

INTERNATIONAL

FORECAST SLIGHT RISE IN MARINE-OIL OUTPUT FOR 1970

Although fish-oil production declined in 1969, world output of marine oils is forecast to increase slightly in 1970. However, it is expected to be somewhat below 1968's record. Baleen-whale oil may rise slightly; no appreciable change in sperm-whale output is anticipated.

Baleen Oil

After a long downtrend starting in 1962, baleen-whale oil production is expected to increase. This estimate is based on a fairly large Norwegian Antarctic catch. Production outside the Antarctic is not expected to change significantly.

Quotas

The 1969/70 Antarctic pelagic whaling countries (Japan, Norway, USSR) agreed to a reduced global quota of 2,700 blue-whale units (BWU)--roughly equivalent to 56,000 tons of oil. The 1968/69 quota was 3,200 BWU. The catch was only 2,469 BWU, with an estimated output of about 51,000 tons of oil. Japan and the USSR both filled their 1968/69 quotas. Norway (quota of 731 BWU) did not participate; her quota later was cut to 231 BWU--roughly equivalent to 5,000 tons of oil. Reportedly, Norway plans to participate in the 1970 expedition.

Forecast Assumptions

The 1970 forecast assumes: 1) fulfillment of the 2,700 BWU global quota; 2) an oil yield approximating 1969's 20.8 tons per BWU; and 3) continuance of output outside the Antarctic at the 1969 level.

Sperm-Whale Oil

Sperm-whale oil production is not controlled under the Antarctic quota agreement. It is not expected to change significantly. This production has continued to be relatively stable, slightly above volume produced during 1962-66. The biggest producer, the Soviet Union, has expanded output substantially in recent years, while output by small producers has been sharply reduced. The North Pacific

output has expanded; Antarctic pelagic output has remained about the same; output from shore stations outside the Antarctic has declined.

Fish-Oil Prediction Difficult

Forecasting world output of fish body and liver oils a year in advance is a precarious task. Among the uncertainties are: probable catches by major countries; possible changes in catch restrictions in countries like Peru; closed seasons; possible strikes; probable oil yields; and possible effects of higher prices tending to stimulate fishing activity.

Forecast

Peruvian fish-oil output in 1969/70 season is not expected to change appreciably, despite a probable decline in the catch limit. The Peruvian Marine Institute has recommended an anchovy catch limit of 9.4 million short tons, compared to 10.9 million tons in 1968/69. The expected oil output is based on an anticipated recovery in oil extraction rate. Some recovery in output from last year's reduced volumes is expected in Norway and Iceland. Possible small increases by Canada, the USSR, and Japan may lead to some overall increase in 1970 world fish-oil production. ('World Agriculture Production and Trade,' Jan. 1970.)



WORLD FISHERY TRADE INCREASED IN 1968

Both quantity and value of world trade in fishery commodities increased in 1968. The share of fish used for fish meal reached a new high. This information comes from FAO's recently released 'Yearbook of Fishery Statistics (Commodities).' The volume lists 1968 commercial and production figures for 150 countries, excluding Mainland China.

Quantity & Value

The value of trade in fish and fish products increased to about US\$2,560 million from about \$2,400 million in 1966 and 1967. The rise was due largely to improved fish-meal

prices. Volume increased from 6,400,000 metric tons in 1966, and 7,103,000 tons in 1967, to 7,841,000 tons in 1968. Fish meal accounted for 3,591,000 tons and \$456 million.

Consumption

The Yearbook also shows consumption of the 64,000,000-metric-ton 1968 world catch of marine and inland-water fish. Almost two-thirds (40,200,000 tons) was frozen, cured, canned, or eaten fresh; 22,800,000 tons, or 35.6%, went into fish meal for animal feed. In 1958, only 13% of the total fish catch was used for fish meal.



HALIBUT SURVEYED IN SOUTHEASTERN BERING SEA

The trawler 'St. Michael' left Bellingham, Washington, Feb. 17, 1970, on a 65-day halibut survey in the southeastern Bering Sea. Sailing under charter to the International Pacific Halibut Commission (IPHC), she is evaluating the incidental catches of halibut in the food-fish catches of foreign trawl fleets. Small, and probably large, halibut are particularly vulnerable to such fishing at this season. The vessel's crew also is doing extensive tagging.

The Commission is responsible to Canada and the U.S. for maintaining halibut stocks at maximum productivity. (IPHC, Feb. 16.)



ATLANTIC SALMON HIGH-SEAS FISHERY INCREASED IN 1969

The 1969 Atlantic salmon catch off Greenland was about 2,210 metric tons, 39% over the previous high in 1967. Fish were prevalent over a wide area of Davis Strait and a substantial fleet took advantage of the situation. Fleets from Denmark, Norway, and the Faroes notably expanded the offshore drift-net fishery. They caught 1,280 tons compared to 544 in 1968. Greenland's catch, up from near-failure in 1968, was still 25% less than her 1967 and 1966 inshore catches; 1969 was the first time Greenland had participated in the offshore fishery.

Larger Fleets & Catches

Danish fishermen made the largest gains. With 18 vessels, they tripled their 1968 catch,

when they had only 7. Norwegian and Faroese vessels more than doubled, but catches rose only about two-thirds.

Catch Off Norway

Danish, Swedish, and Norwegian vessels are rapidly expanding the high-seas fishery for Atlantic salmon off Norway. The fishery is some 12 to 200 miles offshore, northward from Bergen to Finmark. Norway is seriously concerned that her valuable salmon stocks are being depleted. The 1969 catch probably will be over 800 metric tons, more than double 1968's. A sharp increase is reported in participating Norwegian and Danish vessels. Norway has protested the salmon's "ruthless exploitation" by Danish vessels. Five German vessels participated for the first time.

Norwegian Restrictions

Norway severely curtailed her inshore and river fisheries. Longline fishing has been forbidden for some time in Norwegian fishing limits. However, drift gill nets are permitted up to the inshore baselines of her territorial sea. Danish and Swedish fishermen initiated longlining beyond the fishing limits, and Norwegians recently entered the fishery with great vigor. Charges that offshore fisheries are destroying the benefits of inshore conservation are being discussed violently.

Reports from Norway indicate that if developments in the salmon fishery continue to be favorable, as many as 300 vessels might participate in the offshore fishery.

Baltic Fishing

Atlantic salmon are exploited extensively in the practically land-locked, brackish-water Baltic Sea. The salmon exchange between the Baltic, the North Sea, and the Atlantic Ocean is relatively minor. Total Baltic high-seas catch in recent years has been 2,000-2,500 tons. More than half is taken by Danish fishermen; Sweden takes 20%, and West Germany 10%.

Denmark catches almost equal quantities of salmon in the Baltic and off Greenland. In the 1968/69 season (July-June), the catch totaled 1,465 metric tons, 13% below the previous record but still near 1966/67 (and earlier) catch levels. Up to 1963/64, annual catches were mostly near, or below, 1,000 tons. (Reg. Fish. Attaché, Copenhagen, Feb. 19.)



WORLD'S FIRST FLOATING FPC FACTORY IS OPERATING

Last month, Astra Nutrition began operating the world's first floating factory to produce high-quality fish protein concentrate (FPC). The firm is part of the Astra group, Sweden's largest pharmaceutical house.

