .	16,536	10,901
Other . . . . .	2,032	1,808
<b>Total</b> . . . . .	<b>32,082</b>	<b>32,416</b>

### Laver Production Down

On May 28, Korea's Office of Fisheries arranged to export 4.8 million bundles of laver during April-September, although production had amounted to only 7.68 million bundles--less than half the 1968 total. Japan could buy only 3.63 million and, when prices were established on July 10, actually had imported only 2.53 million.

Shipment of the remaining 2.27 million bundles had been scheduled for early August but, because of poor production, only 1 to 2 million reportedly would be available.

### Higher Prices Established in 1969

The new price average is 2,079 yen (US\$5.78) a bundle, almost 700 yen above 1968. A bundle of high-grade laver is 2,310 yen (US\$6.39), and low grade, 2,050 yen (US\$5.69). About 90% is low grade.

The buying price for Japanese importers is 1,800 yen. They may add 250 yen a bundle--150 for import duty, 54 for commission, 4 for warehouse charges, 24 for interest--and deliver to the Laver Association at 2,050. The Association adds 7 yen a bundle before distribution to wholesalers.

### Ministerial Discussion

The Koreans again brought up the subject of dried laver at the 3rd Japan-Korea Ministerial Conference in Tokyo, August 26-28. Korean demands were essentially the same as before--revision of import and marketing procedures. Japan's position remained unchanged, but she promised to reduce tariffs on some secondary marine products, and agreed to continue joint fisheries projects and to extend credit for fishery development.





## JAPAN

### PURSE SEINERS REPORT GOOD FISHING OFF WEST AFRICA

Nichiro's Fishing Company's purse-seine fleet off west Africa made good yellowfin and skipjack catches in July. The average was 13 tons a day per pair of seiners. The fleet included 5 pairs of seiners (two less than in 1968), and 2 refrigerated carriers, 'Haruna' (1,427 gross tons) and 'Chichibu Maru No. 2' (1,697 gross tons).

#### Insufficient Freezing Capacity

A problem was that the carriers have a combined freezing capacity of 100 tons a day and could not process all the catch. When fishing is good, the catch at times exceeds 100 tons.

This problem may worsen when a new 350-ton combination pole-and-line seiner joins the fleet in December. The vessel, now under construction in Japan, will cost about US\$778,800. It will be equipped with a Norwegian power block. ('Shin Suisan Shimbun Sokuho,' July 18.)

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### NORTH PACIFIC WHALING IS SUCCESSFUL

The 1969 Japanese North Pacific whaling expedition ended August 4. The 3 mothership whaling fleets attained their assigned catch of 886.5 blue-whale units. Their combined output totaled 54,983 metric tons of processed products, about 1,200 tons more than planned. ('Nihon Suisan Shimbun,' Aug. 13.)

Production	'Nisshin Maru'	'Kyokuyo Maru No. 3'	'Tonan Maru'	Total
	. . . . . (No. of Whales) . . . . .			
<b>Whales:</b>				
Fin . . . . .	186	192	198	576
Sei . . . . .	1,155	1,317	1,119	3,591
Blue-whale-units	285.5	315.5	285.5	886.5
	. . . . . (Metric Tons) . . . . .			
<b>Products:</b>				
Fin whale oil . .	4,015	4,378	4,190	12,583
Frozen products .	12,094	14,261	12,927	39,282
Salted products .	258.4	110	236.2	604.6
Meal . . . . .	142	273	-	415
Solubles and others	1,988.6	-	20	2,008.6
Total . . . . .	18,498.0	19,022.0	17,373.2	54,893.2

\* \* \*

### EASTERN PACIFIC SAURY FISHING IS DISAPPOINTING

The Taiyo, Nihon Suisan, and Nichiro fishing firms sent 6 vessels to the northeastern Pacific on an exploratory saury fishing cruise in July. The vessels are equipped to fish with stick-held dip nets or scoop nets. In early August, they reported the catch disappointing.

#### Off N. America

From July 22-31, Taiyo's 'Azuma Maru No. 6' (238 gross tons) worked off the North American coast from Vancouver to San Francisco. She found very light concentrations of saury and noted that their response to searchlights was poor.

