INTERNATIONAL

FAO Experts Assess Tuna Stocks in Atlantic & Indian Oceans

Fishery scientists from the U. S., Japan, France, and the Congo (Brazzaville) met at BCF's Tropical Atlantic Biological Laboratory (TABL), Miami, Florida, Aug. 12-16, to assess tuna stocks in the Atlantic and Indian Oceans. The meeting was sponsored by the UN's Food and Agriculture Organization (FAO).

The group considered longline and surface fisheries in the Atlantic and Indian Ocean for yellowfin tuna, albacore, bigeye tuna, the bluefin tunas, and skipjack tuna. Stock separation, catch and effort data, biological data, and status of stocks were examined. The experts found many parallels between the status of stocks in the Atlantic and Indian Oceans.

Their preliminary conclusions were:

The Atlantic

The major Atlantic tuna fisheries are the longline fisheries, chiefly for yellowfin, albacore, and bigeye, which now cover most of the tropical and temperate waters of the Atlantic; surface fisheries, mainly purse seine and live bait, for yellowfin, skipjack, and bigeye tunas along the West African coast; and trolling and live-bait fishing in the Bay of Biscay region for small albacore and bluefin tuna.

The Japanese longline fishery started in 1956 and increased continuously until 1965. Some decrease in Japanese fishing in recent years has been offset by increased fishing by longliners from South Korea and China (Taiwan). The longline fishery initially concentrated on yellowfin; later, as yellowfin abundance decreased, attention was transferred to albacore. The effort in surface fisheries also is increasing; French and Spanish vessels are being joined by vessels from the U. S., Japan, and West African countries.

State of the Stocks

The stocks of large yellowfin on which the longline fishery is based have been greatly reduced by fishing. Any additional increase in longline fishing would, at best, increase the total longline catch only marginally--and might well decrease the total longline catch. Further, increased fishing will certainly continue to decrease the catch per unit effort.

The surface yellowfin fishery is based on smaller fish. This fishery has reduced the recruitment to the yellowfin longline fishery. The presence of the surface fishery may increase the total Atlantic yellowfin catch; it is unlikely to decrease it. However, if the minimum size of fish taken in the surface fishery is decreased, the total catch will almost certainly be decreased.

The longline albacore, and possibly bigeye stocks, also are heavily fished. Increased longline fishing would give little or no increase in albacore catches, though it may be possible to increase bigeye catches. Increased fishing will decrease the catch per unit effort, particularly for albacore. The relation between the surface and the longline fisheries for albacore in the North Atlantic is unknown.

The bluefin stocks do not appear to be large; the group of small bluefin fished off New England is small and heavily exploited.

The skipjack stock appears large; the present small catches can be increased.

Indian Ocean

The history of the longline fishery is similar to that in the Atlantic and the Pacific--increasing Japanese fishing since about 1952 and, more recently, increased fishing by China (Taiwan) and South Korea. Initially, the Japanese catches consisted mainly of yellowfin, but now contain approximately equal catches of yellowfin and bluefin, and less albacore and bigeye. The major surface fisheries are on the eastern boundaries of the Indian Ocean--for bluefin off Australia, and for yellowfin and other species around Indonesia. Another surface fishery is developing off Somalia.

The yellowfin stocks in the Indian Ocean are probably independent of those in the Atlantic. However, there is apparently some intermixing of albacore, bigeye, and bluefin around South Africa.

The state of the stocks is similar to those in the Atlantic. The stocks of all 4 species are heavily fished by the longliners. Increased longline fishing will not increase appreciably (and may decrease) the total yellowfin, bluefin, and albacore catches, though some increase in bigeye catches may be possible. Increased fishing will reduce the catch per unit effort of all 3 species. The effects of the surface fishery for bluefin on the longline fishery is not known.

The major opportunity for increasing appreciably the Indian Ocean tuna catch is with skipjack; these stocks appear large. Increased catches might result from surface fisheries of bluefin and yellowfin. (The experts lacked information to examine these possibilities.)

Need for Statistics

There is an urgent need to improve the statistics of total landings, species composition, and fishing effort. Because of the nature of the fisheries--long-range vessels and landings in foreign countries--the collection, tabulation, and publication of detailed statistics might be better done for the world as a whole, rather than for each ocean.

The Panel

Members of the FAO Working Party of Tuna Stock Assessment are: J. A. Gulland, FAO (Convenor of meeting); J. Joseph, IATTC; J. C. Dao, France; J. C. Le Guen, Congo (Brazzaville); B. Rothschild, M. B. Schaefer, J. P. Wise, U. S.; I. Yamanaka and A. Suda, Japan.

Background of FAO Study

World catches of tunas and related fishes have increased from 920 metric tons in 1948 to an estimated 1,400-1,500 metric tons in 1968. Most tuna catches are made in the tropical and temperate parts of the oceans. FAO convened the World Scientific Meeting on the Biology of Tunas and Related Species in California in 1962. A 4-volume report of this meeting was issued.

Because the tuna fisheries are carried out principally on the high seas, effective conservation regulations can be carried out only on an international basis. International organizations already deal with these matters in the Indian Ocean and the Pacific Ocean: the Indo-Pacific Fisheries Council and the Inter-American Tropical Tuna Commission (IATTC). The IATTC is regulating tuna catches in the eastern tropical Pacific.

The Atlantic tuna fisheries began to increase dramatically in the late 1950s. Alert to the need for international study and possible control, FAO called a conference in Rio de Janeiro, Brazil, in May 1966 to begin forming a research and regulatory body for Atlantic tunas. The result was adoption of the International Convention for the Conservation of Atlantic Tunas. This convention will become effective when ratified by 7 nations. The U. S., Japan, South Africa, and Ghana have ratified it; France, Spain, and Canada are expected to ratify shortly.

Partly to facilitate attainment of the Convention's purposes, FAO early in 1968 began to set up a Working Party on Tuna Stock Assessment. Such parties are made up of experts in particular fields who meet at FAO's expense to study problems and to recommend solutions. The scientists are chosen by FAO and do not represent their nations or governments. They draft a report, which FAO submits to its members.

Norway Stops Danish and Swedish Fishing in 12-Mile Limit

The Norwegian Government has decided to terminate Danish and Swedish fishing in the 12-mile limit, west and north of Norway's southernmost point, no later than Oct. 31, 1970. Shrimp fisheries of Denmark and Sweden will be affected most. Norwegian fishing in the 12-mile limit off Denmark's west coast also will be terminated.

Other Agreement Continues

The special agreement permitting the 3 countries to fish up to a line 4 miles from the coastwise baselines in the Skagerrak and Kattegat, east and north of the southernmost point of Norway, will be continued. (Asst. Reg. Fisheries Attaché, U. S. Embassy, Copenhagen.)

EFTA Keeps Trade Restrictions

At its last meeting, the Council of Ministers of the European Free Trade Area (EFTA) agreed to explore possible trade expansion among member countries. Willingness of EFTA countries to act on this recommendation was tested in June, when a working group in Geneva discussed trade in fish and fishery products. The group concluded that removal of restrictions on fishery commodities was not possible. A completely negative report was submitted to the EFTA Council. (Asst. Reg. Fisheries Attaché, U. S. Embassy, Copenhagen.)

EEC Common Fisheries Policy Delayed

The EEC Common Fisheries Policy did not take effect on July 1 as originally planned. Probably several months or a year will elapse before the policy is effected. Common Market imports of some agricultural commodities have almost ceased as a result of the protectionist nature of the common EEC agricultural policy. Such effects are not likely to result from the fisheries policy, because EEC countries will continue to require large quantities of fish products from nonmember countries. (U. S. Embassy, Copenhagen.)

USSR & Pakistan Sign Fisheries Aid Agreement

A USSR-Pakistan 2-year fisheries aid agreement was signed in Moscow during the summer. Under the agreement, the USSR will help Pakistan study fishery resources off her coasts, train fishery specialists, and, if requested, draft a feasibility study for construction of a new fishing port on the Arabian Sea coast. The Soviets will also send 3 fishery research vessels to explore local fishery resources; Pakistani fishery scientists will participate. (TASS.)

Wants New Resources

Pakistan claims that Arabian Sea coastal fishery resources are overfished and wants new ones found 10-30 miles offshore. The Bay of Bengal area is being explored by an FAO-sponsored team of fishery scientists, including 2 biologists from the Soviet research institute ATLANTNIRO.

Netherlands Sends Shrimp Trawlers to Persian Gulf

A new shrimp trawler, catcher, and processing factory in a hull less than 90 feet long has sailed from the Netherlands to Dubai on the Persian Gulf. The vessel, "Alibut I," a twin-boomed, double-rigged trawler, has enough cleaning and freezing equipment to produce daily 4-6 metric tons of unshelled, heads-off shrimp.

She will work with a catcher vessel offloading shrimp for the U. S. market to refrigerated transports at sea. Owner is Gulf Marine & Diving Co. Ltd. ("Fishing News International.")

Symposium on Ocean Bottom Held in Stockholm

An International Institute for Peace and Conflict Research (SIRPI) symposium on the ocean bottom was held in Stockholm, June 10-14. Seven countries, including the U. S., sent delegates. The agenda included acquisition of mineral resources, acquisition and control of marine fishery resources, military uses of the continental shelf and the seabed beyond, and scientific research in the oceans.

Symposium Recommendations

The Symposium recommended that no government should claim more than a 12-mile territorial sea, and that early consideration be given to establishing an intergovernmental ocean organization. (U. S. Embassy, Stockholm.)

USSR to Aid Algerian Fisheries

Algeria has concluded a Technical Assistance Agreement with the Soviet Union to develop Algerian industry. Fisheries will be one of the 12 industries to receive Soviet aid.

Technical Assistance

According to the Algiers newspaper, "El Moudjahid," the 3 phase Agreement will last for several years. Between 1968 and 1972, the Soviets will make "commercial offers" of exploratory research vessels and fishing trawlers to Algeria. Later, feasibility studies will be made on fishing port improvement, loading and unloading facilities, production improvement, and establishment of fish inspection. Finally, the Soviets will train Algerian fishery specialists.

Other Aid Agreements

The Agreement is similar to others the USSR has concluded with developing countries, but its provisions are more extensive. Other assistance to Algerian fisheries came in 1965-early 1966 when Yugoslavia built 5 fishing vessels for the Ministry of Economic Development. Purchases were financed with Yugoslav credits granted to Algeria. In 1963, the Bulgarian Communist Party stated that "Bulgarian fishery experts will go to Algeria. . .and other Mediterranean countries to study marine fishery resources. . .and to conclude agreements for entry into their ports." Apparently this plan never materialized.

Algerian Landings

Algeria needs to develop her fishing industry. In 1966, landings were 20,300 metric tons, mostly pilchards; 10 years before, landings were 22,300 tons. At the same time Morocco, Algeria's neighbor on the Atlantic, had increased her catches from 112,000 metric tons in 1956 to 303,000 in 1966.

Indian Ocean Yellowfin Catch Declined

In early September, yellowfin tuna catches in the western Indian Ocean north of Malagasy declined to an average 2.5-2.8 tons per vessel per day. From October 1967 until this summer, fishing was excellent and vessels were averaging 5-6 tons a day. At present about 30 Japanese long-liners and 60 other foreign tuna vessels are fishing in the western Indian Ocean. ("Suisan Tsushin," Sept. 7.)

Mauritanian Fisheries Director Visits Japan

The Bottomfish Trawlers Association invited the Mauritanian Fisheries Director to visit Japan in late August or early September. The invitation was extended to promote friendship and goodwill and to provide an opportunity for informal discussion of an agreement permitting the Japanese to trawl inside Mauritania's 12-mile exclusive fishery zone.

Terms of Possible Agreement

The Association sent a mission to Mauritania in July 1967 to discuss a possible agreement. At that time Mauritanian officials agreed to permit Japanese fishing, if the Japanese would train Mauritanian crews, build and operate cold storages, assist in building vessel and gear repair facilities, and provide fishery consultants. Some Japanese question the merit of investing in Mauritanian fisheries in exchange for the right to fish for species like octopus and squid, which are marketable only in Japan, Italy, and Spain. ("Suisancho Nippo," Aug. 12.)

Nova Scotian youngster packs salt herring for export. Fish are pickled in tubs of brine. (Photo: National Film Board)

FOREIGN

CANADA

ONTARIO PRODUCES MORE FISH

Ontario commercial fishermen landed 12.8 million pounds of fish during the first 4 months of 1968, about 7.5% greater than for the same period last year, according to preliminary figures released by the Department of Lands and Forests. This increase came from the northern inland waters and all the Great Lakes, except Georgian Bay and Lake Huron.

The fishermen's revenue was nearly C$1.2 million. It increased correspondingly with the fishing area despite the reduced catches in Lake Huron. Lake Erie, where nearly five-sixths of the fish were landed, was a notable exception. There, catch value declined in spite of a 4.5-percent increase in landings. The entire provincial catch value is down 3.5% because of the Lake Erie decrease.