Harry Wendeus, managing director of Astra Nutrition, said recently: "The world's first continuous processing plant for producing human grade fish protein concentrate went into production late in 1969 at Bua, a fishing community on the West Coast of Sweden. Its output will be supplemented when a 25,000-ton modernized and fully-equipped 'floating factory', upon which more than \$7,000,000 has been spent, goes into operation in international waters. This ship will be attended by 11 fishing boats that will provide the mother ship with a constant supply of fresh fish." He noted the importance of a fresh fish supply to insure quality control. Astra Nutrition has applied for process patents in 40 countries.



Fig. 1 - Motor/Ship 'Astra', a 25,000-ton, \$7-million "floating factory" operated by Astra Nutrition of Sweden. It will process high-grade fish protein concentrate (FPC) from daily catch of fishing boats.

The principle used in the Astra process is extraction of water and oil from the fish with isopropyl alcohol. This is the basic method for making wholesome and acceptable fish protein concentrate that the Bureau of Commercial Fisheries developed and demonstrated to the U.S. Food and Drug Administration--enabling FPC to be used as a food in the United States.

The protein will be used as an ingredient in products for developing countries.

Obstacles Overcome

Astra developed a laboratory method of producing defatted fish protein concentrate in 1957, producing 20 grams during the first year

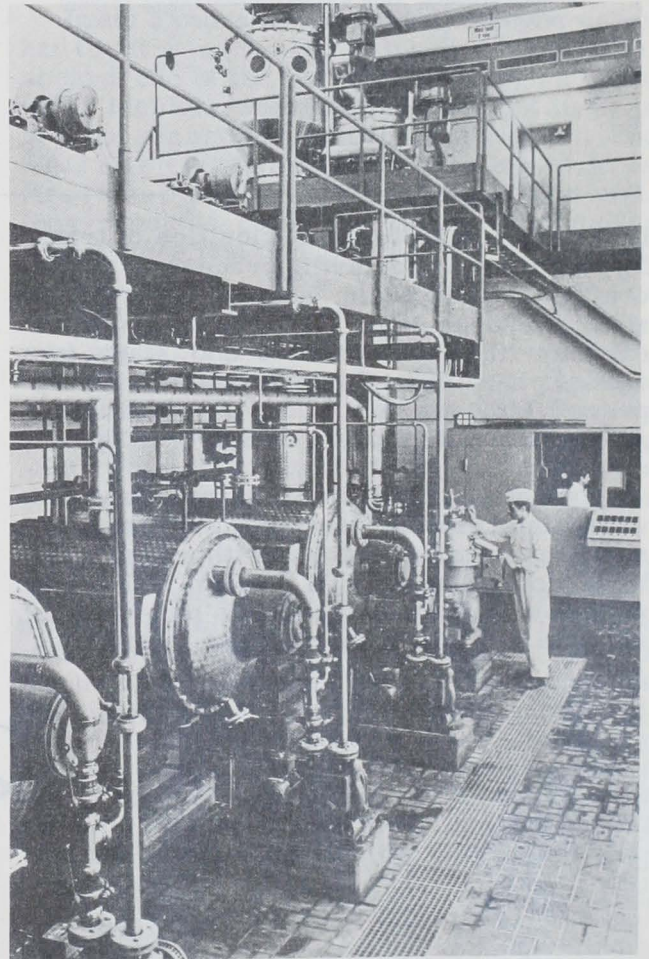
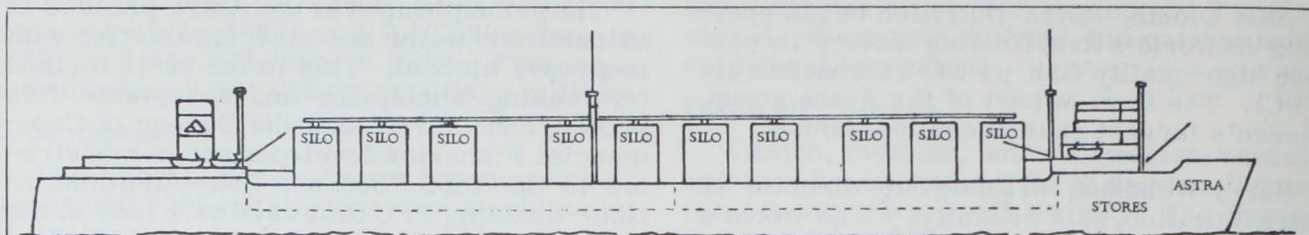
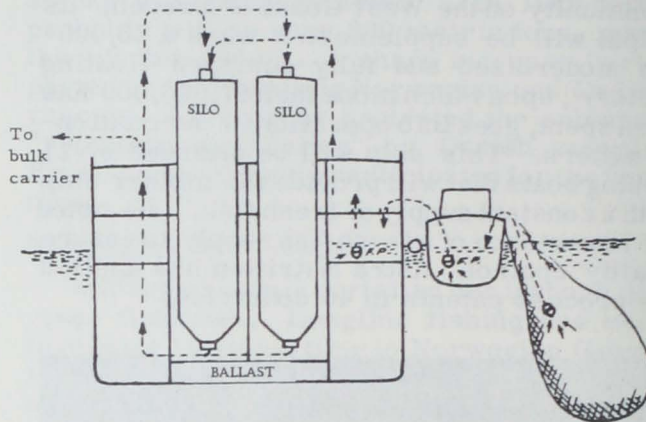


Fig. 2 - Astra's FPC processing method first removes fat and bones. The stainless steel equipment readies powdered concentrate for storage in 20 large silos that extend above and below decks.



Astra Nutrition believes factory ships can solve problem of obtaining large quantities of fish needed to produce high-grade protein. The M/S Astra will operate in international waters, accompanied and supplied by 11 smaller fishing boats. The landing capacity of these boats is estimated at 200,000 tons annually. Combined crews will number 160 persons.

The 20 silos on board will hold 6,000 tons of finished product. This will be transferred by vacuum every 35 days to a bulk carrier.



in 4 days. In 1960, the difficulties of transferring the manufacturing process from laboratory to plant scale "seemed unsurmountable," Wendeus said. "By 1961 we had to re-evaluate the entire method and start over again." By 1963, Swedish authorities approved FPC as a foodstuff. A continuous, rather than batch, process was developed.

Wendeus said product compares favorably with animal protein from other sources. It is a "complete animal protein with a high nutritional content, about 93% protein, with a good amino acid balance. It contains phosphorous, calcium and minerals in proper proportion."

All protein molecules combine smaller chemicals called amino acids. Generally, proteins from animal sources are of higher quality than those from vegetables. Of 22 amino acids that have been isolated, eight are regarded essential in the diet.

Astra Joins National Biscuit

In Jan. 1970, Astra and National Biscuit Co. of New York formed joint venture-- Nabisco-Astra Nutrition Development Corp.--to research and develop sources of essential low-cost protein for use in human food products. The new company will direct its efforts toward reducing the serious protein deficiency in many developing nations.



FAO MASTERFISHERMAN FOR DEVELOPING WORLD

An FAO feature written by Gabriel De Sabatino tells the story of Captain Pierre A. Lusyne, a 60-year-old Belgian who went to sea in sailing ships at 14 and who, as an FAO Masterfisherman, has been sharing his experience with apprentice fishermen in developing countries for the past 15 years.

Lusyne, a native of Ostend, has organized and directed some of the fishing training centers FAO has established around the world under the United Nations Development Programme.