Azuma Maru's primary objective was to study the abundance and distribution of saury as tunabait. Licensed to fish until August 10, she cut her survey short because of stormy weather all along the Pacific coast. After a refueling stop at Terminal Island, Calif., she proceeded to eastern Pacific tuna and marlin grounds.

#### Trawlers South of Aleutians

Nihon Suisan's trawlers 'Shinano Maru' (539 gross tons) and 'Koshu Maru No. 8' (85 gross tons) fished near 40°-45° N. latitudes and 165°-175° E. longitudes, south of Aleutians, until late July. They found no sizable school. Attracting lights proved ineffective. The 2 trawlers, working together, had taken only about 7 tons of saury by the end of July. Later, they moved eastward to continue their search.

#### Trawlers Move Eastward

Two Nichiro trawlers, 'Akebono Maru No. 17' (499 gross tons) and 'Akebono Maru No. 21' (492 gross tons), proceeded eastward between parallels 41°-45° N. latitudes in early August. At that time, they had not encountered any significant concentrations.

Nichiro's third trawler, 'Akebono Maru No. 18,' 499 gross tons, was shrimp fishing in northern waters and had not begun saury fishing. ('Suisan Tsushin,' Aug. 5.)

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## JAPAN (Contd.):

BAIT SAURY SAMPLE  
SHIPPED FROM U.S.

The Federation of Japan Tuna Fishery Cooperative Associations (NIKKATSUREN) recently received a 6-pound sample shipment of saury taken by a U.S. vessel about 80 miles off San Francisco. The vessel had been exploring the commercial possibilities of the saury resource off California. The sample was similar to the saury taken off Japan--medium-size fish used as tuna bait.

## Possible Export to Japan

In view of the poor fishery off Japan in recent years, and the consequent high prices, the U.S. is considering supplying the Japanese. However, NIKKATSUREN officials said that prospects of procuring bait saury from the U.S. do not look bright. Both the price and the quantity available are uncertain, and Japan still restricts imports. ('Suisan Keizai Shim bun,' Sept. 11.)

\* \* \*

RESEARCH VESSEL FINDS  
PROMISING GROUNDS IN S. ATLANTIC

The tuna longliner 'Azuma Maru No. 37' (314 gross tons), searching for new tuna grounds in the South Atlantic since May 26, has found some promising albacore and big-eyed grounds. Near 33°-36°03' S. latitude and 50° W. longitude, she took 41 big-eyed (1,938 lbs.) and 216 albacore (9,504 lbs.). The government is paying half the exploratory-cruise expenses.

The vessel was scheduled to call at Buenos Aires, Argentina, August 4 to transship about 120 metric tons--80 tons of albacore and 40 tons of big-eyed.

## To Fish Higher Latitudes

On the next leg, Azuma Maru was slated to seek southern bluefin in the higher latitudes near 45°-50° S. She is scheduled to return to Japan in March 1970. ('Suisancho Nippo,' July 22.)

\* \* \*

ARTIFICIAL CULTIVATION  
OF TUNA WILL BE TRIED

The Japanese Fisheries Agency plans to try for commercial-use artificial cultivation of tuna. About 60 million yen (US\$167,000) will be appropriated in fiscal year 1970 (April 1970-March 1971) for an experiment. It will be conducted by the Far Seas Fisheries Research Laboratory, Mie Prefectural Fisheries Research Station, and Tokai and Kinki Universities. Land owned by Tokai University, southwest of Tokyo, will be leased for use as the culture area.

## The Experiment

Tuna will be reared from larval stage to maturity for about one year. Big-eyed is the primary species being considered. Bluefin requires 8 years to reach maturity, but big-eyed can be grown in one year to 50-60 centimeters, larger than cultured yellowtail. At that size, it can be used for "sashimi" (sliced fish served raw).