The fishing industry requested a closed season and quotas on Lake Erie yellow perch to avoid oversupply. This reduced yellow perch landings to 1 million pounds. A spring price of 7 cents a pound, compared with 10 cents a pound last year, also reduced Lake Erie catch value. (Ontario "Newsletter.")

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BRITISH COLUMBIA SALMON CATCHES

Record sockeye salmon runs in Rivers and Smith Inlets in British Columbia, and good catches of pink, chum, and coho have resulted in a C$24.5 million fish landing value for the July period, nearly C$7 million more than the previous July high of C$17.6 million in 1966. Salmon landings were worth C$22.9 million ex-vessel, halibut C$1.2 million, and other fish, including shellfish, C$400,000.

A total of 79 million pounds of salmon were landed; 34 million pounds of net-caught sockeye valued at C$12.8 million; nearly 20 million pounds of net-caught pinks worth C$2.5 million to fishermen; trollers landed 7.8 million pounds of dressed coho, valued at just over C$3 million.

Chum salmon landings, mainly from northern areas, were 7.8 million pounds worth just under C$1 million; the highest landings and value of chums for July since 1955.

Seiners and gill-netters landed 7.5 million pink salmon, but they were exceptionally small, averaging only 2.6 pounds, compared to a normal July average of about 4.4 pounds. Troll-caught spring salmon amounted to 2.7 million pounds worth C$1.6 million, compared with 2.5 million pounds and C$1.4 million in July 1967.

Net-caught spring salmon landings were down, totaling 1.6 million pounds, compared with 2.2 million pounds a year ago.

Halibut landings during July (including deliveries at U. S. ports by B. C. fishermen were 5.1 million pounds as against 7.0 million pounds in 1967. ("Fisheries News," Canadian Dept. of Fisheries, Aug. 23.)

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DOGFISH DIET FOR BLACK COD

The lowly dogfish, scorned as a nuisance in fishermen's nets and rejected as a food fish, may become part of the Canadian diet. The sharklike fish may be used as food for Alaska black cod, a gourmet species that can be raised in captivity.

Black Cod Adaptable

The Nanaimo Fisheries Biological Station has found that black cod, completely adaptable to pond cultivation, thrives on a diet of ground-up dogfish. The dogfish diet imparts a superb flavor to the cod. Other foods have been tried, but dogfish has proved the best. Black cod eats more voraciously and grows more rapidly when in captivity. It is an ideal subject for farming.

Dogfish Use Welcomed

There is a long way to go before cod ponds can be established, but a fish-farming program could be developed. Nanaimo scientists have determined that an Alaska cod can consume up to 5 pounds of dogfish for each pound it gains; in early growth stages it converts a pound of dogfish into a pound of cod. As the dogfish has little or no commercial value, any effort to use and control it would be welcomed. (Canadian Dept. of Fisheries, Oct. 4.)

The day's salmon catch is weighed prior to bidding at St. Jean de Luz, France. (Photo: International Labour Office)

EUROPE

USSR

FISHERIES MINISTRY TO SELL SEAFOOD IN MOSCOW

The Fisheries Ministry will take over the sale of fishery products in Moscow on an experimental basis. The Ministry will supply retail food stores and markets with fish and fishery products. Transportation facilities will be provided by the City Administration.

Cold-Storage Facilities

The Moscow Fisheries Combine, the Moscow Harbor Cold Storage Plant, and several other cold-storage facilities in Moscow, formerly under the Ministry of Trade of the Russian Republic (RSFSR), will be turned over to the Federal Fisheries Ministry.

Activities of New Unit

A new unit, MOSRYBA, has been created to supervise and coordinate the operation. MOSRYBA will organize a continuous supply of high-quality fishery products; sell to markets and retail stores; assist retailers in promoting sales and try to increase consumer demand. ("Ekonomicheskaia Gazeta," March 1968; "Rybnoe Khoziaistvo," Nov. 3.)

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CAVIAR SHORTAGE

A caviar shortage, caused by low catches of Volga sturgeon, was reported by the Associated Press from Moscow. Because of hydroelectric power dams on the Volga, increasing pollution, and overfishing, it is feared that Caspian sturgeon stocks are becoming extinct. A Fisheries Ministry official, V. S. Maliutin, has called for restoration of sturgeon "to its former glory." ("Japan Times," July 16.)

Exports

The caviar export trade suffered a reverse in 1963-64 when stocks sold to Western Europe were returned because of an off-odor, apparently caused by polluted waters. In 1966 only 699 metric tons were exported, worth US$2.9 million, but in 1967 exports increased 28%, to 900 tons worth US$5.1 million. It is possible that the reported domestic shortage was caused by increased exports.

Catches Are Declining

What really worries Soviet fishery officials, however, are smaller catches of sturgeon indicating decreasing stocks. During 1958-62, the Volga sturgeon catch was about 50-60% of the world's catch. In 1962, the Soviet sturgeon catch was 22,100 metric tons. Catch has decreased each succeeding year until in 1966 it sank to 15,100 tons. Hatcheries producing 50 million fingerlings a year have been set up on the Volga and Kura rivers. The Ministry of Fisheries, however, believes that 70 million fingerlings each year will be needed to reestablish stocks.

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FAILS TO PROVIDE CARRIERS AND PROCESSING VESSELS FOR HER FAR EAST FISHERIES

Fishermen from Kamchatka Peninsula, who overfulfilled the catch plan for first-half 1968, had serious trouble with the Far-eastern Fisheries Administration ("Dal'ryba") this past summer. The agency had not supplied the necessary refrigerated fish carriers and processing vessels.

Eighteen trawlers in the Sea of Okhotsk were drift-netting for herring; daily catches ranged 600-700 metric tons. Despite promises from "Dal'ryba," no refrigerated fish carriers or factory vessels arrived to offload them. The catches remained for days aboard the trawlers.

20 Seiners Await Carriers

In the Gulf of Anadyr, western Bering Sea, 20 seiners were laid up because no carriers or factory vessels came to offload. The seiners caught an average 250 tons of cod daily; this could have been increased to 400 had motherships been available. A similar situation existed off Karagin Island and Cape Olyutorskii.

The planned July Kamchatka 31,500-ton catch would not be fulfilled if "Dal'ryba" failed to provide transport and processing vessels. ("Vodnyi Transport.")

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USSR (Contd.):

FISHERY PROBLEMS IN THE SOUTHEAST ATLANTIC

Black Sea Fisheries Administration fishermen in the southeast Atlantic have 3 major problems:

Exploratory Fishing

Medium trawlers cruise in the fishing area, make sample trawlings, study hydrology, etc., but fail to direct the fleet to fish schools as soon as they are discovered. Moreover, medium trawlers are not equipped to explore at 1,200-1,500 foot depths where fish suitable for filleting are often found. To be of use to the large vessels working in the southeast Atlantic, exploring should be done by large freezer stern trawlers of the "Tropik" or "Atlantik" classes.

Transport and Transshipment

Catch-loaded vessels are frequently forced into demurrage for several days because of a severe shortage of refrigerated fish carriers. Transshipment to fish carriers is badly organized. Trawlers often unload only part of their holds to one carrier, an inefficient practice that causes a considerable loss of time and money.

Transshipment is much two slow because fish meal is transshipped to Merchant Marine Ministry tankers unequipped for this kind of operation on the high seas. Furthermore, vessels lose hours, and sometimes days, traveling to and from tankers located outside the fishing area.

Profits and Catch Quotas

Quality matters more than quantity. Fewer tons of high-quality fish are more profitable than more tons of low-grade fish. Despite this, all fishing vessels, including those operating under the new system, hang on to the old catch quota as a prime productivity index. Every day they must decide whether to fish for valuable food fish (hake, for instance) and jeopardize catch quotas, or take unutilized fish (such as horse mackerel, or trash fish suitable at best for fish meal) and overfulfil the quota. The problem is tough, because consumers do not want the presently unutilized fish that will make up the catch quota. ("Ekonomicheskaia Gazeta," No. 32, Aug. 1968.)

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TRAWLERS FISH OFF NORTHWEST AFRICA

The Soviet factory stern trawler BMRT-355, "Maiakovskii" class, 3,170 gross tons, fished off northwest Africa, on the Cape Verde Plateau, between 19°15' and 19°51' N., in mid-1968. This new fishing area for the Soviets, a shelf divided by 5 canyons, is hard to trawl.

Method

The trawl was set on sandy bottom at depths ranging from 110 to 200 meters (361-656 feet), at one end of a small shelf terrace. It takes 5 to 7 minutes to cross the terrace at full speed. The trawl is hoisted at the other end, where the terrace drops off into a canyon.

Catch

The trawler fished for snapper and hake. Average hauls were 1.5 to 4 metric tons. Average daily catch was 35-45 tons, after 18 to 20 hauls. BMRT-355 caught 2,000 tons of fish in about 2 months, for a net profit of 182,000 rubles (US$200,000). ("Rybnoe Khoziaistvo".)

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EXPANDS FISHERIES OFF SIBERIA

The only area of the Arctic Ocean fished commercially by Soviet vessels is the Barents Sea. Murmansk, one of the largest centers of the fishing industry, is there. Fishery resources of other waters off the Siberian coast, the Kara, Laptev and East Siberian Sea, are unutilized and unexplored. This is true also of the estuaries of the great Siberian rivers (Ob, Lena, Yenisey, Khatanga, Kolyma, etc.) more populated than the icy expanses of the Siberian seaboard.

Research Urged

Soviet ichthyologists are being urged to locate and delineate the fishery resources and study the species in those waters. Coastal areas of the Laptev Sea are believed to have commercial concentrations of fish.

USSR (Contd.):

Future Expansion

It is presently impractical to expand commercial fishing fleets in the Arctic Ocean because of water conditions and because known fish schools are too small to have commercial value. However, Siberian fisheries can be expanded by setting up shore centers provided with small supply vessels, 5 or 6 airplanes and helicopters, and gear and processing plants. A well-organized fishing industry in the Siberian Arctic might yield large amounts of valuable fish for the consumer market. ("Rybnoe Khoziaistvo.")

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EXPANDS FISHERIES IN BAY OF BENGAL

The Far-Eastern Fisheries Administration is planning to expand operations in the Indian Ocean. The freezer trawler "Akustik," on an exploratory cruise in the Bay of Bengal off the Andaman Islands, will be joined by the trawlers "Astronom," "Aviator," and "Koritsa." This is the first exploration by Soviet Far-Eastern fishermen in the Bay of Bengal.

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PURSE SEINER MAKES RECORD CATCH

The RS-300 class seiner, "Kosmonavt Komarov," has caught 14,480 metric tons of fish in $2\frac{1}{2}$ years, Jan. 1966-June 1968. This is more than 10% above 13,000-ton catch quota assigned to RS-300 class for entire 5-Year Plan, 1966-1970.

For second time in 2 years, Kosmonavt Komarov established an annual record. In 1966, she set an official All-Union record with 5,634 tons; in 1967, her annual catch exceeded the previous record by 166 tons.

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A HISTORY OF PURSE SEINING

The Soviets first attempted purse seining in the 1920s and early 1930s off the Murmansk coast, in the Black Sea, and in the far eastern waters. Results were poor, so the gear was discontinued and the seiners used to carry freight.

Improved net design, and adoption of a Japanese-designed seine-hauling machine, revived Pacific purse seining in the late 1930s. Most purse seining was done from "Kabasaki," the 13-14 meter (42.6-45.9 foot) long motorboats used in coastal fishing, with 500 meter (1,640 ft.) seines.

After World War II

Shortly after World War II, a Soviet-designed 300-horsepower seiner was adopted in the Far East, on the Black Sea, and along the Murmansk coast. The RS-300 seiners developed from those a few years later still yield excellent results purse seining for herring, and trawling for demersal fish in the Soviet Far East. Catches average 1,000 metric tons for a few months of seasonal fishing. Aerial reconnaissance for spotting commercial concentrations of fish has increased the Pacific seiner fleet's effectiveness.

Current Plans

In 1967, the Sakhalin Administration equipped 6 "Okean" class medium side trawlers for purse seining. Six medium trawlers and 5 RS-300 seiners, using 1,200-meter (3,936-foot) seines, fishing mackerel off Hokkaido, caught 9,000 tons in 2 months. In 1968, plans of the Far Eastern Administration call for equipping another 40 medium trawlers to purse seine mackerel and jack mackerel.

Purse seining developed in the European USSR on a large scale in 1966. The Murmansk fisheries also used RS-300 class seiners and converted "Okean" class medium trawlers. From June to December 1966, 15 "Okean" class trawlers purse seined herring in the Norwegian Sea; catches ranged from 1,000 to 1,800 tons per vessel. In 1967, 43 medium trawlers of the Northern and Western Administrations purse-seined in the Norwegian and North Seas; catch was about 100,000 tons. These Administrations are converting 80 more vessels to purse seining, mostly "Okean," "Maiak," and RS-300 classes.