FAO believes the centers are essential to train crewmen properly at a time when fishing vessels have computers and other complex equipment for finding and catching fish. Highly skilled hands are required. Education and training are so vital to fishery development and to food production that the matters will be discussed at the Second World Food Congress FAO is convening at The Hague, Netherlands, June 16 to 30.

His Proudest Achievement

Lusyne's proudest achievement is the Deep Sea Fishing Training Centre he organized for the Republic of Korea (S. Korea) to provide trained crewmen for the country's growing fishing fleet. The center was established in Pusan in 1965 under a 5-year \$2,800,000 FAO project financed jointly by UNDP and Korean Government. The center was so successful that Lusyne turned its direction over to the Koreans on schedule in 1969. "They are operating it entirely on their own with just occasional help from us," he said in Rome. "It's all their show now."

Lusyne, who speaks no Korean, had to start from scratch, as he did with the other projects. In less than a year after the project was negotiated, the center was operating. He noted: "We started out with 50 trainees out of 300 applicants and only five instructors, all of whom I had to brief myself. Now there is a much larger staff and the centre graduates about 150 apprentice fishermen a year."

The Center

The course lasts 18 months: 10 months' shore training, 7½ months at sea aboard the center's two training ships. Then there are 15 days of summing up and examination.

The trainees, who include non-Korean nationals, are selected carefully and live at the center. The center is well equipped with workshops and demonstration rooms. The trainees receive blue uniforms, red caps, and a small allowance. They make their own tools and gear for the fishing trials aboard the ships. The tuna they catch is sold to a cannery in Samoa, and the money helps pay for the school.

Discipline and cooperation are excellent, reports Lusyne, who runs his schools with near-naval discipline. "The trainees are encouraged to keep busy even in their spare moments and physical exercise is a daily 'must.' It is good for morale as well as for physical fitness. It instils a good team spirit and a sense of participation among the men."

In his 5 years at the school, Lusyne never had to put a trainee in his place. "Only once, aboard one of the training vessels, we had a little incident when the trainees got tired of being at sea and wanted to return to port. The FAO Masterfisherman told them he would be fired if he did so and retired to his cabin until they reported ready for work. The matter ended there and then."

'Survived Dunkirk

Lusyne became an instructor after a World War II eye injury disqualified him for sea duty. He had taken part in the evacuation at Dunkirk in 1940 and was almost killed when his ship was rammed accidentally in the dark by a destroyer and sank with 300 troops. He says his survival was a pure miracle.

In 1945, he organized a fishing-training school in Ostend as part of Belgium's reconstruction efforts. In 1955, he joined FAO and was sent to India. There, working under a Technical Assistance project, he organized 4 training centers, which later expanded to 12. Later, he set up schools in New Caledonia in the western Pacific, in Suez, U.A.R., and in Vang Tau, Vietnam. He also served as a training adviser in Pakistan. In 1964, he was sent to Korea to establish the deep-sea training center.

The Sea at 13½

The Belgian sea veteran has excellent credentials as a seagoing schoolmaster. His father ran a fleet of fishing smacks that sailed

by wind power alone. He gave Pierre his first taste of the sea when he was 13½. The elder Lusyne, an old-school captain, rejected engines -- and lost out to motorized competitors. "He had put all his faith in sails," Lusyne says nostalgically.

Now Lusyne is preparing for yet another assignment, perhaps South America.



1970 YELLOWFIN TUNA SEASON IN EASTERN TROPICAL PACIFIC ENDS

The season for harvesting yellowfin tuna in the eastern Tropical Pacific Ocean ended at 12:01 a.m., local time, on March 23, 1970.

On March 18, the Director of Investigations, Inter-American Tropical Tuna Commission, recommended the closure data to all nations with vessels in the regulatory area. It was done to assure that the established catch limit of 120,000 short tons for 1970 would not be exceeded.

Nearly 68,000 Short Tons

The catch reported by the Commission, Jan. 1-Mar. 23, 1970, was 67,913 short tons. This is 14,383 tons, or 27%, greater than the 53,530 tons of the comparable period in 1969.



JAPANESE SOUND OUT MEXICANS ON JOINT FISHING IN MEXICO

The Japanese Nichiro Fishing Co. is sounding out Mexican fishery interests on the proposed joint fishing venture to promote Mexico's fisheries. Although the details are unknown, the proposed plan calls for Japanese-U.S.-Mexican fishing company in Ensenada to produce tuna, shrimp, and fish meal. Also planned is the sale of fish-meal plants.

U.S. Firm Would Sell Catch

The U.S. partners reportedly would handle all sales of fish caught. The Japanese firm is seeking a loan from its government on grounds that the venture would extend Japanese technology to Mexico. Japan has concluded a fishery agreement with Mexico. If the proposal takes shape, the Japanese firm plans to send a survey team to Mexico around May. ('Suisan Keizai Shimbun,' Mar. 6.)



JAPAN AND MAURITANIA REACH FISHERY AGREEMENT

On Feb. 19, 1970, Japan and Mauritania signed an agreement permitting Japanese trawlers to fish inside Mauritania's 12-mile exclusive fishery zone. The pact became effective April 10 and will run one year. Then it may be extended by mutual agreement.

What Agreement Provides

The agreement provides that: (1) 24 large Japanese trawlers will be permitted to enter Mauritania's 12-mile exclusive fishery zone from April 10; also 5 small vessels (30-50 gross tons) will be allowed inside the 3-mile territorial water zone to train 1-3 Mauritanian fishermen aboard those vessels; (2) fish catches by the 5 small vessels will be delivered to shore-based cold storages for sale at prices determined by committee of Japanese and Mauritians; and (4) fishing fee will be assessed as 'cooperation fee'; it will include charges for use of port and other fishing-connected facilities. The amount of assessment reported was about US\$27.80 per gross ton of vessel, agreed to in earlier talks. ('Suisan Tsushin,' Feb. 26.)



CANADA

NEWFOUNDLAND'S 1969 LANDINGS TOPPED BILLION LBS. FIRST TIME

Newfoundland's sea fish landings in 1969 exceeded one billion pounds for the first time on record, reported the Canadian Dept. of Fisheries & Forestry. It was an increase of 6.7% over 1968's 951 million pounds. The gross landed value of C\$28.2 million was up 1.1% from 1968's record C\$27.9 million. The lower relative increase in landed value reflected a further increase in herring landings--as average groundfish and shellfish prices remained stable.

Groundfish Down

Groundfish landings were 610 million pounds, down 1.8% from 1968. Cod landings, which fell 11.3% to 329 million pounds, accounting for most of decrease in groundfish catch. A poor Labrador fishery and decreased catches in northern Labrador caused the decline.

Flounder landings rose to 163 million pounds from 136 million pounds in 1968. The ocean perch (redfish) catch declined slightly from 1968's 76 million pounds. Landings of Greenland turbot rose 27% from 1968's 30 million pounds because fishing increased on new grounds. Other groundfish amounted to 11 million pounds, compared to 1968's 8 million pounds.

Offshore Trawler Landings

Groundfish landings by Newfoundland's offshore trawler fleet were 276 million pounds, 2.6% over 1968. This fleet accounted for 45.3% of total groundfish landings, 20% of cod landings, 87% of flounder and ocean perch.