## Potential Problems

While a tuna-seeding technique has been tried successfully in Japan, the Agency has cited potential problems in commercial cultivation. Tuna are deep-sea fish and may die if reared in a confined area--a tank, for example, where they might swim into the walls. While millions of eggs are released during spawning, the rate of survival for juvenile and adult stages is unknown. Temperature conforming to natural environment during spawning and rearing periods also may be difficult to control. Although tuna can be fed water fleas and brown shrimp, they are voracious eaters. This poses a question of their value as a commodity--the cost of feeding relative to growth. ('Shin Suisan Shim bun,' July 21.)

\* \* \*

OWNERS HOPE TO IMPROVE TUNA  
PURSE SEINING IN EASTERN PACIFIC

Owners of 4 purse seiners that failed dismally in the eastern Pacific tuna fishery this year are seeking improved performances in 1970. The season opens January 1. Large vessels and speed boats may be used. The independently managed seiners may unify operations.



CFR  
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## JAPAN (Contd.):

### Late Arrivals in Eastern Pacific

The seiners landed only about 360 tons of yellowfin during the 1969 season. This disappointing performance has been attributed to their late entry. By the time they arrived, the yellowfin had left the coastal area and were associated with schools of fast-swimming porpoise. These schools travel too fast for the slow seiners. ('Katsuo-maguro,' Sept. 9.)

\* \* \*

### MORE FISHING VESSELS ARE EXPORTED

From 1965 through 1968, Japan exported 405 fishing vessels--219 draggers, 159 tuna vessels, and 27 purse seiners. She exported considerably more to S. Korea than to other countries.

Over three quarters went to 4 countries--185 to S. Korea, 66 to the Philippines, 38 to Taiwan, and 29 to the Ryukyus.

### S. Korean Orders Rise

Applications for export of draggers to S. Korea have increased again this year because the latter wants to develop a pelagic fishery to earn foreign exchange.

Korean import restrictions are more strict this year; the import of fishing vessels more than 4-5 years old has been banned. No such restriction has been imposed by any other country, and exports to other countries will continue as before. ('Minato Shimbun,' July 6.)

\* \* \*

### SUPER TRAWLERS PLANNED

Four fishery firms--Nihon Suisan, Hokoku Suisan, Taiyo, and Tokushima Suisan--are planning to build 5,000-gross-ton trawlers to operate in northern waters in 1970. Two other major firms, Kyokuyo Hoge and Hoko Suisan, also are considering 5,000-ton trawlers.

Nihon Suisan has ordered a 40-ton daily capacity minced-meat plant and a 125-ton meal plant for its trawler. The other firms are planning similar installations.

## Fish-Meal Production Boosted

Together with 'Taiyo Maru' (2,886 gross tons) and 'Akebono Maru No. 72' (3,500 gross tons), now being fitted with meal plants, such vessels would boost substantially Japan's 1970 factoryship production of minced meat, meal, and frozen products. ('Suisancho Nippo,' Aug. 5.)

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### NEW TUNA LONGLINER PERFORMS WELL

On July 13, the tuna longliner 'Yakushi Maru No. 38' (254 gross tons), a bulbous-bow, all-weather vessel built in early 1969, returned from a 141-day trip to the eastern Pacific. She brought back 176 metric tons of tuna (mostly big-eyed) taken near 4°-12° S. latitudes and 120° W. longitude, southwest of Clipperton Island.

### Catch Brought High Prices

The catch, frozen aboard by a trolley-type, fish-hanging, and semi-air-blast-freezing system, retained a high degree of freshness and good meat quality. It brought high ex-vessel prices--averaging over 300 yen a kilogram (US\$756 a short ton) at Shimizu.

### Stable Craft

The vessel's stability was good and double-deck construction provided a safe working area. On July 24, she departed again for the eastern Pacific. The owners hope for annual earnings of over \$611,000. ('Suisan Keizai Shimbun,' July 29.)

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### TWO MODERN TUNA LONGLINERS ORDERED

The Hoko Suisan Fishing Company recently ordered two 405-gross-ton, all-weather, tuna longliners for high-latitude operations from Usuki Shipyard. The advanced-design vessels will be equipped with modern installations, including a reel-type longline retriever and a freezing unit capable of very low temperatures. They should be completed by March 1970.