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WATER POLLUTION CONFERENCE

The first All-Union Conference on Water Pollution, attended by 400 scientists and specialists, was held at Moscow University in February. A meeting will be held every 4

USSR (Contd.):

years. Soviet scientists believe that water pollution is inhibiting industrial and city growth and that clean water shortage is increasing catastrophically.

Subjects Presented

The "keynote" paper covered the pollution rate of inland fishery water bodies, the most effective means of protection against it, and gave the maximum permissible concentrations of toxic substances tolerated by fish eggs, larvae, fry and adult fish, on which to base regulation of industrial sewage, wastes from timber rafting, etc.

Other papers described the effect of organic phosphorus and its compounds, metal-organic compounds and polymetallic ores on fish, invertebrates, and algae; the effect of phenols on certain functions in fish, and on the photosynthesis of CHLORELLA; and the pollution of rivers, reservoirs, and inland seas. Principal pollutants of inland waters were defined as oil and oil products; industrial, urban and rural sewage; poisonous chemicals; detergents; and timber wastes.

Conclusion

The participants deplored the increasing pollution of fresh and ocean water, urged expanded research on the effect of pesticides, detergents, and other poisonous chemicals on hydrobiological processes and on water living organisms, and recommended measures to prevent water pollution such as breeding detoxicating organisms. ("Giodrobiologicheskii Zhurnal," No. 4.)

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RAILROAD CAR TRANSPORTS LIVE FRESH-WATER FISH

The Soviets have designed a railroad car to transport live fresh-water fish over long distances. The all-metal car is divided into 3 sections. One contains 2 diesel generators and the refrigerating equipment. One is a service compartment, with a kitchen and showers, to give the service personnel maximum comfort on the trip. The third carries 2 stainless steel tanks with a capacity of 15 cubic meters.

Water in the tanks is circulated constantly and oxygen is supplied by a multijet pump. The tanks hold about 10 metric tons of fish. ("Rybnoe Khoziaistvo.")

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TESTS PRESERVATION BY RADIATION

Equipment for processing fish and fish products with gamma rays will be tested on board the research vessel "Akademik Knipovich" and in a Ventspils plant, according to "Fiskaren," a Norwegian periodical. (Asst. Reg. Fish. Attaché, U. S. Embassy, Copenhagen, Sept. 17.)

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WAY DEVELOPED TO WARN FISH OF UNDERWATER EXPLOSIONS

Deep seismic soundings on the ocean floor--widely used in underwater geological exploration and surveying--may be harmful to the fishing industry because the explosions kill many fish.

Recorded Voices

Soviet biologists have developed a way to warn the fish when an explosion is imminent. A loudspeaker, lowered into the water, transmits "voices" of predator fishes recorded on magnetic tape. The fish immediately flee, and the explosion can take place without damaging marine life. The device has been tested successfully. ("Rybnoe Khoziaistvo," July.)

East Germany

WINS SECOND PLACE IN WORLD FISHING VESSEL CONSTRUCTION

In 1967, East Germany ranked second in the world in fishing vessel construction. Her shipyards built 82 fishing vessels, 103,311 gross registered tons--19.6% of total world construction; Japan built 21.8%. ("Neues Deutschland" July 29.)

In first-half 1968, East Germany launched fishing vessels totaling 42,000 gross registered tons. Twenty-seven were exported to the Soviet Union, France, Norway, West Germany, and Denmark.

East Germany (Contd.):

Rated Third by Soviets

A Soviet source has rated East Germany third, with only 14% of the total. ("Vodnyi Transport.") The discrepancy may be due to incomplete data for 1967.

Plans Data Center

An electronic data center and data-retrieval system on worldwide shipbuilding developments should be completed by January 1969 for the East German shipbuilding industry. Every 4 weeks the center will issue a review of the latest developments in the industry to about 2,000 shipbuilding specialists. This must be considered an attempt by East Germany to become more competitive in selling vessels abroad. ("Ostsee-Zeitung," July 24.)

West Germany

FISHES OFF CANADA

As their herring catches in the North Sea declined, West German vessels began fishing off the Atlantic coast of Canada early in June. The vessels are supplied from the island port of St. Pierre off Newfoundland. Salted herring and frozen fish blocks will be transshipped from there to West Germany. (Fisheries Council of Canada.)

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PLANS UNDERWATER LABORATORY

By May 1969, the first German underwater laboratory will be lowered into the North Sea off the island of Helgoland. After tests at about 60 feet, it will be lowered about 135 feet to the bottom. The program, designed by the German agency for air and space research, will include marine-biological and medical studies. The latter will attempt to determine how heart and blood circulation react to physical work, both in and outside the pressure chamber, and to long periods in cold water. Other studies will be made on the foods best tolerated by aquanauts. ("Vestkysten," July 10.)

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TRANSSHIPS SALTED HERRING FROM ST. PIERRE

The first shipment of West German-caught salted herring from the northwest Atlantic arrived at Bremerhaven in July aboard the Dutch freezer-transport "Arctic." Four Bremerhaven herring luggers had caught the fish. The luggers, reporting continued good fishing, took some of the much-sought "full" herring and, by July 25, had landed about 4,500 metric tons at St. Pierre. (U. S. Embassy, Copenhagen, Sept. 20.)

Denmark

FISHING PORT CELEBRATES FIRST BIRTHDAY

The Danish North Sea fishing port of Hanstholm celebrated its first birthday on Sept. 8. The construction of the port was begun in 1960. Ever since 1917 other efforts to build a lasting harbor had been unsuccessful.

Drying plaice, a very valuable fish, in Denmark. Many are sold live in fish shops.

Landings

In the first year, 22,000 metric tons of fish were landed at Hanstholm. Nearly 75% were industrial fish for meal and oil production; the rest were food fish. Industrial landings brought 3 million kroner (US$400,000); food fish landings yielded about 8 million kroner ($1.1 million).

Denmark (Contd.):

Cutters Land 90%

About 90% of the landings came from cutters home ported at other places in Denmark, showing Hanstholm's excellent location in relation to major North Sea Danish fishing grounds. If Hanstholm's own fleet continues to increase as it has during this first year, within five years it will number 100 cutters. (Asst. Reg. Fish. Attaché, U. S. Embassy, Copenhagen, Sept. 20.)

* * *

LARGEST SIDE-TRAWLER BUILT

M/S "Ellen Pedersen," the largest Danish-built side trawler, is 115 feet (overall length) and 203 gross tons. Lines and stability curve of the US$279,000 vessel were determined by computer at the Danish Ship Technical Research Institute. It can be diverted to line and purse-seine fishing.

M/S Ellen Pedersen, largest Danish-built side trawler. First Danish vessel equipped with refrigerated sea-water cooling system.

Seawater Cooling System

It is the first side trawler in Denmark equipped with a refrigerated sea-water tank cooling system. The stern loading room can take herring and mackerel in seawater cooled to -1° C. (30.2° F.). This system saves work on board, and gives better room capacity use than ice cooling in wooden boxes. There are two storerooms with a total space of 8,500 cubic feet. (U. S. Embassy, Copenhagen, Aug. 9.)

* * *

FISHING SALMON OFF GREENLAND

Although the State's Ship Inspection Control office considered the vessels unsuitable for the hazardous trip across the North Atlantic, about 20 small Danish fish cutters, some only 20 GRT, fished salmon off Greenland this year.

10 Cutters in 1967

Greenland salmon fishing disappointed the 10 cutters making the trip last year; stormy weather interferred with fishing. Nevertheless, this year twice as many cutters were willing to risk everything for the chance of making a profitable catch. Danish interest was aroused when, in 1966, a Faroese line vessel caught US$200,000 worth of salmon in 3 months. (U. S. Embassy, Sept. 3.)

* * *

FISHES YOUNG HERRING IN NORTH SEA

In recent years, many small boats from the Esbjerg industrial fishing fleet have fished young herring from nearby North Sea grounds. Other countries have often criticized this fishery because of its impact on abundance of adult herring in subsequent years. The North East Atlantic Fisheries Commission (NEAFC) has discussed the desirability of protecting these young herring but has taken no action. The Danes have been told that fishing young herring definitely has an effect on late fishing of adult herring elsewhere in the North Sea, including waters off the Scottish and English coasts.

Declining Stocks

North Sea herring fishing has become more dependent on strong year-classes because the stock in the southern North Sea has been drastically reduced by ten years of intensive fishing. In the 1950's, about 200,000 metric tons were taken annually; only 5,000 tons had been taken by October this year. Criticism of the Danish small herring fishery will intensify because the year-class being fished appears strong and others will object to this heavy fishing of juvenile stages.

Criticism of Fishery

Critics emphasize two points: (1) Danish fishermen damage subsequent years' fishing--in which they themselves participate--

Denmark (Contd.):

and, (2) reduction plants do not want small fish; they are difficult to process and meal and oil yield is poor.

Needs Tagging Study

NEAFC action to protect young herring has been postponed pending further study. An extensive tagging effort is essential to determine racial composition and mortality rate of stock fished on Bloden Ground. In May 1968, the NEAFC decided that the study could not begin before fall of 1969, and would be contingent on more financial support from member countries. (U. S. Embassy, Copenhagen, Sept. 17.)

* * *

SETS MINIMUM PRICES
FOR HERRING EXPORTS

Minimum prices have been instituted for whole and cut herring exported to Common Market (European Economic Community, EEC) countries. The agreement, worked out primarily between Denmark and West Germany, was reached quickly because both needed it. Denmark wanted substantially higher prices than those prevailing, while Germany wanted to avoid sales of Danish herring at "dumping" prices. Denmark was motivated, in part, by fears that Germany would request an end to the EEC customs-free quota, if low prices on Danish herring exports continued. Minimum price systems are already in effect for some Danish pond trout and fresh cod fillets exports to other European countries.

EEC Common Fisheries Policy

Because the EEC is Denmark's best customer for fish and fish products, they are extremely interested in avoiding any disruption of the market while the EEC Common Fisheries Policy is under preparation. This policy has been delayed pending agreement on territorial fishing rights. It is doubtful that agreement will be reached on these, although the rest of the policy probably will be approved. (U. S. Embassy, Copenhagen, Sept. 20.)

* * *

REGULATES SALES OF
PACKAGED FRESH FISH

The growing supermarket trade in retail-packaged fresh fish in closed packages has led to a new regulation. It covers whole fish, fillets, boned herring, crustaceans, fish roe, and fish liver.

Provisions

General provisions cover quality of the raw material, processing and packaging material. Packages must be clearly marked to indicate: (1) the type of commodity, (2) net weight, (3) registration number of the producer, (4) packing date and latest sales date (not in code), and (5) the highest permissible refrigeration temperature, 5° C. (41° F.). The most noteworthy provision is that packaged fresh fish must be sold by the retail shop before close of business on the day after packaging. Eel and flatfish, whole and in pieces, may be sold no later than the second day after packing. Fresh fish can be sold only in established retail fish shops; however, special permission for sale can be obtained by supermarkets meeting hygienic requirements.

Top Quality Assured

Denmark, surrounded by productive fishing grounds, has no point more than 80 miles from the coast. Excellent quality fresh fish have been available to housewives in several hundred neighborhood fish shops. Supermarkets are taking a greater share of this trade each year, largely with retail packaged items. New regulation assures that traditionally high quality fishery products will continue to be available. (U. S. Embassy, Copenhagen, Sept. 20.)

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FAROESE FISH OFF GREENLAND

A large Faroese fishing fleet of 42 distant-water long-liners, 10 trawlers, and about 100 open motorboats was fishing near Greenland early in July. Long-liners and trawlers fished cod banks off the west coast, while open boats with 4 or 5 men fished inshore. The small boats were transported in special "expedition ships" and fished from Faeringehavn, Kangarssuk, Borgshavn, and Ravns Storø.

Denmark (Contd.):

The Faroese

The total population of the Faroe Islands is less than 40,000, but the islands are well represented each year in the large commercial fleet. The Faroese were pioneers in the area. They began fishing the grounds with very small cutters in the early 1920's. Their present distant-water fleet is one of the most modern.

Products

Primary products of Faroese distant-water fisheries are salt fish and klipfish, which are exported to Brazil and southern Europe. Quantities of frozen fillets produced for the U. S. market are transported directly to Boston on specially equipped refrigeration vessels.

Principal Port

Main base is Faeringehavn in the Godthaab district. The port is open to all vessels. It provides all supplies, including fuel, food, and fishing gear. It has a small hospital, radio-telegraph center, a Faroese seaman's hotel, and a Norwegian welfare home.

This season, for the first time, Greenlanders will be permitted to land catches in Faeringehavn.

Fillet Factory

The Faeringehavn fillet factory produced 3,000 metric tons of cod fillets in 1967. Its capacity has been expanded. (Asst. Reg. Fisheries Attaché, U. S. Embassy, Copenhagen, July 5.)