Pelagic & Estuarial Species

Landings of pelagic and estuarial species were 401 million pounds, up 22.6% from 1968. Herring landings of 390 million pounds showed another substantial increase. Reduction plants continued to operate at full capacity during herring season; there was increased demand by producers of pickled products.

Salmon landings declined slightly from 1968's 3.2 million pounds. Capelin landings of 7.6 million pounds were virtually the same.

Shellfish Climbed 11.3%

Landings of shellfish increased 11.3% from 1968's 4.4 million pounds due to higher catches of scallops and crabs. The lobster catch fell 4.9% from 1968's 4 million pounds; however, higher prices offset volume decline, and value remained C\$2.4 million.

The scallop fishery yielded 275,000 pounds, more than double 1968's catch. Crab landings were 730,000 pounds; 190,000 pounds in 1968. Squid landings were insignificant.

Fewer Fishermen

The number of commercial fishermen fell from 19,355 in 1968 to 18,150. Of these, 3,430 fished 10 months or more, 8,500 5 to 10 months, and 6,220 less than 5 months.

There were 16,700 inshore fishermen in 1969, 18,041 in 1968. There were substantially fewer Labrador fishermen.

The stationers and floaters who did not go to Labrador apparently remained out of the fishery from the island as well. The offshore fleet provided jobs for 1,450 men; in 1968, 1,314.

Fewer Motor Boats

With fewer fishermen and the shift to small longliners continuing, the number of motor boats decreased by 1,000 to 9,500. The number of row boats also declined to 3,900 from 4,440 in 1968. The fleet of small longliners (under 25 gross tons) increased by 44 to 375 at year's end. Most of this increase occurred in the Fogo Island-Twillingate and Port au Choix areas.

Variety of Vessels

Some large longliners and jackboats (over 25 gross tons) remained in use, with new vessels replacing those not used. At year's end, there were 67 otter trawlers in operation, compared with 60 a year earlier. Also, five small inshore draggers operated, two fewer than in 1968.

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CANADA (Contd.):

BRITISH COLUMBIA'S FISHING INDUSTRY
VIEWS THE 1970s

The Fisheries Association of British Columbia, in its monthly "Facts on Fish" (Jan. 1970), listed problems it would like to see resolved in the 1970s:

(1) Protection of coastal fish stocks from foreign fleets. This refers primarily to U.S. fishermen. (2) Protection from huge Japanese and Soviet trawl fleets. (3) Exclusive jurisdiction by coastal state over its Continental Shelf; control of fisheries resources made a part of international law. (4) Protection of halibut nursery stocks from Soviet and Japanese trawl fisheries. (5) Control of pollution. (6) Increase of salmon resources and more consistent production. (7) Better use of dogfish. (8) Better pay for fishermen, and (9) Greater consumption of fish.

Difficult Decade

The Jan. 1970 "Western Fisheries," a Vancouver monthly trade magazine, states that the 1970s will bring a decade of hard negotiation between Canada and the U.S. The article concedes that the fisheries of the two countries are so interwoven that compromise and full cooperation in conserving and exploiting the stocks are primary requirements. However, two views are elaborated that seem to indicate that either Canada should go it alone--or renegotiate a treaty with a greater percentage of increase in fisheries going to Canadian fishermen.

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EXTENDS BAN ON HUNTING BABY SEALS

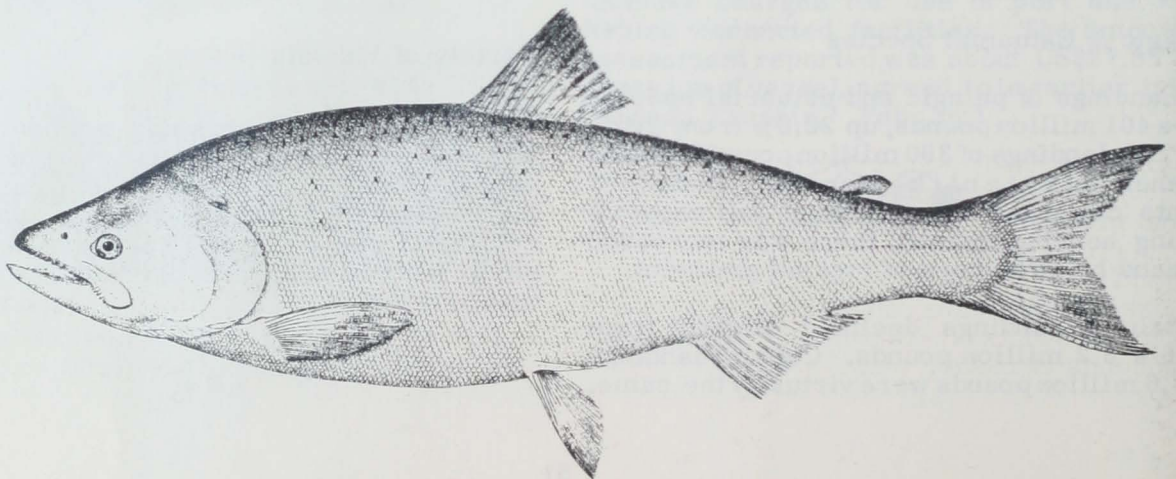
The ban on killing baby "whitecoat" seals, announced in October 1969, has been extended to the North Atlantic. Norway is honoring the ban. The March 22 opening date for the hunt, both in the Gulf of St. Lawrence and off Labrador's east coast, should prevent the taking of baby seals. (Canadian Dept. of Fisheries and Forestry, Jan. 30.)



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APPROVES LEGISLATION FOR
SALT FISH CORPORATION

The House of Commons' Fisheries and Forestry Committee has approved authorizing legislation for a Salt Fish Corporation. The corporation would regulate interprovincial and export trade in salt fish. It would be provided with C\$10 million to buy and hold fish in advance of sales. The money also could be used for loans to fishermen.



EUROPE

USSR

PLAN TO EXPAND FISH FARMING

The Soviets are speculating on the possibility of farming algae (Ahnfeltia, Phyllophora, Furcellaria, Laminaria, and Chlorella) for human and animal food. Scuba divers would "farm" the sea algae; fresh-water species would be cultured at animal-breeding farms. Soviet scientists claim 20% of fishery resources of world's oceans must be left intact to ensure safe replacement of stocks. This "danger limit" is being approached rapidly. It is why need arises for effective "management." Now, only half world's catch is used for food; the other half is processed into fish meal, fertilizers, oils, etc.

The Soviet Continental Shelf covers 6.6 million square kilometers--nearly half in waters less than 50 meters deep. This area offers greatest potential for resource management or fish farming. ('Sots. Ind.,' Nov. 23, 1969.)

V. P. Zaitsev, a leading scientist, reported experimental Ahnfeltia farming in Soviet Far East and on Solovetskie Islands in White Sea; this showed that algae can be improved by hybridizing and fertilization. He claims Chlorella has as much vitamin C as lemons and 4 times as much protein as wheat. Many tasty dishes can be prepared from sea kale, which also has medicinal value.

Black Sea

Experimental oyster and mussel (Mytilus) farms on the Black Sea become economically self-sufficient in 3 years, according to Zaitsev. Fish can be "pastured" in lagoons saturated with nutrients. ('Pravda,' Oct. 2, 1969.)

Far East

In the Far East, a special 80-vessel fleet is "harvesting seaweeds and mollusks" for several processing plants. The Far East is their main harvesting and processing base for Pacific algae, squid, octopus, sea cucumbers, crustaceans, and shells. Catches of marine products other than fish reach tens of thousands of metric tons.