### Specifications

The vessels' main specifications are: length 166 feet; breadth 29 feet; depth 13



## JAPAN (Contd.):

feet; 1,600 hp. engines; 11.5 knots cruising speed; 6-ton daily freezing capacity with trolley-type fish hangers, and 1.5 tons in freezing trays; and 270 metric tons carrying capacity. They will carry 22-man crews. ('Minato Shimbun,' Sept. 7.)

\* \* \*

## FISHERIES AGENCY BUILDS 1,500-TON PURSE-SEINE RESEARCH VESSEL

The Fisheries Agency has decided to build a 1,500-gross-ton, purse-seine research vessel patterned after the large U.S. commercial seiner. The vessel will carry two 40-knot speedboats and search for skipjack and other surface tuna schools. This is intended to help the tuna fishery, which is in financial trouble because of declining longline catches. She also could be used to investigate other resources, such as saury, mackerel, and sardines.

## The Vessel

The vessel will be 223 feet long, 46 feet broad, and 23 feet deep. Two 5,500-hp. main engines, coupled to controllable pitch propellers, will give a maximum speed of 18 knots. Other equipment will include a sidethruster, a stabilizer, and a Norwegian power block. Construction is to be completed in 1971. ('Suisancho Nippo,' July 25 & 28.)

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## FROZEN TUNA COMMISSION SALES GROW

During Jan.-April 1969, member companies of the Frozen Food Exporters Assoc. exported 18,955 metric tons of frozen tuna caught by other countries. Japanese exports of frozen tuna for the same period were 20,610 tons.

The 18,955 tons handled through commission sales were taken mainly by Taiwanese and S. Korean fishing vessels; 12,672 tons were exported to the U.S., and 6,283 to Italy.

## Yellowfin Is 60%

Yellowfin accounted for 11,312 tons--60% of total sales. Japanese yellowfin exports during the same period were 8,425 metric

tons--20% below commission sales. Albacore accounted for 7,000 tons of total sales (Japanese exports were 8,795 tons); big-eyed 616 tons, and skipjack 584 tons.

## Exports Unchanged

Japanese frozen tuna exports for same period 1968 were 39,138 tons. During first 4 months of 1969, Japanese exports were half the 1968 period's. However, when commission sales are added, the quantity exported remains the same. ('Suisan Tsushin,' July 5.)

\* \* \*

## FROZEN TUNA EXPORTS DIP IN FIRST-HALF 1969

Frozen tuna exports during January-June 1969 of 32,980 metric tons were down 37% from the 52,190 tons exported in same period 1968. Yellowfin exports declined 47% from same period 1968; albacore decreased 19%.

## Main Importers

Principal importers were: U.S., 12,274 metric tons (19,239 in 1968); Puerto Rico, 7,654 (11,570); Italy, 5,965 (12,558); Malaysia, 1,866 (939); and American Samoa, 1,575 (3,366).

The 1969 exports are expected to total about 65,000-70,000 tons at the most, compared with 105,000 tons in 1968. ('Suisan Tsushin,' July 22.)

\* \* \*

## PREMIUM ON EXPORT CANNED TUNA INCREASED

On July 15, the Tokyo Canned Tuna Sales Co. announced an 11-14 U.S. cents-per-case premium increase on canned whitemeat tuna in brine for export to the U.S. The increase resulted from the depletion of the company's canned tuna stocks. It is not known whether all of the present stock will be sold under the new price.

## Sold Half Stock

During the July 8-11 sales, the company offered about 200,000 cases and received buy-offers totaling 400,000 cases. It decided to sell half the stock initially, and to allocate the remainder according to the buyers' past



## JAPAN (Contd.):

performance and quantity ordered during recent sales.

Further upward price adjustments may be made if buy-offers increase. The recent premium increase was strongly opposed by the trading firms. They claim the present monopolistic sales system must be eliminated to end such arbitrary practices. ('Suisan Tsushin,' July 17.)