Spain

THE FISH CANNING INDUSTRY

Spain's fish canning industry consists of 508 very small plants each producing an average of 175 to 2,000 metric tons a year. The canneries are spread among the provinces of Galicia, Guipuzcoa, Viscaya, Santander, Asturias, Lugo, Coruna, Pontevedra, Huelva, Cadiz, and the Canary Islands. The largest and best equipped are in Pontevedra Province, which has the greatest variety of raw fish, but the industry center is in Galicia.

Production Problems

National fish canning capacity is probably 220,500 tons a year, but only 33% is utilized. Production is low (1) because canneries are too small, (2) equipment is antiquated, (3) labor is unstable and costly, (4) high price of oil used in canning, (5) low priced tin for can manufacturing is insufficient, (6) varnish to coat inside of cans is expensive, (7) raw material supply is a problem, (8) production-line techniques required to satisfy demand for high quality pack are lacking, and (9) there are tariffs and other charges on Spanish products in international market.

Industry's Future

Badly needed is a program of mergers, closures of small inefficient plants, and upgrading of existing plants, equipment, and methods. Cold-storage plants to even out the flow of raw material are required; so too is an intensive program to market finished products. It will take a revolution in thinking by industry leaders to accomplish this. ("Informacion Conservera.")

Netherlands

FISH INSPECTION

Mandatory fish inspection is carried out by the Inspection Service for Consumer Articles through all stages of distribution. The program does not apply to Surinam and Netherlands Antilles.

Local & Export Fish Checked

The inspection program applies to both export and domestic fish trade. Canned and smoked fish are laboratory tested. Inspections take place at wholesalers, at retailers, at processing plants, and at fish auctions at the border in case of imports. After compulsory sale at the auction, the fish are no longer subject to inspection controls if transported by train, boat or truck. (U. S. Embassy, the Hague.)

Italy

REJECTS JAPANESE FROZEN TUNA

Some Japanese frozen tuna shipments to Italy have been rejected because of poor quality and improper size. Italian buyers claimed the tuna were not fresh, had freezer burns, and were not properly headed and gutted. They also complained that the fish were larger than the size contracted.

Increasing Rejections

Growing competition on the Italian canned tuna market and consequent demand for better-quality pack are causing increasing rejections. Italian processors claim that, after cooking, the tuna develops green or dark meat, sponginess, putty-like condition, and petroleum odor.

Prices Affected

Due partly to the Italian buyers' stringent delivery requirements, prices of Japanese frozen tuna exports to Italy have been rising. ("Katsuo-maguro Tsushin.")

Norway

HIGH-PROTEIN FISH MEAL PLANT IN OPERATION

A/S Norod, Egersund, Norway, started production of high-protein, low-fat fish meal, this year. The plant, equipped with West German machinery, uses a conventional gasoline extraction of fat. A gasoline explosion shortly after the opening of the plant disrupted operations until a few weeks ago.

Plant at $\frac{3}{4}$ Capacity

In August the plant was operating at three-quarters of its 15,000-ton annual capacity, but was expected to run at full capacity shortly. Fat extraction of fish meal (mackerel) produces protein and fat contents of 80.2% and 0.7%, respectively. Extraction based on fresh raw materials, however, promises an 84% protein content and only 0.2% fat content. (U. S. Embassy, Oslo, Aug. 6.)

* * *

MECHANICAL FEEDER STACKS SARDINES

Trio Maskinindustri in Stavanger, Norway, has developed a new type of mechanical feeder to stack sardines. Small pneumatic fingers can pack about 40 cans a minute. A vibrator turns all the fish heads in the same direction. The feeder is equipped with a double conveyor system, synchronized by an electropneumatic device, to assure uninterrupted delivery to the processing machinery.

U. S. Plant Using Feeder

A Trio feeder, combined with a head-cutter and nobbing machine, at a Maine (U. S.) cannery, has an 18,000 fish per hour capacity, equal to the production capacity of 4 or 5 human workers. Equipped with a belly-direction device, the feeder can be combined with filleting or packing machines.

Other Developments

Trio also has developed grading machines for brisling and sardines, and large herring and mackerel. One, grading fish by weight, can handle 18,000 fish an hour. (Export Council of Norway, Oct.)

* * *

PLANS MORE FACTORY TRAWLERS

Norway is expected to build more factory stern trawlers to satisfy the growing demand for kitchen-ready fish products. Norway has five such vessels. An additional factory stern trawler, now on order, will be the first to operate out of northern Norway. There is no difficulty crewing the new factory vessels, even though trips last several months. (U. S. Embassy, Copenhagen, Sept. 20.)

* * *

EQUIPS HERRING FACTORYSHIP

The 193-foot "Triplex," a converted trawler purchased in Holland, successfully completed sea trials during the summer and is now fishing. The vessel is equipped to purse seine herring and process them into fish meal. She carries freezing tanks for herring intended for human consumption and has 4 auxiliary engines to power the fishing and processing equipment. The vessel makes 12 knots. (U. S. Embassy, Copenhagen, Sept. 20.)

United Kingdom

LOBSTER FARMING TO BE TRIED IN SCOTLAND

A team of skin-divers has begun work on a lobster-farming project at Kinlochbervie and new lobster storage tanks have been opened at Grimsby.

Instead of traditional creels, the Kinlochbervie divers are laying large cages 6' sq. and 8' deep to provide cover for young lobsters while they grow to commercial size. Pulford Estates Ltd., developers of the white fish industry in northwest Sutherland, will market the catch.

Storage at Grimsby

The Grimsby storage tanks were built for Minch Shell-fish Ltd. with a grant and loans from the Highlands and Islands Development Board. The new tanks should make a big difference to lobstermen in the Outer Isles, as the company hopes to take crabs, scallops, eels, and winkles, as well as lobsters. Initially, 3 people will be employed on the project, but additional labor will be hired when crab trade develops. ("Fish Trades Gazette.")

Iceland

MID-YEAR FISHERIES REVIEW

The greatly reduced herring and capelin catch this year, uncertainty about northern herring stock migrations and doubts about the fall herring catch all point to a 1968 catch well below last year's reduced level. The decline in fishery exports during first-half 1968 may foreshadow lower foreign-exchange earnings for all of 1968.

By August 24, herring catch was 38,418 metric tons; it was 156,661 tons in 1967. Capelin catch 78,073 tons; 97,165 tons in 1967. Gains in white fish catch have been more than offset by herring decline.

The small herring catch has meant decreased herring meal and oil production. Loss of the Nigerian market for dried white fish has meant that most white fish raw material has been salted and the rest used for freezing and reduction.

Herring Production

Salted herring production, amounting to 35,000 barrels by June, had not even begun in mid-1967. Advance 1968 contracts for salted herring total 347,000 barrels. The USSR has ordered 100,000 barrels, to be salted in Sept.-Dec. this year: 40,000 to be delivered before end of year, and 60,000 during Jan.-Mar. 1969. Prices are based on last year's dollar prices and have been increased in terms of kronur to cover last November's devaluation.

Exports Drop

Poor catches caused a 30.8% decline in fishery exports in first half this year and, considering last year's kronur devaluation, a 26% decrease in value from US$45 million to $33 million. Fishery exports declined over 30% in value last year.

On September 7 the government agreed to finance 75% of the Price Equalization Fund to offset fluctuation in export prices. When prices decrease, frozen product exporters are reimbursed for the amount of the decline. Initially, the fund was financed 50-50 by government and industry. Under the new settlement, government will contribute 75% and industry 25%. Price guarantees are based on the export prices of Dec. 31, 1967. The government also agreed to provide 25 million kronur (US$1 57 kronur) in 1968 for payment to freezing plants in proportion to their outputs.

The quick-freezing industry's high domestic costs (costs and deficits in some cases were too great to benefit from last November's devaluation) and the importance of fishery exports made increased government assistance inevitable. (U. S. Embassy, Reykjavik, Sept. 12.)

LATIN AMERICA

Mexico

SURVEYS GULF OF CALIFORNIA

The Mexican Department of Fisheries has begun an intensive survey of Gulf of California fishery resources. It will be the most comprehensive survey of this area since the Japanese study made shortly before World War II.

As part of the Government's program to develop fisheries, the surveyors will measure both utilized resources and those with potential value.

Survey Areas

The first survey of the eastern shore will include the head of the Gulf and the western side as far as San Felipe. The survey will extend as far as Teacapan, Sinaloa, a few miles south of Mazatlan. Field work, begun in late August, will continue through September.

Survey Ships & Methods

A grid of trawl station lines has been laid out to cover the entire coastal area out to a depth of 20 fathoms. Eight shrimp trawlers donated by fishermen's cooperatives will make three 12-day trips each from Guaymas, Mazatlan, and intermediate ports. A biologist and a technician aboard each trawler will enumerate catches and evaluate results. Additional surveys out to 80 fathoms will be made by the large French trawler that recently conducted commercial fishing tests under a French-Mexican loan agreement.

Shrimp Studies

While the Gulf survey is underway, a related project is being carried on in the Gulf estuaries and lagoons. These areas are nursery grounds for young shrimp. Recent heavy increases in shrimp catches in Laguna Caimanero, near Mazatlan, have been attributed to construction of artificial drainage canals that provide clean fresh water. The current project is to study other bodies of water with similar physical improvement work in mind. (Regional Fisheries Attaché, U. S. Embassy, Mexico, Sept. 8.)

* * *

FISH CANNING IN BAJA CALIFORNIA

Baja California is the center of the Mexican fish-canning industry. The peninsula--State of Baja California and Territory of Baja California Sur--is an important producer of fresh and frozen lobsters, frozen abalone, totoaba, sea turtles, kelp, and other marine products. But canning and fish-meal manufacture are by far the most important parts of the industry.

Baja California State produces more marine products than any other state in Mexico; the port of Ensenada produces more than any other city. In 1966, the State produced as much as Mexico's entire Gulf and Caribbean coasts. Veracruz and Sinaloa, next highest-producing states, each produced less than half as much. Only Sonora and Sinaloa exceeded the State in value of production, while the Territory's catch value was sixth in Mexico. Shrimp, the principal fishery in Sonora and Sinaloa, have an extremely high unit value. In Baja, the largest fisheries are for species with a low unit price--sardines, mackerel, anchovies, kelp, and medium-price tuna. The fisheries for high-priced abalone and lobster are not large enough to bring Baja's total value up to first place.

Canning for Domestic Market

With two exceptions, all seafood canned in Baja California is produced for the domestic market. Canned tuna, sardines, anchovies, jack and Pacific mackerel, bonito, squid, mussels, and fish meal are sold entirely in Mexico. Baja produces nearly all the Mexican pack of abalone and tuna-scrap pet food.

Over half the abalone pack is exported to Asia and the U. S.; the U. S. imports all the pet food. Canned abalone is the second most valuable Mexican fishery export. In 1966, export value of canned and frozen abalone meat was US$2,573,000. Baja produced 5,235 metric tons of fish meal in 1966, over half the total Mexican production.

History of Industry

Commercial fishing in Baja California began about 1928, when the first canneries opened at El Sauzal near Ensenada, and at Cabo San Lucas at the southern tip of the

Mexico (Contd.):

peninsula. Prior to World War II, three more canneries opened at Ensenada, and 2 or 3 small abalone plants were built farther south. Development was steady, and the fisheries now are the peninsula's largest industry. There are 13 plants in Baja; one packs only tuna, 2 produce only abalone, several can only sardines, mackerel, and anchovies; and a few can 2 or more of these. Six operate fish-meal plants using cannery offal and some whole fish.

The canneries compare favorably with plants in the U. S., Canada, and Japan. Some older ones have antiquated equipment and rely on hand labor, while others have replaced obsolete machinery. The newer ones, outfitted with the latest equipment, shine with stainless steel. Sanitation standards are very high, retorting times conform to the rigid requirements of the State of California. Some new canneries have imported practices, techniques, and even technicians from well-known plants in Spain. The industry blends the best from Mexico, California, and Spain.

Ensenada Canneries

The government-controlled Bank for Development of Cooperatives (BANFOCO) has incorporated 5 of the canneries in Baja California.

The largest fish cannery in Mexico, Pesquera del Pacifico (BANFOCO), was built 6 miles northwest of Ensenada to take advantage of a small natural harbor. Since then, the little bay has silted, and Ensenada has built a modern harbor. The fishing fleet unloads at the dock in the city, and the fish are trucked to the cannery.

Pacifico is more than a fish cannery. It is really a food processing complex producing a great variety of canned products, seafoods, fruit, vegetables, fruit juices, tomato paste and puree, pet food, and fish meal. Originally, the plant only packed fish, then began processing tomato sauce in which to pack the fish, and eventually branched into fruit and vegetables. A reduction plant has been added to utilize the fish offal.