Barents Sea

The first Soviet commercial farm to operate on the Barents Sea will experiment with breeding flounder, cod, haddock, and herring. It will be equipped with hatcheries, aquaria, and forage grounds for fish. If the experiment is successful, the Soviets plan a "network of underwater 'farms' with a sizable yield." (TASS, Dec. 2, 13, 1969.)

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SCIENTISTS OBSERVE FISH WITH UNDERWATER TV

In 1969, scientists of the Kamchatka Branch of the Pacific Fisheries and Oceanography Research Institute (TINRO) used underwater TV cameras to observe salmon migration into Kuril Lake (Soviet Far East). They determined with "absolute accuracy" the number of migrating salmon. The new observation method is claimed to have great importance for determining fishery stocks and directing fishing operations. Research continues.

Detect Salmon 2 Km. Away

The scientists are also experimenting with a new hydroacoustic detection device aboard vessels on the high seas. The device has located salmon accumulations 2 kilometers away, and determined their number and migration path.

The expanded 1970 test program with the new device is aimed at making it suitable for detection of smaller fish like herring and perch.

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UNDERWATER FILM SHOWS FISH CAN 'LEARN'

An underwater film on trawls and fish behavior shows that fish can "learn" how to avoid or escape nets, and hide behind rocks and between bottom rises where trawls cannot get them.

Since this ability will make conventional fishing gradually less efficient, scientists have suggested the use of artificial schooling

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techniques with electric light, ultrasounds, feed concentrations, and even aromatic substances.

The photographers were 2 scientists of the Soviet Atlantic Fisheries and Oceanography Research Institute. ('Sotsialisticheskaya Industriya,' Nov. 23, 1969.)

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SEIZED 39 JAPANESE FISHING VESSELS IN 1969

In 1969, the Soviet Union seized and detained 39 Japanese fishing vessels and 363 fishermen. By year's end, 33 fishermen were still held.

The Soviets captured 40 Japanese vessels in 1968. From the end of World War II to December 1969, the Soviets seized 1,314 Japanese fishing vessels and 11,126 fishermen.

Japan Plans Aid

Japan plans to develop relief measures for owners and crewmen of the captured vessels; 7,488,000 yen (US\$20,800) have been earmarked for that purpose in fiscal 1970 (April 1970-March 1971). ('Suisan Tsushin,' Feb. 2, and 'Nihon Suisan Shimbun,' Jan. 21.)



NORWAY

CANNED FISH EXPORTS FELL IN 1969

Although official Norwegian figures were available only through October 1969, it was predicted in January 1970 that 1969 canned fish exports would not match 1968 volume. This was attributed to inadequate supplies of raw material, particularly for the most important canned commodity, sild sardines. Stocks of several of the most popular packs were extremely short.

Kippers

Kipper exports fared even worse due to lack of raw material. For the past 2 years, exports have been less than half the volume of the late 1950s.

Herring Roe

Exports of soft herring roes dropped drastically as the winter herring fishery vanished.

Shrimp

Exports of peeled shrimp were only 3-4% of the volume of 10 years ago. The main reason is that the raw material has been used for other consumption and processing. Also, canned-shrimp production has developed tremendously in many other countries.

Brisling

Despite the canners' lack of raw materials for sild sardines and kippers, they were able to keep factories running fairly well due to good supplies of brisling. Brisling stocks were at normal levels. There were small stocks of several types of sild sardines. Kipper stocks were negligible and normally would have been completely exhausted, but small quantities were being held in reserve for old customers. ('Norwegian Canners Export Journal,' Jan. 1970.)

Exports (calculated in $\frac{1}{4}$ cases):

	Mid-Dec. 1967	Mid-Dec. 1968	Mid-Dec. 1969
Brisling	347,000	373,000	336,000
Sild	849,000	1,023,000	940,000
Kippers	254,000	182,000	197,000

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HERRING FISHERY ON GEORGES BANK IS UNSUCCESSFUL

The factory vessel 'Gadus' returned to Norway after a 4-month fishing trip to Georges Bank and other areas of the American coast, where she fished herring with a floating trawl. The results were below expectations.

The pack amounted to about 600 metric tons of herring fillets. Herring was considerably less abundant on Georges Bank. They arrived one month later than usual and were difficult to fish because they congregated in very shallow waters. Night fishing took place in 20 to 40 fathoms, and day fishing in deeper waters. In August, the fish were found in entirely uncustomary places.

The Fishing

Most herring were fished on Georges Bank toward northwest and northeast; some in the

NORWAY (Contd.):

Gulf of Maine. During the last leg, *Gadus* fished off Nova Scotia, where the herring were large and of high quality. During the end of October, the crew caught about 150 to 160 metric tons during one week. The herring were different from the species found on and near Georges Bank. Poor weather intensified toward season's end and retarded catch.

The bulk of the pack was delivered to Cuxhaven in Germany. (Reg. Fish. Attaché, Copenhagen, Feb. 19.)

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SAITHE SALES TO EAST EUROPEAN MARKET WILL SET RECORD

Norwegian sales of deep-frozen saithe fillets to COMECON (Communist East European) countries will total a record 20,000 metric tons this year. The Soviet Union is expected to purchase most, 10,000 tons, after several years of declining purchases. This large purchase will not affect Soviet purchases from other areas, mainly Iceland and Britain.

Soviet Saithe Catch Drops

The Soviet catch of saithe decreased from 33,800 tons in 1966 to 11,900 tons in 1968; it is most likely reason for increased Soviet purchases abroad. Norway does not expect the increased sales to the Soviet Union to adversely affect sales to her more stable markets, such as Czechoslovakia and Hungary.

Wants Larger Saithe Market

Deliveries to the U.S., Western Europe, and other markets are based on cod, haddock, and other white fish, not saithe. Norway would like to change this. She considers saithe a delicacy and would like to expand its market. (Export Council of Norway, Mar. 1970.)

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NEW WHALING FACTORYSHIP IS DELIVERED

A new factory whale catcher, 'Peder Huse,' has been delivered to Torodd Huse and Partners, Steinshamn, Norway.

She has been equipped with up-to-date machinery that will clean-cut vacuum-packed and frozen whale beef, freeze whale meat in blocks as raw material for sausage and fodder, and increase production of whale oil. Her loading capacity is 500 metric tons of whale meat and 250 tons of oil.

Packing & Production

Whale meat is stored in 2 cooling tanks aft. It is processed on 3 production lines consisting of conveyors, cutting tables, and freezers. The beef, clean-cut and packed by a special machine, is frozen and packed in cartons. The frozen blocks of sausage meat and fodder are glazed and packed in plastic bags. The whale oil is produced aft of the factory area.

Contracts Made

Contracts have been made to deliver whale meat to Japan, and fodder to England, after the 1969/70 Antarctic season ends. Norway returned to whaling for the 1969/70 season after a year's absence. ('Norwegian Fishing and Maritime News,' Vol. 4, 1969.)

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WILL PURCHASE FLOATING HERRING-MEAL FACTORYSHIP

Norway may obtain her first herring-meal-and-oil factoryship. The 27,000-ton, US\$8 million vessel will fish globally, aided by 10-20 purse seiners. NORGLOBAL A/S is backing the project.