New prices are:

Style and Can Size	Present Price <sup>1/</sup>	Premium		
		Original	Additional	Total
. . . . . (US\$/Case) . . . . .				
<b>Canned whitemeat tuna</b>				
<i>in brine:</i>				
Solid:				
7-oz. 48½	11.11	0.28	0.14	0.42
13-oz. 24½	10.33	0.28	0.14	0.42
3½-oz. 48½	6.66	0.17	0.11	0.28
66½-oz. 6½	12.33	0.42	0.14	0.56
6.6-lb. 6½	21.17	0.83	0.14	0.97
Flake:				
6½-oz. 48½	8.11	0.20	0.11	0.31
Chunk:				
6.6-lb. 6½	18.94	0.56	0.14	0.70
<sup>1/</sup> Exwarehouse, Shimizu, Japan.				

\* \* \*

## CANNED TUNA IN OIL EXPORTS DECLINE

Canned tuna in oil exports, January-June 1969, were 4,680,764 pounds valued at US\$2,016,500; these were sharply below comparable 1968 exports of 15,910,088 pounds worth \$4,976,900.

The decline was due to short supplies of skipjack (the principal species used for canned tuna in oil) and higher export prices. ('Katsuo-maguro Tsushin,' Aug. 11.)

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## FROZEN SHRIMP IMPORTS CONTINUED HIGH IN JUNE

Japan imported 4,122 metric tons of frozen shrimp worth US\$11 million in June, surpassing the 4,000-ton mark for the 3rd straight month. Imports in June 1968 were 2,324 tons.

The imports were reported to have increased frozen-shrimp holdings to around 1½ months' supply, depressing prices for smaller-sized shrimp on domestic market.

The principal suppliers during June were: Australia, 526 metric tons; Hong Kong, 440; Thailand, 404; Mexico, 397; and Communist China, 366. ('Suisancho Nippo,' July 17.)

\* \* \*

## IMPORT RESTRICTIONS LIFTED ON SMOKED SCALLOPS &amp; SQUID

The government has decided to reduce the number of commodities on the residual import restriction list from 120 to 60. Smoked scallops and smoked squid, now under import quotas, definitely will be decontrolled.

Fresh and frozen yellowtail, jack mackerel, Pacific mackerel, saury, sardine, cod, herring, squid, and scallops, salted cod and herring roes, dried laver, and marine-animal meal and scraps will remain on the list. ('Suisan Tsushin,' Sept. 22.)

\* \* \*

## YAIZU LANDINGS ROSE IN AUGUST

Landings at Yaizu in August of 7,792 metric tons (worth about US\$4.6 million) were 118 tons over the 7,674 (\$4.4 million) landed in August 1968. Bluefin and albacore landings were down but good skipjack fishing off Japan in August resulted in sharply increased landings compared with the same month last year. ('Kanzume Tokuhō,' Sept. 4, 1969.)

Landing and Average Exvessel Prices,  
July-August 1969 & July 1968

	Quantity		Average Price		
	1969		1968	1969	
	Aug.	July	Aug.	Aug.	July
	. . (Metric Tons) . .		. (US\$/Short Ton) .		
<b>Tuna:</b>					
Bluefin <sup>1/</sup>	2,708	3,267	4,004	975	849
Albacore	187	780	306	489	434
Skipjack	4,266	8,291	2,848	287	262
Mackerel	89	38	25	144	131
Others	542	448	491		192
<b>Total</b>	<b>7,792</b>	<b>12,824</b>	<b>7,674</b>		
<sup>1/</sup> Includes yellowfin and big-eyed tuna.					

\* \* \*



## JAPAN (Contd.):

SHRIMP TEAMS VISIT  
SOUTHEAST ASIA & LATIN AMERICA

The Japan Fish Products Import Assoc. plans to send a shrimp team on a government-subsidized trip to Pakistan, India, and Thailand. The team will survey local shrimp fishing, processing, and marketing; it will advise on quality control and sanitation. This will facilitate Japanese imports of frozen shrimp from the 3 countries.

In 1967 and 1968, the association sent similar missions to southeast Asia and the mid-East. As a result, shrimp purchases from those areas have increased sharply.