Pesquera Peninsular (BANFOCO) is the oldest cannery in Ensenada. Formerly at the water's edge, it is now some distance from shore due to a land fill formed when the modern harbor was built. The fishing boats unload at the dock, or into floating offshore hoppers connected to shore by submarine pipelines.

Peninsular specializes in packing sardines and anchovies in 4-oz. and 12-oz. rectangular cans. In late 1967, the plant began packing sea mussels gathered from rocks along the coast near Ensenada. Its fish-meal plant is equipped with a stick water plant for maximum utilization of cannery offal. Other Ensenada canneries give their fish offal to Peninsular; they find this more economical than operating individual plants to utilize small quantities.

The BANFOCO canneries are supplied by 2 company-owned purse seine fleets. The 3-vessel tuna fleet fishes as far south as Peruvian waters. The 6-vessel sardine and mackerel fleet fishes local waters. The larger refrigerated seiners go as far south as Isla de Cedros, taking bonito and yellowtail as well as sardines and mackerel.

Three canneries are partly owned and operated by Spanish interests.

Empacadora Galicia de Baja California and Empacadora Mar pack sardines and anchovies as Spanish-style sardines.

Conservas del Pacifico, S. A. (COPASA) is owned 55% by a Mexican food, wine and olive producer, and 45% by a consortium of 3 Spanish canning firms. It packs the greatest variety of seafoods of any one plant in Mexico.

COPASA owns and operates the newest and only Mexican-built purse seiner in the tuna and sardine fishery. "Copasa," an all-purpose, refrigerated vessel, fishes both tuna and sardines. When sardines are scarce in local waters, she fishes in the Gulf of California and lands catches at Guaymas. There the sardines are cleaned and headed for shipment to Ensenada by refrigerated truck.

Empaca Portena packs Spanish-style sardines, 1-lb. oval sardines, and mackerel in 1-lb. tall cans (salmon style).

The locally owned Empacadora Costa Azul cans abalone for export. For the domestic market, Costa Azul cans abalone, anchovies, and mackerel, and cooks and freezes lobster.

A fleet of privately owned small seiners provides anchovies, mackerel, sardines, and

Mexico (Contd.):

squid for the 7 Ensenada canneries. The fleet, about 25 boats 45-60 feet long, makes one-day trips, fishing in daylight. Their seines are ring nets, or modified purse seines without turntables. Catch sold for canning brings US$40 a ton. The canneries are extremely quality conscious. Any anchovies not suitable for canning are used in the meal and oil plants and bring only $16 a ton. High prices for tuna, sardines, and anchovies at Ensenada reflect high prices paid by nearby California canneries.

Southern Canneries

All canneries south of Ensenada are in extremely remote places. Their neighboring villages, from 1,000 to 1,500 people, depend almost entirely on the canneries, although there are lobster fisheries at 3 villages and one has considerable tourist business. Small company-owned refrigerated ships bring in perishables and carry out canned fish, fish meal, and frozen abalone meat. Coastal freighters also stop at some villages. All towns have airstrips for small aircraft required to haul out live lobsters. The towns are desolate, frontier-style, aggregations of shacks, but they are surrounded by a stark beauty of sea and desert that holds great attraction for visiting fishermen and yachtsmen.

One pioneer plant, Pesquera Isla de Cedros (BANFOCO), is on Cedros Island at the southern edge of Baja California State. It cans abalone and fish. Although at the southern edge of abundance of northern anchovy and mackerel, it is also at the northern limit of southern sardine, and draws seasonally from all these resources. Over 25 years ago, the cannery was described as "One of the cleanest I have ever seen." It still has a good reputation. A reduction plant uses cannery offal and whole fish.

Cedros is served by a company-owned fleet of 5 small purse seiners or ring net boats. As at other southern canneries, the abalone divers are members of the fishermen's cooperative associations that own the diving tenders.

Pesquera de Bahia Tortugas (BANFOCO), an abalone cannery in the northern part of Territory of Baja California Sur, is on the beautiful landlocked harbor of Bahia Tortolo at Puerto San Bartolome. To early American whalers, it was known as Turtle Bay, and visiting yachtsmen and fishermen still call it that.

Empacadora de Baja California, at Bahia Asuncion, is the only abalone cannery without an unloading wharf. The supply ship and diving boats lie off the beach and transfer cargo by amphibious "ducks." Visiting fishery experts have described it as "one of the best operated small fish canneries we have ever seen."

Years ago a small sardine cannery was built at San Juanico, but it never got into production. All traces of the village have disappeared and only the abandoned cannery building stands as a reminder.

Bahia de la Magdelena, one of the world's largest landlocked harbors, supports two canneries. Though lying south of the northern anchovy abundance, they still can draw on what remains of the southern race of Pacific sardine. Thread herring and Pacific mackerel are canned as "sardines" and are used, with anchoveta and round herring, for fish meal.

Pesquera Matancita (BANFOCO) is near the northern entrance to Bahia Magdelena. Like other canneries in the south, it is a self-contained entity with power plant, water supply, air strip, company stores, etc. Unlike the others, it can receive some supplies overland via a barely passable road. Two complete fish-meal plants and two canning lines can handle 170 tons of raw material a day. Matancitas is supplied by 3 small purse seiners.

The other Bahia Magdelena plant, on Isla Margarita a little to the south, is probably the world's smallest combination sardine cannery and reduction plant. La Maritima, at Puerto Alcatraz, has a daily capacity of only 20 tons of raw material, which is supplied by 3 very small seiners.

Half Mexican Tuna Pack

Over half the Mexican tuna pack is canned at Compania de Productos Marinos at Cabo San Lucas. The cannery, at the extreme southern tip of Baja, has operated continuously since about 1929. This was achieved despite changes in ownership, damage from tropical storms, and a change in marketing

Mexico (Contd.):

from export to domestic in response to growing Mexican demand. Marinos has enough cold storage room for 200 to 250 tons of frozen tuna, but other equipment is somewhat outmoded; the plant depends on hand labor. Skipjack and yellowfin are packed as first-line tuna; bonito and yellowtail are labelled economy. Scrap is used for fish meal in the reduction plant.

Marinos' 4-vessel tuna fleet includes 2 veteran pole-and-line live bait boats that have fished out of Cabo San Lucas for years. A third boat, the largest tuna vessel in Mexico, can carry 310 tons of frozen tuna. The fourth is owned by an Ensenada fishermen's cooperative.

Several better-known tuna fishing banks are closer to Cabo San Lucas than to Ensenada, and Marinos has a larger canning capacity than Pesquera del Pacific, Ensenada. So they have worked out an informal arrangement allowing Ensenada vessels to sell catch at San Lucas when Pacifico cannot handle the fish--or when an Ensenada vessel must put into port with a catch too small to make a trip home worthwhile.

Conservas de California is a vegetable cannery in La Paz on the Gulf of California. It specializes in canned chilis and olives, but occasionally it packs small quantities of specialty sea foods.

Can Factories

Can factories in Ensenada and Monterrey provide standard-size cans for all Baja California canneries. Odd sizes and shapes, not available from Mexican can makers, are imported from the U. S. Canned fish may be shipped into Mexico from the Free Zone of Baja California duty-free, even when imported cans are used.

Practically all canneries use their own labels and brand names and also pack under other labels for distributors. The 2 principal tuna canners share some brand names and pack for one another when orders get ahead of production.

The huge growth of the fish-canning industry has come from the tremendous expansion of consumer demand during Mexico's economic development. Imported canned fish has always been in great demand among higher income groups, and a bewildering variety of products is still imported from Europe, North America and Asia. As potential consumers increased, domestic canners took advantage of the growing market and began packing competitive products that are acknowledged copies of well-known imported favorites. There is a proliferation of Spanish- and Portuguese-style sardines, squid, mussels, U.S.-style tuna, and salmon-style mackerel (there are no salmon in Mexico). Many labels even show the names of foreign companies that provided techniques and technical supervision.

Peru

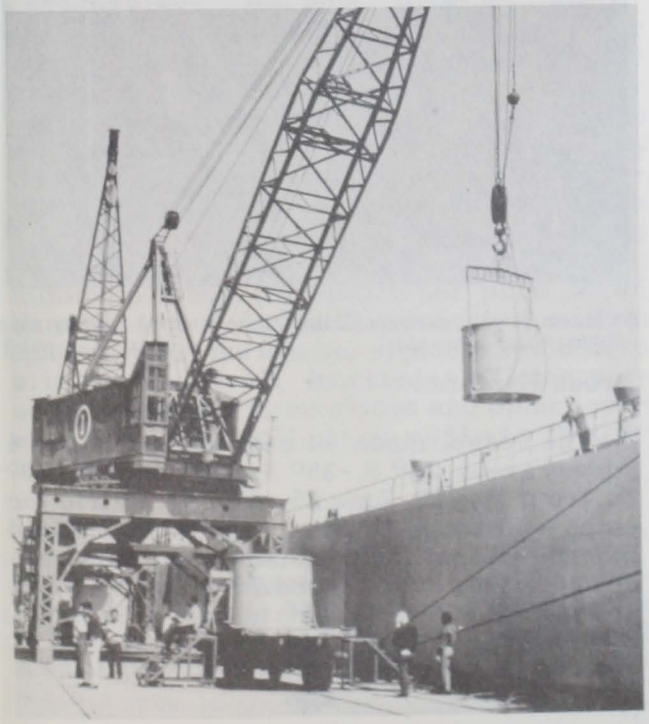
FIRST PERUVIAN BULK SHIPMENTS OF FISH MEAL

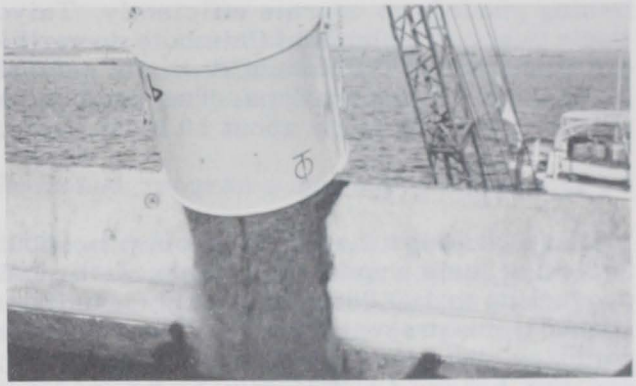
The first bulk shipments of fish meal from Peru apparently were a complete success. In 8 working days (between June 24-July 4), 15,197 metric tons of bulk fish meal were loaded aboard a tanker, an operation normally requiring 13 days with the same quantity of sacked meal. The operation was repeated in August.

The bulk meal requires only 57 cubic feet per ton, compared with 80 cubic feet per ton for sacked meal. Proponents of the new system claim up to $10 per ton may be saved by shipping in bulk.

The experimental loading was carried out in Chimbote. Meal was dumped from sacks by hand and transferred via small conveyers into large canisters carried aboard trucks. (The cannisters were 6 feet high by 5 feet 11 inches in diameter, and hold $2\frac{1}{2}$ tons of meal; each required 4 minutes to fill. Each truck carried 2 or 3.) The cannisters were trucked to dockside, lifted individually by crane, and the meal emptied into the hold of the tanker. The first operation employed 70 cannisters, 3 cranes (with another held in reserve), 35 trucks, and about one-third the personnel required in the normal sacked-meal loading operation. The record operation employed 40 trucks and 90 cannisters. All the meal was treated with a liquid antioxydant (Etroxiquina) and was subject to the requirements of the vessel owner and underwriters: cured for 21 days, treated with a minimum of 100 grams of

Peru (Contd.):





Photos: "Pesca."

antioxygant per ton, fat content of the meal at time of shipment no more than 12 percent, and with temperature, moisture content, etc., similar to normal meal. During shipment, the holds were sealed and filled with inert gas, and the oxygen level kept below 2 percent.

The experimental shipments were undertaken by 7 firms, all members of the Peruvian Fisheries Consortium. The meal was loaded aboard the Dutch vessel "Thuredrecht" bound for Rotterdam. The vessel made the trip in 20 days, unloaded its cargo in 1 day, and returned immediately to Peru. Another shipment was made August 20. Engineers plan to reduce loading time to 6 days by using larger cannisters (7 feet high, 6 feet in diameter, and holding $3\frac{1}{2}$ tons of meal) and reducing to 55 cubic feet the area required for a ton of meal. Another shipment was scheduled for October 17. ("Pesca," July 1968.)

* * *

JAPANESE FIRM TO INVEST IN FISH PRODUCTION

Taiyo Fishery Co., one of Japan's leading fishery firms, is planning to buy all the shares of Industriad Del Mar (INMAR); the Japanese company already owns 50%. Taiyo believes that a wholly owned subsidiary will be profitable because fish meal export prices have stabilized and the anchovy catch has increased. The company also intends to buy 2 fish meal plants to expand its business in Peru.

Fish Meal Plants

The INMAR fish meal plant at Atico, close to the Chilean border, is too far from the

Peru (Contd.):

fishing grounds to operate efficiently. Taiyo wants to acquire plants at Chimbote, in northern Peru, and at Callao and Pisco, in central Peru, to even out operations. Two companies will be selected from about 10 local firms.