NORGLOBAL

The cooperative NORGLOBAL has capital of about US\$1 million; 53% is owned by north Norwegian interests. Factory and equipment is estimated at \$3.5 million, and vessel purchase at \$2 million. Total capital requirements amount to \$7.4 million.

The vessel will require 20-25 men to work in its floating factory and 20-25-man crew. (Reg. Fish. Att., Copenhagen, Feb. 19.)

* * *

SHRIMP FACTORY SHIPPED TO KUWAIT

A complete shrimp factory has been shipped to Kuwait from the Norwegian engineering concern, Haahjem Mekaniske A/S of Vigra. The firm also is working on other orders for Kuwait.

NORWAY (Contd.):

The factory will be operated in connection with a fleet of shrimp trawlers, also built in Norway, which has been fishing with good results in the Persian Gulf for several years.

Previously, the Norwegian factory exported fish-processing plants and equipment for installation aboard factoryships. (Export Council of Norway, Feb. 1970.)



WEST GERMANY

HERRING FISHERY DEVELOPS OFF U.S. ATLANTIC COAST

The developing West German fishery for herring off the U.S. Atlantic coast was spurred by recent failures on European herring grounds. West German vessels began fishing the Georges Bank area to ensure adequate supplies for their domestic industry.

This fishery began in earnest in Aug. 1967 with the appearance of 5 freezer-trawlers. Vessels arrive in July and stay until Dec. The main months are Aug., Sept., and Oct., with up to 35 vessels fishing.

The Catches

The 1968 catch was about 38,000 metric tons, product weight--double 1967's. The 1969 catch was expected to be close to 90,000 tons (50,000 tons). Such quantities guarantee sufficient supplies.

Becoming More Important

For economic reasons, the bulk of herring from Georges and Banquereau Banks was landed and transshipped from St. Pierre et Miquelon on reefer ships to West Germany.

Production of frozen herring off the U.S. will become more important in West Germany's herring industry. Marketing of frozen herring rests exclusively with Seefrostvertrieb GmbH. This year's contract between the firm and German industry was arrived at quickly. It led to greater employment of the fleet on Georges Bank.



UNITED KINGDOM

FISH LEVY INCREASED & EXTENDED

The White Fish Authority's (WFA) general levy on fish was increased and extended on Feb. 15, 1970. Previously, WFA had collected a levy only on first-hand sales of white fish-sea fish, fresh or preserved, other than herring, salmon, and migratory trout. Now there are differential rates for landed or imported white-fish products. The levy also has been extended to include imported fish meal, and fresh and processed shellfish. The levy's purpose is to expand and diversify further WFA's current services to the white fish industry.

New Regulations

The WFA levy was increased from 1.0d. to 1.2d. per stone of white fish landed or imported. (1d. = 1 US¢; 1 stone = 14 lbs.; 1 sh. = 12 US¢.)

The new regulations extend the levy's scope: (a) For first time, a levy is imposed on oysters, scallops (*Pecten maximus* and *Clamys opercularis*), crabs, lobsters, crawfish, nephrops, shrimps, and other edible crustaceans. Molluscs in shell, other than oysters and scallops, are exempt from levy. (b) Fish landed or imported in processed form carries a differential levy calculated by reference to the approximate whole-fish equivalent. The rates are shown below. (c) A levy of 8 shillings per ton is imposed on imported fish meal, whether manufactured from white fish or herring; a proportion of income from this levy will be paid to Herring Industry Board. (d) The levy on white fish purchased at first hand for the manufacture of fish meal has been reduced from one cent (U.S.) to 0.12d. per stone (14 lbs.). (e) Imports of processed shellfish (frozen crab meat, peeled shrimps, shelled Norway lobsters) will be levied at rate applicable to "any white fish product not referred to above." (f) The levy does not apply to imports of canned and bottled fish.

Who Pays Levy When

The increased rate is payable by first-hand purchaser unless the seller collects levy and adds it to his sales invoice. The levy on imports is payable by first-hand purchaser, usually the importer.

UNITED KINGDOM (Contd.):

The levy is payable weekly, unless other arrangements have been made. Payment is due 7 days after end of week in which fish were purchased. (U.S. Embassy, London, Feb. 11.)

The new rates of levy are:

	Rate Per Stone
FISH LANDED WHOLE OR GUTTED & WHOLE SHELLFISH	1.2d
DIFFERENTIAL LEVIES	
Fresh Frozen and Chilled White Fish:	
Headless & gutted	1.6d
Fillets, skin on	2.4d
Fillets, skinless	3.0d
Smoked White Fish:	
Headless and gutted	2.0d
Fillets, skin on	3.0d
Fillets, skinless	3.2d
Salted and Cured White Fish:	
Wet	2.4d
Dried	3.6d
Fish Meal	0.6d
White Fish Sold at First Hand for Fish-Meal Production	0.12d
Any White Fish Product Not Referred to Above	2.4d



ICELAND

JOINS EFTA

Iceland will join EFTA sometime in 1970 and come under all EFTA trade and tariff policies. On Jan. 1, 1970, she gained the same access to British market for frozen fishery products as other Nordic countries. On same date, Britain lifted all import restrictions on frozen fish in return for a minimum price system--increasing prices about 10%.



LATIN AMERICA

PERU

FISH-MEAL PRODUCTION AND EXPORTS ARE HIGH

Peruvian fish-meal production in Jan. 1970 set a record for Jan. It followed the excellent (a record) Dec. 1969 production.

Exports continued high. Stocks on hand, Feb. 1, 1970, were exceeded for that date only in 1967 and 1968.

Preliminary reports show high production (about 180,000 metric tons) for early Feb., although final figures have not been issued. (Fishery closed for 4 weeks on Feb. 14.)

Whether fishing would be as good when "veda," or closed season, ended on Mar. 16 remained to be seen.

	Fish-Meal Production & Exports, Jan. 1968-70		
	1970	1969	1968
	(Metric Tons)		
Production:			
Jan.	362,869	240,495	284,021
Exports:			
Jan.	<u>173,404</u>	<u>140,283</u>	<u>192,056</u>
Stocks on hand Feb. 1:	493,577	487,348	688,943

The current excellent fishing has given the industry a much-needed boost. (Sociedad Nacional de Pesqueria, Feb. 26.)

* * *

WORLD'S LARGEST STICKWATER MACHINERY BUILT FOR PERU

The Norwegian engineering concern, Bergs Maskin A/S, Trondheim, has produced the world's largest manufacturing unit for stickwater for a Peruvian company. The machinery, valued at US\$2 million, will be installed by Bergs. Two similar but smaller stickwater machines are being produced at Bergs for other Peruvian firms. (Export Council of Norway, Feb. 1970.)





In Indonesia, breeding fish involves 200,000 Javanese. Fish and rice are staple diet. FAO encourages raising fish in ponds. (Photo: UNations)

JAPAN

"INVISIBLE" NET CATCHES
MORE FISH

Fishermen in Japan and other countries are increasing their use of "invisible" nets. The nets are transparent nylon strand that is virtually invisible under water. Fish swim blindly into the net and become entangled.

The nets are so effective that almost all gillnet fishing in Japan is now done with them. Because they are so effective, they are banned in areas such as the salmon fisheries of Canada, where there is a serious need for conservation.

The Japanese also use "invisible" nets for trawling, especially in inshore waters where light penetrates to the bottom. The wings of the trawls are made of more visible material which deflects the fish into the transparent net body and codend where they are trapped.