## Other Visits Planned

The association also plans to send a shrimp mission on a 45-day trip to 12 Latin American countries--Brazil, Surinam, Guyana, Trinidad, Tobago, Barbados, Venezuela, Colombia, Panama, Costa Rica, El Salvador, and Mexico. ('Suisan Keizai Shimbun,' July 17.)

\* \* \*

JAPANESE-MAURITANIAN  
FISHERY TALKS FAIL AGAIN

Negotiations to allow Japanese trawlers to fish inside Mauritania's 12-mile fishery zone were broken off for a third time this June. Japan had offered to pay entry fees according to the quantity of catch, but Mauritania wanted assessments based on vessel tonnage.

Since the difference between the two methods of assessment--against 69 Japanese vessels trawling off west Africa--would amount to US\$1.9 million, the Japanese would not accept Mauritania's proposal. ('Suisan Keizai Shimbun,' June 24.)



## INDIA

## VESSEL MAKES RECORD LOBSTER CATCH

According to a report from Cochin, an Indo-Norwegian project deep-sea fishing operation made a record catch of spiny lobsters

off Quillon recently. On a 2-day cruise, the fishing vessel 'Klaus Sunnana' caught up to 5 metric tons of lobsters in only 14 hours of fishing.

## Fairly Large Quantities Found

A survey of the coast from north of Trivendrum to Cannanore has indicated fairly large quantities of shrimp and spiny lobster in 100 to 250 fathoms. Intensive fishing has been carried out in some of the grounds to find out their commercial possibilities. ('World Fishing,' London, July 1969.)



## CEYLON

## FIRST FISH CANNERY IS OPERATING

Ceylon's first fish-packing plant, 'Sesalai,' began operations on August 5. Built for about US\$382,500, it employs 100 workers. The cannery capacity, which is about 28,000 cans per 8-hour day, packs small fish taken in coastal waters. Tuna will be canned in the future. ('Suisancho Nippo,' August 21.)



## INDONESIA

FROZEN SHRIMP EXPORTS  
ARE DEVELOPING

Shrimp could become an important export commodity for Indonesia. Already it is a commercial catch along the east coast of Sumatra and the north coast of Java. But along the muddy coasts of Kalimantan (South Borneo) and West Irian (western New Guinea), it is practically untouched.

Because proper collection facilities have been lacking, shrimp has never been major export item, with one exception: Requiring practically no more effort for foreign than for domestic sale, it is shipped in ice from some parts of Sumatra to Malaysia and Singapore.

Exports began in 1967, when exporters in Djakarta first succeeded in collecting standard sizes in sufficient quantities. Since then, frozen shrimp exporting has begun in other areas, for example, Central Java and North Sumatra.



## INDONESIA (Contd.):

### Fishing Areas & Supplies

Most of the export shrimp comes from the existing small fishing operations, but increasing competition has impelled some exporters to set up their own operations. Djakarta's supplies generally come from the Bay of Djakarta, Tjirebon, West Java, and Tjilatjap in Central Java.

### Fishing Methods

The local fishermen use primitive gear-- beach seines, push nets, or traps. Nylon gill-nets have been introduced in Tjirebon, and their popularity is increasing rapidly. Trawling is still experimental, except in North Sumatra, where it is already a commercial operation. Most of the shrimp supplied to Djakarta is *Penaeus merguensis* mixed with other varieties, such as tiger prawn *P. monodon*.

### Handling & Transportation

The fishing grounds are so close to the landing places that shrimp usually are landed un-iced. As soon as landed, they are collected by the exporters, usually through intermediaries buying only the exportable sizes. Handling facilities are provided by the exporters. The shrimp are beheaded, washed, packed in ice in cases or baskets, and trucked to Djakarta. The 6-10 hour trips are made at night to avoid excessive heat.