To Increase Production

Taiyo, hoping to have INMAR operate about 30 fishing boats, expects to increase fish meal production to 100,000 metric tons annually--about 3 times present capacity. The Japanese company also plans to include shrimp, tuna, and sea bream in INMAR's operations. ("Japan Economic Journal," Oct. 8.)

Nicaragua

PRODUCTION AND EXPORTS

During the first 6 months of 1968, the Nicaraguan fishing industry produced nearly 3.5 million pounds of fishery products--mostly shrimp and lobster--worth over $3 million. Nearly all the shrimp was exported, primarily to the U. S. Between 71 and 81 shrimp vessels and 45 to 53 lobster boats operated during the period.

Jan.-June Production and Export Totals

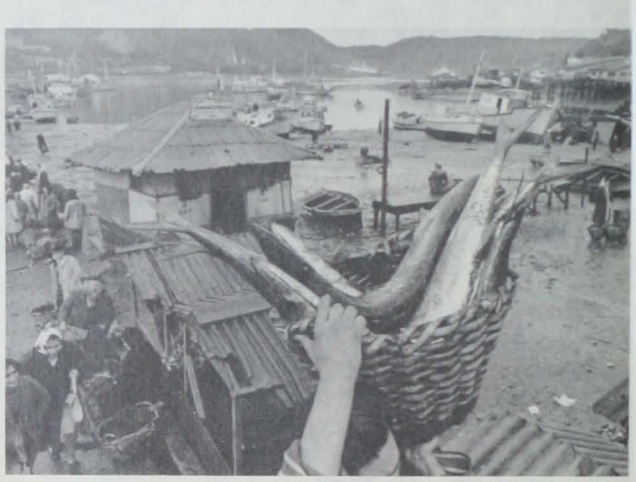
	Production	Exports
	. . . . (1,000 Lbs.) . . .	
Shrimp, frozen. . .	2,758.8	2,831.3
" dried . . .	521.6	65.3
Lobster, spiny. . .	147.2	155.5

(Instituto de Fomento Nacional, "Boletin Information Pesquero No. 8.")

Chile

JAPAN EXPLORES FOR TUNA OFF CHILE

The Japanese Fisheries Agency has released the first interim report on the tuna long-line explorations by the research vessel "No. 31 Azuma Maru" (340 tons) in the upper latitudes off the coast of Chile.



At Puerto Montt, southern Chile, customers buy directly from fishing boats at low tide. (FAO/S. Larrain)

Areas Explored

The vessel made 24 sets in the first of 4 survey areas, 20° S.-35° S. and 100° N.-130° N., from May 23-June 25. The 31 metric ton catch--albacore 14 tons, bigeyed 8 tons and others--did not include black tuna. The vessel operated in the second area, 20° S.-35° S. and 70° W.-100° W., from July 4-Sept. 21. ("Suisancho Nippo," July 9.)

ASIA

Japan

STUDIES MERGER OF TUNA PACKERS

The Tuna Packers Association has published an interim report proposing packing plant mergers and industry modernization. The 139 plants owned by 112 firms would be reduced to 43 initially and to 14 through later mergers.

Industry Difficulties

Independent tuna packers are having trouble with raw material and labor problems, increasing competition in foreign markets, and weakening competitiveness of the Japanese product. As South Korea and Taiwan are likely to begin tuna packing, Japan must strengthen her international competitiveness. The industry must accelerate modernization by streamlining production processes and consolidating operations.

Initial Merger Plans

Mergers would increase production by combining and mechanizing operations. In the U. S., 20 packing firms produce 20 million cases of canned tuna a year. The top seven pack 19.3 million cases, or about 2.8 million per firm. In Japan, 112 packers produce 6 million cases a year at 139 plants, or about 43,200 per plant. Assuming that 500 cases per day is the minimum output for economic plant operation, to pack 6 million cases the 112 packers could operate only 107 days a year. However, if machine-packing is adopted, minimum daily production would have to increase to 700 cases, plants would have to operate 200 days a year and minimum annual production per plant would thus be 140,000 cases. To pack only 6 million cases a year, the number of plants would have to be reduced to 43. Increasing efficiency by using more packing machines and other modern equipment will necessitate further mergers.

Later Mergers

A second merger would reduce the number of plants to 31, producing 1,000 cases a day per plant and increasing overall annual production to 6.2 million cases. The fifth merger would cut plants to 14, each packing a minimum of 500,000 cases a year, for a total annual production of 6.8 million cases.

Proposed Programs

Cooperatives would be established for each group of packers. Means must be found, under existing law, to extend loans to the cooperatives and to assist packers who want to retire or transfer to other industries. Two different programs have been proposed to implement the mergers. One would set up a US$0.5-1 million subsidy program to assist packers withdrawing from the industry. It would be financed either half by the Government or wholly by the industry, 50-50 between packers and can manufacturers. The other program would set up a Government-financed purchasing agency to buy lots, plants, and business licenses from retiring owners. Land and facilities would be sold to parties other than tuna packers and the business licenses sold only to packers. No new license would be issued, restrictions would be imposed on "outsiders" (packers not belonging to the Association), and fixed performance quotas established. ("Suisan Tsushin," Sept. 13.)

* * *

DISBANDS TUNA PROMOTION ORGANIZATION

The Japanese International Tuna Association, formed in 1956 to promote frozen and canned tuna exports to the U. S., is to be dissolved. The Association has been promoting tuna exports with funds provided by a 50% government subsidy, matched by contributions of 25% each from the frozen tuna producers and the canned tuna packers. However, frozen tuna producers, faced with growing production and export problems, have questioned the need for such a program, and their resistance has led to the decision to end the program. Future export promotions will be undertaken by the Japan External Trade Organization (JETRO), with government subsidy. ("Nihon Suisan Shimbun.")

* * *

Japan (Contd.):

TUNA PRICE
STABILIZATION CONSIDERED

The Federation of Japan Tuna Fisheries Cooperative Associations (NIKKATSUREN) is studying measures to stabilize tuna prices, primarily yellowfin, which have dropped more than usual. NIKKATSUREN wants to build its own cold storages to regulate domestic tuna supply and so stabilize prices. In the export market, Japan alone cannot stabilize prices; she must seek the cooperation of South Korea and Taiwan.

Demand High Quality

Study of the domestic market indicates that demand for high-quality fresh tuna will grow. Consumption of medium- to high-grade fish is increasing in rural communities; since medium-quality tuna is abundant, market demand for it must be stimulated. Promotion of fresh-fish consumption is important because tuna bring higher prices on fresh market (for "sashimi" and "sushi" trade) than when sold to packers. However, consideration also must be given to stabilization of supply to the packers, who annually use over 100,000 metric tons of raw tuna. They are faced with shortage of raw material.

Adjust Tuna Supply

To adjust tuna supply on domestic market, NIKKATSUREN would have 5,000- to 10,000-ton capacity cold storages at Yaizu, Shimizu, and Misaki. Yellowfin landings would be stored during May, June, and July, when prices decline; they would be released after September, when prices begin going up. Normally, yellowfin prices decline during those months from around US$529 a short ton to $403-454 a ton exvessel, but this year prices fell to $333-365 a ton.

As for storage methods under the supply adjustment plan, NIKKATSUREN either could buy the tuna landings, or store them for sale on a consignment basis. Since cold storages would have to be operated year-round, they also could be used seasonally to store albacore, skipjack, and bait saury.

Export Market

S. Korea and Taiwan have begun turning to the Japanese market because of price declines in other markets. Taiwanese fishermen are taking many bluefin tuna in the Indian Ocean. They want to sell them to Japan because there is no market in Europe or the United States and Taiwanese demand is very limited.

Some Japanese feel tuna imports should be handled through one agency and conform with NIKKATSUREN's price-stabilization program. However, many fear that imports of foreign-caught tuna would amount to supporting foreign fleet expansion. They want the countries seeking markets in Japan--South Korea and Taiwan--to agree to stop enlarging their fleets. Under present circumstances, this is questionable. ("Suisan Keizai Shimbun," Sept. 18 & 19.)

* * *

TUNA PACKERS HAMPERED
BY SHORTAGES

Packers in Yaizu and Shimizu pack close to 80% of all of Japan's canned tuna. They are being hampered by a raw fish shortage, caused by poor landings of summer albacore and a slow fall season skipjack fishery. Normally, when fruit packing ends in early September, packers switch to full-time tuna canning. Short supplies of albacore and skipjack are making it hard for them to keep going until tangerine packing start in November.

Possible Plant Closures

Some packers feel they should suspend production rather than lose money keeping plants open. However, if they stop, they have to pay their workers over 60% holiday pay to keep them for the next fruit-packing season. Besides, production stoppage would delay fund turnover and adversely affect the plant's financial position. ("Suisan Keizai Shimbun," Sept. 6.)

* * *

ATLANTIC ALBACORE
SHIPPED HOME

The extremely poor summer albacore fishery off Japan and a domestic raw material shortage have caused some Japanese firms to ship albacore taken off Angola back to Japan. Some firms preferred to ship catches home rather than sell to other countries, because the small (about 13 kilograms or 28.6 pounds)

Japan (Contd.):

and fair quality fish either were rejected or brought very poor prices on the export market. Japanese packers, paying $428-454 a short ton, claimed the Angola-caught albacore yield was low, only about 50% recoverable for brine-packed tuna production.

The fishery off Angola was still good in August despite the passing of the peak fishing season. Vessels were catching around 3 tons per operation. ("Katsuo-maguro Tsushin," Aug. 1.)

* * *

AVERAGE PRICES OF FROZEN TUNA EXPORTS TO U. S., JUNE-SEPT. 1968 & 1967

Species	Prod.	Export Prices Average				Quantity Exported
		June	July	Aug.	Sept.	in Sept.
		. . .	(US$/Short Ton, f.o.b. Japan) . . .			Short Ton
Albacore	Rnd.	450 (424)	453 (462)	456 (472)	451 (472)	92 (835)
Yellowfin	gill. & gutt.	364 (352)	366 1/ (400)	368 (397)	371 (409)	3,836 (2,042)
Albacore	loin	1/ 920 (892)	933 (913)	991 (948)	1,008 1/ (990)	75 (150)
Yellowfin	loin	805 (797)	807 (863)	811 (897)	848 (890)	106 (28)

Note: Prices in brackets are for same months in 1967.
1/Only one shipment in month.
Source: Fisheries Attaché, U. S. Embassy, Tokyo, Oct., from Japan Frozen Tuna Exporters' Assoc.

* * *

BERING SEA GROUNDFISH CATCH UP

Twelve mothership-type bottom trawl fleets in the Bering Sea had taken 505,000 metric tons of fish by July 25, about 20,000 tons more than in 1967. The high catch was due entirely to the large amount of Alaska pollock taken by 5 meal and minced meat factoryship fleets. Catches of most other species were sharply below last year's. Pacific ocean perch landings of 3,000 tons were 13% of 1967's catch and the 7,000-ton herring landings were less than one-third. Herring catch was low because there were no good concentrations of egg-bearing fish off Cape Olyutorski. In early August the four herring fleets in that area began fishing tanner crab. ("Nihon Suisan Shimbun," Aug. 7.)

* * *

1967 FISHERY CATCH HIT HIGH

Data from the Japanese Agriculture and Forestry Ministry indicate that 1967 fishery production was a record 7,824,000 metric tons (excluding whales). This was 10 percent, or 722,000 tons, more than 1966 landings of 7,103,000 metric tons. (On April 12, 1968, the Ministry had released preliminary data showing 1967 fishery production about 7.7 million metric tons.)

Marine fisheries accounted for 7.24 million tons of the total, 10 percent more than 1966's 6.56 million tons. ("Suisan Tsushin.")

* * *

IMPLEMENTS KENNEDY ROUND TARIFF CUTS

On July 1, Japan effected a simultaneous tariff reduction on imports. Under the Kennedy Round, Japan agreed to a two-fifths cut on items listed for a 50% reduction over a 5-year period. Frozen tuna and salmon, and canned fish are among fishery products affected by the reduction. Initial cuts on fishery products will reduce the 10% duty on frozen fish imports to 8% and the 20% duty on canned fish to 15%. Fisheries Agency officials and industry leaders foresee no serious adverse effect on the domestic industry. Some observers feel that the reduced levy may serve to stimulate rising frozen tuna imports. ("Nihon Suisan Shimbun.")

* * *

SHRIMP IMPORTERS ADOPT STANDARD PURCHASE CONTRACT

The Marine Products Importers Association adopted a standard contract for use in purchasing shrimp from foreign countries (excluding Mexico). The contract will protect Japanese trading firms against heavy losses when shipments contain uneven-sized shrimp or weight shortages. Such cases have occurred frequently in deliveries from southeast Asian countries this year. Claims of contract violations are difficult to settle under present procedures, since the buyer, by means of letter of credit, makes full payment at the time of purchase. The new contract, while not stipulating any definite amount payable by letter of credit (the Association plans to negotiate for an 80-percent L/C payment), does

Japan (Contd.):

provide for final inspection of shipment at the port of destination instead of accepting delivery on "f.o.b. final" conditions.