Use of the nets was reported by Hilmar Kristjonsson, FAO fishing technologist, who recently visited the Far East to stimulate interest in FAO's world fishing conference in Reykjavik, Iceland, May 24 to 30.

His Report

Kristjonsson said: "In Japan, which produces about half of all the netting used in world fisheries, virtually all gillnets are now made of this material. It consists of a wire-like nylon monofilament which, because of its transparency, has proved far more effective in catching fish than the traditional twine.

"More than a decade ago, transparent nylon monofilaments, like those used by anglers, were used in some commercial gillnet fisheries but mainly in lakes. Recently there has been an almost 100 percent changeover to this invisible material in marine gillnetting in Japan."

Kristjonsson foresaw great possibilities in the use of such nets, particularly with low-powered fishing boats in clear tropical waters of developing countries at coastal depths of 10 to 20 fathoms. Small boats are very important to countries like India. There, the mechanized fishing fleet consists of about 10,000 vessels 30 to 36 feet long. In India,

Kristjonsson said, "it will be interesting to test the effectiveness of monofilament trawl nets as compared with the twine nets used now in these countries."

Small Net Invisibility

He noted that net visibility generally is more important when fishing with small rather than large trawl nets. It is likely that nets with "invisible" sections may also be important to industrialized fisheries, especially in shallow grounds and in midwater.

These and other developments will be discussed at the FAO Technical Conference on Fish Finding, Purse Seining, and Aired Trawling.

* * *

FISHERIES AGENCY BUDGET INCREASED
FOR FISCAL 1970

The Fisheries Agency budget for fiscal year (FY) 1970 (Apr. 1970-Mar. 1971) surpassed the US\$100 million mark for the first time. It is about US\$112.8 million, 22% over FY 1969's \$92.4 million. It includes large increases in funding for fishing-port improvements; shallow-water fishing development; and biological research. The latter relates to international fisheries, such as North Pacific Alaska pollock and crab fisheries.

Overseas Developments

Overseas fishery development will include saury surveys by 350- and 530-ton exploratory vessels; bottomfish surveys off New

Program	Proposed	
	FY 1970 Budget	FY 1969 Budget
(in Millions US\$)		
Fishing-port improvements	60.11	48.16
Shallow-water fishery development	0.71	0.09
Overseas fishery development	2.27	1.96
Biological research relating to international fisheries	0.65	0.53
Marine resources conservation and cultivation	1.69	1.53
Coastal fishery structural reorganization	3.84	4.34
Improvement of fishery disaster compensation system	6.40	2.79
Experimental undersea fish culture	0.19	0

JAPAN (Contd.):

Zealand and west Africa; and exploratory tuna longlining in the high latitudes of the South Pacific. ('Suisan Keizai Shimbun,' Feb. 3.)

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COASTAL FISHERIES HURT BY SOVIET AND SOUTH KOREAN VESSELS

Since early Feb. 1970, Japanese octopus fishermen off Hokkaido's Pacific coast (8-11 miles off Shiranuka) have suffered substantial damage from one 300-ton South Korean (ROK) and 2 Soviet fishing vessels trawling in an area banned to Japanese trawlers.

Gear Damaged

Reportedly, the Soviet vessels came close to the Japanese territorial limit (3 miles) and badly damaged coastal octopus fishing gear. The damage was estimated at about US\$30,000. The Japanese fishery cooperative is demanding compensation from the Soviets via the Japanese Foreign Office.

Soviet Bombing Exercises

An additional irritant: The Soviet Union informed Japan of 2-week bombing exercises on the high seas off Iturup Island (South Kuril Islands) beginning Mar. 1. The area is a Japanese cod fishing ground; its season usually opens prior to Mar. 1. ('Asahi Evening News,' Feb. 13.)

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TUNA SEINING IN EASTERN PACIFIC IS POOR

The seiner 'Hakuryu Maru No. 55' (500 gross tons), the only Japanese seiner in the eastern tropical tuna fishery since the season began January 1970, caught only about 35 tons of yellowfin by late February. Because the vessel must catch 1,000 tons to cover expenses, its catch so far has been disappointing.

2 Unsuccessful Years

The vessel experienced two bad years in the fishery. So this year she is using three speed boats, like those used by U. S. seiners in pursuing porpoise-associated yellowfin schools. However, unsatisfactory radio com-

munication between speed boats and mother-ship is hampering coordination of operations. ('Shin Suisan Shimbun Sokuho', Feb. 25.)

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WILL EXPORT ALASKA POLLOCK TO U.S.

The Federation of Hokkaido Fishery Cooperative Associations is planning to export frozen Alaska pollock fillets to the U.S. Initially the Federation plans to sell around 500 tons. If a steady trade can be built up, it hopes to increase shipments to around 4,000 tons.

Trial Shipment Made

Sales negotiations began in October 1969, when the president of a U.S. firm visited Hokkaido to study Japanese fillet processing. This resulted in a 5-ton trial shipment to the U.S. for quality evaluation and to determine U.S. consumer reaction.

May Open New Market

The planned shipment is attracting attention in Japan as opening a new market. The Japanese use Alaska pollock primarily for 'surimi' (minced fish meat) for use in 'kamaboko.' ('Suisancho Nippo,' Feb. 7.)

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MAY BUY SEA URCHIN FROM AUSTRALIA

A leading Japanese sea-urchin paste manufacturer is investigating the possibility of importing sea urchin roe from Australia because of the supply shortage. Sea urchin, abundant along the coast of Australia, are not harvested.

The Japanese company recently obtained samples from Australia and found them comparable in quality to imports from South Korea, North Korea, Taiwan, and Okinawa.

May Begin Importing

If first-stage processing (removing the shells) can be performed in Australia, the Japanese firm hopes to begin importing around US\$28,000 worth a month.

In 1969, three major sea-urchin processors in Shimonoseki imported in 6 months a combined monthly average of around \$83,000 worth. ('Minato Shimbun,' Feb. 11.)

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JAPAN (Contd.):

JAPAN AND KENYA TO BUILD JOINT COLD STORAGE

Japan's Taiyo Fishing Co. and Ataka Industries, with the government of Kenya and a local fishing company, plan to build a 2,000-ton capacity cold-storage in Mombasa. Half the financing will come from the government of Kenya; the other half will be shared equally by the 3 companies. Construction was scheduled to begin in February 1970. Completion is scheduled for October. The plant will store tuna for Taiyo, and other fish for the local market.

Taiyo already operates a fishing base at Mombasa. It buys tuna from South Korean and Taiwanese longliners for export to Italy and other countries. ('Katsuo-maguro Tsushin,' Feb. 6.)

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EXPORTS OF CANNED TUNA WENT UP IN 1969

Japanese canned-tuna exports in 1969 were 64,489.3 metric tons worth US\$65.8 million. In standard cases of 48.7-oz. cans, this was about 6.72 million cases, a 9% increase over 1968 exports of 6.14 million cases.

Exports of canned-tuna-in-brine in 1969 surpassed the 3-million case level for the first time. ('Suisan Tsushin,' Feb. 19.)

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EXPORTS OF FROZEN TUNA DOWN SHARPLY, OTHER FISH ROSE IN 1969

In 1969, Japanese frozen-tuna exports were 65,280 metric tons worth US\$27.46 million. These were down about 40% in quantity and 83% in value from 1968 exports of 197,000 tons worth \$41.06 million.