### Processing, Freezing & Cold Storage

After arriving at the Djakarta processing plants, the shrimp are dumped into washing tanks. Some processors ice the washing water to keep temperatures down. If the shrimp are heads-on, they are first beheaded; then, after being thoroughly washed, they are graded according to quality, species, and size. Each category is weighed into 2.2 kilogram

(5 lbs.) lots and distributed to the packing tables. They are arranged in rectangular metal pans covered with perforated metal lids. After water has been poured through the holes into the pans, they are frozen at  $-20^{\circ}\text{C}$ . ( $-4^{\circ}\text{F}$ .) for 8-12 hours. After the frozen blocks are removed from the pans, each is placed in a plastic bag, and then in a carton. Six cartons go into one 13.6 kilogram (30 lbs.) masterbox. These go in cold-storage to await final sea or air shipment to Singapore, Hong Kong, Japan, and the U.S.

### Quality Control

Fishery products for export, including shrimp, are inspected by government agents shortly before shipment. A certificate of quality is issued for those found fit for human consumption. They are graded "Excellent," "Good," "Fair," and "Poor," ratings roughly equivalent to "U.S. Grade A," "U.S. Grade B," "U.S. Grade C," and "Sub-Standard."

### Future Developments

To export frozen shrimp requires freezing and cold-storage facilities. Such facilities still are underdeveloped in Indonesia, forcing shrimp exporters to establish new freezing and cold-storage plants. These indirectly benefit the whole fish-processing industry. The rush for exportable shrimp also has opened new shrimp fishing opportunities-- development of more efficient fishing gear and methods, and exploration of new fishing grounds.

The participation of new private enterprises is also very important to the industry. Formerly, private enterprise was very reluctant to invest capital in the shrimp fishery.

(Text based on a note submitted to 13th Session of the Indo-Pacific Fisheries Council, Australia, Oct. 1958, by Soenjoto Darmaredjo, Institute of Fisheries Technology, Pasar Minguei, Djakarta.)





# SOUTH PACIFIC

## AUSTRALIA

### INTENSIVE SHRIMP RESEARCH PROGRAM TO BEGIN

Australia has announced a major research program on shrimp to be undertaken by the Commonwealth Scientific and Industrial Research Organization (CSIRO). The ultimate objective is the fullest exploitation of the northern shrimp fisheries consistent with conservation. It will involve about A\$600,000 in capital expenditure over 3 years and, when in full operation, a recurrent yearly expenditure of about \$330,000.

#### Gulf of Carpentaria Shrimp Fishery

Six years ago, the Commonwealth, the Queensland government, and commercial fishermen began the investigations that led to the discovery of great quantities of shrimp in the southeastern Gulf of Carpentaria. Commercial exploitation, first by Australian and later by foreign fleets, soon produced an annual harvest of millions of pounds.

#### Catch Decreased in 1968

After a record catch in 1968, the yield decreased considerably in 1969. Reasons for the decrease are unknown, but some other countries also reported a bad season. Only a carefully planned research program can determine the true cause of such dramatic fluctuations. More must be learned about the factors influencing population size, particularly the rate of natural replenishment and the impact of commercial fishing.

#### CSIRO's Program

CSIRO will begin with a size and age composition study of individual and collective shrimp catches. Individual specimens will be tagged to chart movements to and from the fishing grounds. Oceanographic researchers will study the effects of ocean currents and seawater changes on migration in different areas and seasons. Species studies will include investigations of growth, reproduction, behavior, the factors influencing food supplies, and the effect of different fishing intensities. ('Australian Fisheries,' July 1969.)

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#### SETS UP FISHERIES RESEARCH FUND

Australia is establishing a Commonwealth Fishing Industry Research Trust Account similar to the ones for the wheat, wool, dairy,

meat, tobacco, and egg industries. The initial annual Commonwealth contribution will be about A\$500,000. Each State will name its own trust fund to receive industry contributions for fisheries research within the State.

#### Advisory Committee

A Fishing Industry Research Committee--one representative from the Department of Primary Industry, one from the Commonwealth Scientific and Industrial Research Organization (CSIRO), and one from the Fishing Industry Council--will advise the Minister for Primary Industry on expenditures from the account.