Mexican Imports

Imports from Mexico will be regulated voluntarily to avoid oversupply. Trading firms importing shrimp from Mexico will notify the Association of the quantity loaded on vessels. When the quantity reaches a certain level, the Association will advise importers not to order any more shipments during that month. Claims against Mexican shrimp will be handled jointly by the trading firms. ("Suisan Tsushin," Sept. 20.)

* * *

EXPECTS TO IMPORT 4,000 TONS SALMON ROE

Salmon roe imports from Alaska and Canada began in July, but by August 15 total imports were only 130 metric tons.

Production

The pink salmon season peaked in mid-August in all parts of Alaska (Bristol Bay, Cook Inlet, Prince William Sound, and Ketchikan), but the ratio of males was higher than expected and salmon roe production was low. Nevertheless, combined Alaskan and Canadian salmon roe production was expected to reach 4,000 tons.

Prices

Red salmon roe prices started about 7 cents a pound below the first price last year. No appreciable price fluctuation has been noted since. Demand was high at mid-August and there was a shortage of salmon roe produced by factoryship. Prices were expected to remain stable until the season's peak in September and October. There will be a carryover to next year if production does reach 4,000 tons.

Mid-August shore prices per pound were: chum salmon roe: first grade US$2.60; second grade $2.50; third grade $2.40. Red salmon roe: first grade $2.40; second grade $2.30; third grade $2.00. Silver salmon roe: second grade $2.00; third grade $1.80. ("Suisan Tsushin," Aug. 17.)

* * *

IMPORTS MINCED FISH FROM TAIWAN

Edible fish cake processors in southwestern Japan, faced with an acute shortage of raw material, are planning to import "surimi" (minced fish meat) from Taiwan. Recently survey teams sent to Taiwan found an abundance of lizardfish and croaker, suitable for "surimi." The processors will provide technical assistance for production of fresh, high-quality material. ("Suisan Keizai Shimbun.")

* * *

IMPORTS SOVIET FISH MEAL

Five major trading firms have imported about 4,000 metric tons of white fish meal from the USSR. This was Japan's first purchase of Soviet fish meal this year. In 1967, a shipment of Soviet meal could not clear Japanese Customs and was exported to another country.

Prices

Import price was about US$172-175 a metric ton, Yokohama warehouse delivery, about $11.00-14.00 lower than the Japanese factoryship meal price. ("Minato Shimbun," Aug. 22.)

* * *

SWORDFISH EXPORT PRICES AT RECORD HIGH

Export prices for swordfish shipments to the U. S. reached a record high in July. Prices for swordfish fillets (50-70 pound size) in July-Aug. were around 55 cents per pound c. & f., about 20 U. S. cents above comparable 1967 prices which averaged 34.2-35.2 U. S. cents. This sharp gain is attributed to poor swordfish landings in the U. S. Low production in Canada and Peru, the two other major swordfish suppliers, also contributed to the price rise. Prices per pound for swordfish exports to the U. S. during first half 1968, for 50-70 pound size fillets c. & f., rose from 39.7 cents in January to 47.6 cents in June. ("Suisan Keizai Shimbun," Aug. 13.)

* * *

WHALE OIL PRICES DOWN

Estimated fin whale oil production for the current North Pacific whaling season is about 15,500 metric tons. Contract price of about

Japan (Contd.):

US$130 a metric ton is about $10 below the price for fin whale oil produced in the Antarctic whaling season. Whaling companies have made concessions because the total production will be sold on the domestic market. Producers are satisfied despite the low contract price because the overseas market for soybean oil, fish oil, and fin whale oil is extremely slack.

Down $30 A Ton

Sperm whale oil production for the current North Pacific whaling season is estimated at 20,000 tons. Prices are expected to be about $142 a ton, compared to last season's $172. Nearly all the sperm whale oil production will be sold to domestic users.

* * *

OYSTER CANNERS CUT PACK

The canned oyster pack this year will be reduced 35% from last year, to 1.25-1.30 million cases. Despite such a marked reduction, many canners have large inventories totaling 200,000-250,000 unsold cases.

Large Inventory

The large stocks have accumulated due to an inactive export market, and uncertainty in purchases because of canned oyster production in the Gulf area of the U. S. Financial help is needed to prevent canners from selling at low prices, causing chaos in the market. Hiroshima canners had planned to extend some financial help to cover unsold stocks, but the help had not materialized by mid-July.

The market is expected to improve this fall and winter. ("Suisan Tsushin, July 12.)

* * *

FREEZES SEA URCHIN EGGS SUCCESSFULLY

A simple method of freezing sea urchin eggs has been perfected by the Iwate Prefectural Fisheries Laboratory. Sea urchin eggs, a delicacy in Japan, are served raw at high-class "sushi" restaurants. "Sushi" is raw sliced fish served on rice. Chemical preservatives, ordinarily used to retain freshness, produce an off-flavor after extended storage. In new freezing technique, fresh eggs are soaked in brine for about 10-15 minutes and then are quick-frozen. This may open a new field in sea urchin egg processing. ("Minato Shimbun," Sept. 17.)

* * *

AGAIN SEEKS PROTECTION FROM GEAR THEFTS OFF MEXICO

The Federation of Japan Tuna Fisheries Cooperative Associations (NIKKATSUREN) has again asked the Japanese Fisheries Agency to send a "guidance" vessel to the waters off Mexico to protect Japanese vessels against continued gear thefts. During April to July, 13 cases of gear thefts, amounting to over US$10,000 in losses, were reported by Japanese long-liners fishing off Mexico. NIKKATSUREN fears that continued occurrence of such interferences could lead to conflict on the high seas. This problem, however, is presenting considerable difficulties to the Agency since it cannot file protests without knowing the nationality of the offending vessels, and sending of a "guidance" vessel to such distant waters would entail much expense. ("Katsuo-maguro Tsushin," Aug. 6.)

* * *

CANNED MACKEREL MARKET IN U. S. SURVEYED

The Japan External Trade Organization (JETRO) has reported the results of the canned mackerel and saury marketing survey conducted in the U. S. The survey revealed that in Atlanta, Georgia, Negro housewives were the principal consumers of canned "wet fish," and market demand will continue at present level.

Hopeful About U. S. Market

The Japanese hope the U. S. market, which only recently began importing canned mackerel in quantity, will provide a good outlet for the Japanese product. Between December 1966 and early 1967, the U. S. imported from Japan 200,000 cases of canned jack mackerel and 445,000 cases of canned Pacific mackerel.

Japan (Contd.):

Atlanta Survey

In Atlanta, canned jack mackerel were the most widely used canned "wet fish." Interviews with Negro householders showed that 91-93 percent of the respondents in all income categories used canned jack mackerel, while only 4-13 percent reported buying canned Pacific mackerel. The market for canned saury was very limited. Between 90-94 percent of the Negro housewives of all age groups reported using canned jack mackerel. Among the white population, only 16 out of 100 respondents said they used canned mackerel. Among the canned "wet fish," jack mackerel was the most popular because of its lower price (according to 97 percent of the respondents).

Served in Several Ways

Housewives said they served canned fish in fish loaf, salad, and sandwich, in that order. Canned tuna was by far the leading choice, followed by canned salmon. Retail stores surveyed showed that most of the retailers in Philadelphia and Atlanta handled canned jack mackerel, while only a few chain stores carried canned Pacific mackerel. The canned saury market was extremely limited. As for the country of origin of canned mackerel marketed in Philadelphia and Atlanta, 7 out of 13 chain stores said they sold only U. S. domestic products, while 4 reported handling imports from Japan and 2 said they carried South African products. ("Nihon Suisan Shimbun.")

日本

Malaysia

SARAWAK'S FISH IMPORTS DRAIN FOREIGN CURRENCY

In 1967 Sarawak imported about US$670,000 worth of salted, dried, and boiled fish; about $180,000 worth of fresh-frozen or refrigerated fish; and almost $670,000 worth of canned fish. Fish must be imported to meet Sarawak's needs from October through January when local fishing comes to a halt. This off-season, known as "Landas," causes the State an annual loss of over $1.5 million in foreign currency.

Lack of Local Facilities

Sarawak lacks fish-freezing and refrigerated-storage facilities and has no efficient marketing organization to help solve the currency drain problem. Furthermore, there are no large fishing vessels above 100 tons capable of fishing during "Landas."

Inshore Trawling Opposed

Fearing depletion of stocks, local fishermen are opposed to trawling inside the 30-fathom limit. The Marine Fisheries Department is considering new regulations limiting trawl depth and net mesh size. The Department wants trawling to continue so that the fishing industry can become self-supporting. Eight trawling licenses were issued in 1967 but foreign companies' requests to trawl in Sarawak waters were rejected because of local opposition. (U. S. Consulate, Kuching.)

* * *

UNDP FISHERIES TRAINING CENTER

The Malaysian Government has asked the United Nations Development Program (UNDP) for assistance in establishing a fisheries training center at Penang. The UNDP will contribute US$1,336,700; the Malaysian Government $1,441,000. The Food and Agriculture Organization (FAO) will administer the 5-year project.

Training Program

The present fishing industry, confined almost entirely to shallow inshore waters, operates with small, rather primitive vessels and old-fashioned gear. Introduction of more sophisticated equipment and vessels, for expansion into offshore waters, will require training of crews and technicians. Crews and technicians will receive training in navigation, fishing, and operating vessel engines. Three different courses will be given--short courses for existing crews in operation of sophisticated vessels and gear; longer courses for new crews; and courses on modern shrimp fishing for trainees from Sabah and Sarawak. An international training team will include a project manager, a chief instructor, 2 master fishermen, a fishing gear expert, an electronics specialist, and consultants. UNDP will provide expert services, fellowships, a training vessel, fishing gear, vehicles, and equipment for shore training.

Malaysia (Contd.):

Upon termination of UNDP support, the Malaysian Government will operate the center.

Changes in Fishery Industry

Introduction of improved fishing gear and mechanization of fishing vessels is changing Malaysia's fishing industry rapidly. Vessels with inboard engines increased from 1,500 in 1957 to 9,300 in 1966. During the same period, annual fish catches in West Malaysia increased from 111,000 metric tons to 234,000. The profitable centralized trawl fishing is expanding. In East Malaysia, foreign companies and local enterprises are participating in the expanding shrimp fishery.

Conflict With SE Asia Center

The UNDP project may conflict with the Southeast Asian Fisheries Development Center, approved by the Manila Conference on Southeast Asian Agricultural Development in April 1967. That Center, composed of an oceanic fishery training division in Bangkok and an oceanic fishery research division in Singapore, was to train fisheries technicians of the Southeast Asian countries, to develop fishing grounds and to investigate fishery resources of Southeast Asia. The original agreement, drafted by Japan, called for a flat assessment of member countries. This was rejected with Malaysia's initiative. A revised agreement recommended voluntary contributions of unspecified amounts. Establishment of the UNDP supported Fisheries Training Center may induce Malaysia to withhold financial support from the Manila project. If other members follow such a policy, the Southeast Asia Center would collapse.

South Vietnam

CONSTRUCTS FISHERY PROJECTS WITH U. S. AID

The Agency for International Development (AID) will contribute over US$42,000 to a joint project to rebuild La-Gi harbor in Binh Tuy province. Availability of a usable harbor should increase the local fish catch considerably.

Builds Saigon Wholesale Fish Market

Construction of the U. S. financed Saigon wholesale fish market began in June. The project, consisting of a wharf, a wholesale fish market, and a cold-storage plant should be completed by the end of the year. (AID Saigon.)

North Vietnam

USSR AIDS FISHERIES

The research vessel "Onda" of the Pacific Institute for Fisheries and Oceanography (TINRO) returned to Vladivostok in June after an 18-month cruise to North Vietnam where Soviet specialists trained fishermen, helped organize shore processing plants, and advised on marine fisheries development.

Soviets have intermittently provided fisheries aid to North Vietnam since the early 1960s. They have joined the North Vietnamese in fisheries research in the Gulf of Tonkin. Most of this joint research effort has been conducted by TINRO scientists.

Cooperative fisheries research was initially sponsored by the West Pacific Fisheries Commission which included, in addition to North Vietnam, North Korea, Communist China, and Mongolia. After the Chinese withdrew from the Commission in 1966, the USSR continued aid to North Vietnam and North Korea on a bilateral basis.

Gulf of Tonkin Survey

A comprehensive survey of fishery resources in the Gulf of Tonkin was carried out in 1959-1960 by 3 TINRO vessels: "Onda," "Pelamida," and "Orlik." Similar research continued in subsequent years.