Some programs the fund might support are: biological research--distribution, behavior, sustainable yields--and fishing regimes for particular stocks; technological research to improve exploiting, handling, and processing methods; economic and market research; extension of research results to the industry; vocational training and technical education. Each one would contribute to overall fisheries development. The fund also would support direct development projects: for example, demonstrating prototype equipment, exploratory fishing, and developing new products.

#### Scope of Fund

Any type of program connected with the fund's purposes will be considered. Fund money will be spent for the benefit of the Australian fishing industry as a whole, rather than for a particular section. The fund will not be used to finance purchases of plants and facilities, nor will it finance projects in the external territories. ('Australian Fisheries,' July 1969.)



## AMERICAN SAMOA

### TUNA PRICES UNCHANGED IN SEPTEMBER

September tuna prices in American Samoa carried over from August: \$430 a short ton for frozen round albacore, \$415 iced; \$347.50 for frozen gilled-and-gutted yellowfin, \$327.50 iced. ('Katsuo-maguro Tsushin,' Sept. 4.)





# AFRICA

## SOUTH-WEST AFRICA

### STRICTER CONSERVATION MEASURES ANNOUNCED

A South-West African government official has announced stricter conservation measures for fish resources, including a closed season from November 1, 1969, to January 31, 1970. Beginning in fall 1970, the closed season will run from the end of October to the beginning of February of the following year.

He also warned vessels encroaching on the 12-mile fishing limits that patrol services will be strengthened.

The government also has decided to tighten spiny lobster catch limits. ('The South African Shipping News and Fishing Industry Review,' Sept. 1969.)



## SOUTH & SOUTH-WEST AFRICA

### FISH OIL PRODUCTION & EXPORTS, FIRST-HALF 1968-1969

	PRODUCTION		EXPORTS	
	1968	1969	1968	1969
	..... (Metric Tons) .....			
January . . . . .	5,187	2,537	14,446	-
February . . . . .	9,258	9,211	4,293	6,101
March . . . . .	14,008	9,101	5,012	-
April . . . . .	15,069	13,027	2,280	19,413
May . . . . .	16,812	14,917	16,000	3,378
June . . . . .	18,114	21,067	18,289	6,488
Total . . . . .	78,448	69,860	60,320	35,380

(Source: U.S. Consul, Cape Town; South African Fish Meal Producers' Association.)



## SOUTH AFRICA

### SOUTH AFRICAN COMPANY ENTERS ANGOLAN FISHING INDUSTRY

A South African company, Pescangol (Pty.) Ltd., is planning to develop a small uneconomic Angolan fish-meal factory into a profitable operation. Through an Angolan subsidiary, Investimentos Sul Africanos de

Angola, the company has bought a 75% interest in the ailing Unipesca S.A.R.L. Pescangol agreed to pay about US\$71,000 demanded by Unipesca's bankers, reducing its overdraft by one third.

### Previous S. African Ventures

Pescangol now will have what promises to be a lucrative share in the underdeveloped but potentially rich, Angolan fishing industry. The industry has tempted South Africans before. Several were forced to drop plans for Angolan subsidiaries some years ago after Portuguese legislation prohibited foreign control of Angolan fishing ventures.

Pescangol seems to have found a loophole: a group of South-West African farmers obtained a 90% interest in Unipesca just a few months before the law. They converted the company from trawl to shoal fishing, and installed an old 7-ton-an-hour fish-meal plant. These changes were insufficient for a profitable operation, and debts began to mount. This opened way for Pescangol's take-over.

### To Renovate Company

Pescangol will replace 3 shoal-fishing boats with 70-80 vessels now on order from a Luanda boatbuilder. All boats will be fitted with radios, still new to Angolan vessels, power blocks, and echo-sounders.

Pescangol also plans to build a 30-ton-an-hour fish-meal plant; one quotation has been received from a Norwegian manufacturer. Unipesca already has its own jetty. The fish will be unloaded by pump.

### To Expand Production

After the plant is commissioned in 1970, raw-fish intake should rise to 40,000 metric tons; 26,000 tons are planned this year. Unipesca has averaged only 15,000-18,000 tons since 1965. ('The South African Shipping News and Fishing Industry Review,' Sept. 1969.)