In late 1965, under a Technical Assistance Program, the USSR supplied Hanoi with 3 medium freezer trawlers ("Maiak" class of about 800 gross tons). These vessels can stay at sea for 50 days and have a 200-metric-ton fish hold capacity.

Pakistan

FISHING INDUSTRY PROGRESSES

The income of West Pakistan fishermen has increased appreciably in the past decade with government, U. N., and U. S. assistance. The 9-year-old fish harbor and market at Karachi has affected the lives of fishermen and their families. The fishermen are mechanizing their boats, getting better gear and equipment--and making larger catches. Still, only a minority of the more than 5,000 fishing boats along the W. Pakistan coast has been mechanized.

Fishermen's Cooperative Builds

A fishermen's cooperative has built and equipped a hospital, schools in some villages, and provided fresh, pure water. Helping in these developments were the U. S. with money and equipment, and FAO with plans for the harbor and market.

Facilities at the fish market include stores for nets, gear, equipment spares, oil and petrol. These supplies are available cheaply at easy terms by the fishermen's cooperative society.

Fig. 1 - Fishermen strain Karachi surf for small fish and crabs. Karachi harbor is to the right; to the left is a small island, near which masts of a sunken ship indicate shoals. (FAO/W. Williams)

Fig. 2 - Typical net-repairing scene on the jetty. (FAO/J. Olsen)

Fig. 3 - Dried fish for auction. Both fresh and dried fish of all kinds and crustaceans are auctioned. (FAO/J. Olsen)

Pakistan (Contd.):

Fig. 4 - Fresh fish from the Arabian Sea are brought to this busy Karachi market every day. (FAO/W. Williams)

Fig. 6 - Boy selling "Kachra" at fishing village 11 miles from Karachi. (FAO/W. Williams)

Fig. 5 - Fish-drying yard in Karachi.

SOUTH PACIFIC

Australia

TASMANIA HAS GOOD FISHERY POTENTIAL

Interest abroad is growing in the fishery potential of areas adjacent to Australia's Tasmanian territorial waters. There have been reports of substantial concentrations of fishery resources that indicate a good future for joint ventures by foreign and Australian businessmen.

From small beginnings a few years ago, abalone fishing has developed into an important export industry. It is second in importance among all Tasmania fishery products only to the spiny lobster. Industry growth was (weight in lbs. of meat):

	1966	1965	1964
Quantity	970,000	403,400	103,200
Value	A$350,000	A$101,000	A$25,700

More substnatial growth is expected in the near future.

Companies Active

Safcol (Tas.) Pty. Ltd. and Planet Fisheries (Tas.) Pty. Ltd. are processing abalone in Tasmania. A factory at Margate, operated by Gourmet Sea Foods, is producing tenderized abalone steaks mainly for export to the U. S. and the Orient. W. Angliss and Co. (Aust.) Pty. Ltd. plans to expand all over Tasmania in fish processing. This project is expected to take up to 10 years and cost over $3,000,000. (U. S. Consul, Melbourne.)

Note: A$1 = US$1.12.

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SOVIET SHRIMP FISHING IN GULF OF CARPENTARIA CREATES UPROAR

The Soviet stern trawler "Van Gogh" fishing shrimp in the Gulf of Carpentaria has caused an uproar in Australia. Australian fishermen claim that Van Gogh wailed her sirens at them as soon as sizable shrimp stocks were spotted, forcing them to scatter to prevent collision with the giant Soviet vessel. This harassment is blamed for having deprived the Australians of $24,000 worth of shrimp in one sweep. Some fishermen "took" a couple of shots at the vessel with a carbine. Prime Minister Gorton ordered a Royal Australian Air Force plane to patrol the Gulf and dispatched an armed Navy patrol boat. The Government has protested to the Soviet ambassador in Canberra against alleged intimidation and harassment of Australian trawlers by the Van Gogh. Despite this, the Van Gogh rescued the crew of an Australian trawler sinking in the Gulf, and the Soviet captain threw a vodka party for them. ("The Washington Post," July 12 & 14; Radio Melbourne, July 11; UPI, July 13.)

Van Gogh

The Australian press reports the Van Gogh is trawling for shrimp in 8 fathoms 40 miles off Karumba on the southeast coast of the Gulf. She can catch and process 70 tons of shrimp in 24 hours. She has a fish meal plant to process offal and less valuable species and is believed to be the mothership of 10 smaller freezer trawlers. The vessel carries a crew of 103, including a number of scientists, 33 women, 2 physicians, a dentist, and a nurse. The Van Gogh is apparently surveying shrimp resources and may be exploring for other species since she carries nets with mesh sizes too large to catch shrimp. (U. S. Consulate, Brisbane, July 2; "Brisbane Courier Mail," July 2 and 3; "The Telegraph," Brisbane, July 1.)

Industry Expansion

Australia has been preparing a major expansion of the shrimp industry into the Gulf of Carpentaria since 1963, when researchers found commercial stocks there. Schooling by sexually mature shrimp occurs in the Gulf from March to September; the schools provide the commercial catch. Exploratory trawling, which landed over 70,000 pounds of mixed shrimp during the last 12 months, has prompted commercial Australian companies to plan construction of 6 to 10 shrimp-fishing ports from Darwin to Cape York, and to look for 200-300 shrimp boats in the Gulf by mid-1969. ("Fishing News International," June 1968.)

AFRICA

Ghana

PLANS FISHING INDUSTRY EXPANSION

Since the fishing industry has been able to meet only 50% of the annual fish requirements, the government is planning on expansion of fisheries aid. A Fisheries Training School is being established with Norwegian assistance, US$1 million working capital will be provided for the State Fishing Corporation (SFC), and the harbor at Takoradi will be expanded to relieve overcrowding at Tema. In January 1969, fishing gear will be placed on an open general import license making it more readily available to local fishermen.

Fig. 1 - Japanese tuna boat unloading in harbor of Tema, Ghana.

Fig. 2 - Small trawlers landing fish in Tema.

Fig. 3 - A fisherman seining.

Fig. 4 - Ghana's coastline has no natural harbors and surfboats are commonly used. (FAO Photos: A. Defever)

State Fishing Corporation

SFC, which has been losing money since its inception in 1961, has yet to fulfill its quota of fish for the local market. After the government announced that it was giving the corporation a "second chance," SFC began an internal reorganization. Several senior officers were dismissed and over 100 others were asked to re-apply for their jobs--only the most qualified will be rehired.

Ghana (Contd.):

Trawler Conversion

A Japanese firm has offered to convert the Government's 10 Soviet-built trawlers into tuna fishing vessels. The trawlers, idle since the February 1966 coup, were recently offered for sale--but no takers. The Japanese estimate that it will take a year to convert the vessels. Meanwhile, a 10-man Soviet technical team is talking with the Government on several subjects, including the fate of the trawlers.

Idle Fishing Vessels

The Norwegian firm holding a management contract for SFC has loaned it about US$340,000 to purchase spare parts for repair and maintenance of 7 idle Norwegian-built fishing vessels. SFC also is buying 4 new British-built fishing vessels; 2 will be delivered soon. Ghana hopes to have 10 vessels seaworthy by the end of 1968. (U. S. Embassy, Accra, Aug. 1 and 10.)

South & South-West Africa

SHOAL FISH CATCH IN FIRST HALF REPORTED

Division of Sea Fisheries data show the following Cape west coast shoal catch for the first 6 months of the 1968 and 1967 seasons:

	Jan.-June	
	1968	1967
	. . (Short Tons) . .	
South Africa:		
Pilchards	100,404	74,730
Maasbanker	1,365	8,940
Mackerel	44,587	153,095
Anchovy	137,217	169,635
Red-eye herring	14,671	13,966
Total	298,244	420,366
South-West Africa:		
Pilchards	489,924	491,429
Maasbanker	54	100
Anchovy	63,635	6,098
Total	553,613	497,627

Catch of 2 Factoryships

Also, the 2 South African factoryships took 393,883 tons of pilchards for the first six months in 1968. ("The South African Shipping News and Fishing Industry Review," Aug. 1968.)

* * *

REACH FISHING AGREEMENT

South Africa and South-West Africa have agreed that no new South African factoryships will be licensed to operate in the latitudes off South-West Africa. No new licenses will be granted for exploitation of fishing grounds off South-West Africa, either by shore-based companies or factoryships, unless research proves that the present South-West African fishing industry would not be harmed. (U.S. Embassy, Pretoria, Aug. 10.)

South-West Africa

PLANS SILOS FOR FISH MEAL PELLETS

The South-West African fishing industry has requested permission to erect silos for pelletized fish meal at the Walvis Bay harbor. The silos will store fish meal for bulk shipment.

The factoryship "Suiderkruis" was very successful in pelletizing and bulk-handling fish meal. This led the local industry to seriously consider introducing a similar process in land-based factories to reduce or eventually eliminate the bagging of fish meal. ("The South African Shipping News and Fish Industry Review," July 1968.)

Morocco

FISHING INDUSTRY DEVELOPMENTS

The Moroccan Office of Exportation and Commercialization (OEC) has reported an improvement in canned fish exports. By the end of the 1967/68 fish export campaign June

Morocco (Contd.):

0, OEC was left with only a normal reserve stock of 500,000 unsold cases. Last year, on the same date, OEC had a stock of over one million cases. Sales progressed or remained steady in the usual markets for Moroccan fish, except in Germany where Moroccan exports ran into strong Italian competition. The U. S. absorbs about 2.6% of Moroccan fish exports.

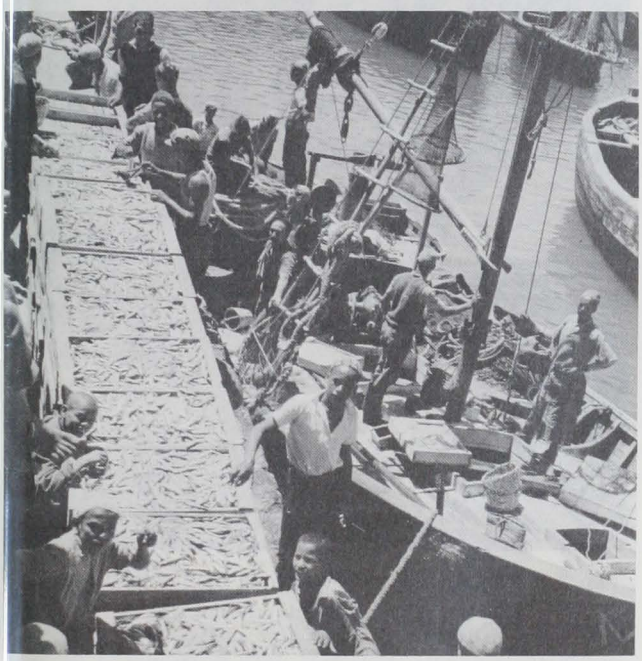


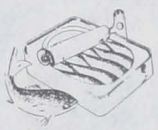
Fig. 1 - Unloading sardines at Safi, Morocco. (Photo: J. Belin)

Fig. 2 - Typical purse seiner used to catch sardines.

Fig. 3 - Great quantities of fish are unloaded daily in Agadir. Part is processed in relatively new factory that produces fish-meal both for animals and people. In 1966, some went to school feeding program of UN/FAO World Food Program. (Photo: A. Defever)

Modernizing Industry

The government is very interested in modernizing its fishing fleet, installing cold-storage and freezing facilities at the principal fishing ports, consolidating and improving fish canning procedures, and expanding fish exports. The new 5 Year Plan has allotted about US$250,000 from public funds for fisheries development. Private investors are expected to contribute over $1 million. (U.S. Embassy, Rabat, Aug. 20.)



Senegal

EXTENDS TERRITORIAL SEA AND CONTIGUOUS ZONE

On July 17, Senegal extended her territorial sea from 6 to 12 nautical miles with a contiguous zone of another 6 nautical miles. The contiguous zone will not affect the rights of parties to the 1958 Geneva Conventions that effectively enforce Convention provisions.

Expanding Fleet

Pressure to extend the limits came from the National Bureau of Fisheries and Oceanography. The Bureau was anxious to ensure adequate supplies of tuna, sardinella, rouget, and sole for Senegal's expanding fleet. The fleet should number 34 tuna-freezing vessels by 1971. (U. S. Embassy, Dakar.)

Togo

STRIVES TO IMPROVE FISHING

Thousands of people live from fishing along the 75 miles of Togo's coastal belt. Their baits, equipment, and methods are primitive and their catch small. Mechanized fishing is at its beginning. When the sea is rough, the small local boats cannot cross the bar or land safely.

Fish is one of the most important sources of animal protein for the people of Southern Togo. The government has received FAO help to improve fishing.

Fig. 1 - FAO expert examines fish from a locally built drier.

Fig. 2 - Togolese fishermen removing fish from their nets.

Fig. 3 - Beach seining is a popular Togolese fishing method. The large net is dragged in by a team of fishermen.
(FAO/C. Bavagnoli)