Tuna exports peaked at 177,000 tons in 1966, declined to 107,000 tons in 1967 and 1968, and dipped sharply in 1969. This one-time earnings leader of all fishery and agricultural products dropped from top place.

Yellowfin Fell Far

By species, yellowfin declined drastically as reflected in the sharply reduced shipments

to Italy. Italy, a major importer, uses an estimated 40,000-45,000 tons of raw tuna a year. She is becoming a very important market for Taiwan, South Korea, and the U.S.

Saury Exports Continue Rise

The 1969 exports of other fishery products show saury up with 16,171 tons; this compares with 14,367 tons in 1968, and 13,000 tons in 1967. Saury exports are rising steadily despite poor catches in recent years.

The 1969 average export price for frozen saury was \$460 a metric ton, over 50% above the 1968 average price of \$305 a ton.

Seed oyster exports totaled 2,672 tons, including 2,238 tons sold to the U.S., 321 tons to South Korea, 102 tons to France, and 8 tons to Spain. Previously, they were exported almost entirely to the U.S. which, in 1968, took 1,858 tons. ('Suisan Tsushin,' Feb. 18.)

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PET-FOOD TUNA EXPORTS DOWN IN APR.-NOV. 1969

Canned pet-food tuna exports totaled 504,026 cases Apr.-Nov. 1969, 200,000 fewer than same period 1968 (707,726 cases). The decline was attributed to short supplies of raw material and increased production in the U.S. The U.S. imported almost 90% of the 1969 exports. ('Katsuo-maguro Tsushin,' Feb. 10.)

Canned Pet Food Tuna Exports, Apr.-Nov. 1969		
	Can and Case Size	
	6-oz. 48's	1-lb. tall 24's
(No. of Cases)		
U. S.	440,317	10,500
Canada	50,609	-
Netherlands	2,500	-
Belgium	100	-
Total	493,526	10,500

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IMPORTS OF FROZEN SHRIMP ROSE SHARPLY IN 1969

Japanese imports of frozen shrimp in 1969 reached 48,886 metric tons worth about US\$121.75 million. This is an increase of nearly 39% in volume and 56% in value from 1968 imports of 35,204 tons worth \$78.06 million.

JAPAN (Contd.):

Since Japan liberalized her shrimp imports in 1961, these began to rise steadily until 1968. Then they declined for first time due largely to drastically reduced shipments from the Soviet Union.

1969 Imports Up Sharply

In 1969, imports rose sharply--a recent high in volume and value. This resulted from continued imports particularly during second-half 1969, despite domestic oversupply, which disrupted shrimp market. Firms that had purchase arrangements with foreign suppliers had to buy regardless of Japanese demand. ('Suisan Tsushin,' Feb. 14, & 'Nihon Suisan Shimbun,' Jan. 7.)

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CANNED-MACKEREL EXPORT PRICE
TO U. S. DROPS

Japanese prices for canned-mackerel exports to the U.S. declined in early Feb. 1970 to around c. & f. US\$6.10 a case (48 1-pound tall cans); the mid-Jan. price was around \$6.30 a case. The drop was attributed primarily to softening of Philippine market, the biggest, and in other southeast Asian countries.

Another contributing factor were foreign customers who, anticipating further price decline, did not buy. They were aware of reports Japanese packers and trading firms were carrying large unsold stocks. The export outlook appeared gloomy because the mackerel packers were in full production.

5 Million Cans

Canned-mackerel exports during Jan.-Dec. 1969 by 21 member firms of the Japan Canned Food Exporters Association were about five million cases. The trading firms Mitsui, Mitsubishi, and Taiyo handled over 50% of exports; the rest were sold mostly by Nozaki, Marubeni, C. Itoh & Co., and Kansmatsu. ('Kanzume Tokuho,' Feb. 9, 'Suisan Tsushin,' Feb. 9, and 'Katsuo-maguro Tsushin,' Feb. 4.)

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EXPORTS OF CANNED MACKEREL
TO U.S. ARE GROWING

Japanese exports of canned mackerel to the U.S. in 1969 totaled 395,000 cases (1-lb. tall 48's) of natural pack. The U.S. is Japan's second largest market, next to the Philippines; in 1969, the latter took 1.15 million cases of natural pack. This was 40% of about 3 million cases of that style pack. Canned mackerel exports to the U.S. began growing around 1967, when U.S. packers were the principal buyers.

Private Brands Promoted

In recent years, major firms have been promoting their own brands in the U.S.; these sales now exceed quantity sold to U.S. packers. The outlook for mackerel exports to the U.S. is of steady increase. ('Suisan Tsushin,' Mar. 6 & Feb. 20.)

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MAY SELL MACKEREL PET FOOD
TO CANADA

The Japanese Northern District Purse Seine Fishery Assoc. expects to export canned mackerel pet food to Canada. This would be the first time the Japanese have used mackerel in pet food; normally the dark meat of tuna is used.

The product was developed by the Aomori Prefectural Marine Products Research Institute, at the Association's request, to help stabilize mackerel prices in Japan.

Sample Favorably Received

The sample product was sent to Canada, where it was favorably received. A Canadian importing firm was sending a buyer to Japan to sign a purchase contract. ('Minato Shimbun,' Feb. 21.)

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JAPAN (Contd.):

SAURY FISHERY PLANNED OFF U.S. WEST COAST

About 10 large and small Japanese firms have indicated a desire to fish saury experimentally off U.S. west coast in 1970. Many more are reported interested. License applications may involve 30 vessels.

Some independent vessel owners want to operate with the big firms. Some coastal saury operators want to go it alone. Most major firms hope to conduct independent or two-boat operations; at least one firm plans to send a mothership accompanied by several vessels.

The Fisheries Agency is studying licensing policy. Reportedly, it does not plan to restrict number of vessels if these are only 15 to 20. However, its decision will depend on attitude of coastal saury operators.

1969 Operation

The 1969 Japanese saury catch off the U.S. west coast by six exploratory vessels was about 460 metric tons. The saury operations were east of 124° W. longitude from Sept. 23 until late Nov. Medium and small saury were abundant between 40° N.-45° N. latitudes; small fish ran heavy north of 44° N. latitude.

Good catches were made between 40° N.-43° N. latitudes, where medium fish were mixed with small. Saury were concentrated in areas with well-defined current boundaries located not very far from shore. Conditions relating to seaward and north-south migrations are unknown; the relationship between fishing season and fish concentrations could not be established.

Narrow & Light Weight

The eastern Pacific saury had many parasites. Their bodies were narrow and light in weight--considering their length. From early Oct., stormy weather persisted. ('Shin Suisan Shimbun Sokuho' and 'Suisan Tsushin,' Mar. 3.)



SOUTH KOREA

1969 CATCH WAS 98% OF GOAL

The Republic of Korea's 1969 catch totaled 858,000 metric tons, 98% of the goal set early in the year. The coastal catch was 534,000 tons; offshore, 158,000 tons; fish culture, 85,000 tons; and distant water fishery, 81,000. ('Suisancho Nippo,' Jan. 31.)

Growth Rate Slowing

South Korea's catch has grown rapidly during the last 4 years: from 701,000 metric tons in 1966, it increased over 20% in 1969. However, the growth rate is beginning to slow. It was 6.8% in 1967 (749,000 tons), 12.3% in 1968 (841,000 tons), and only a little over 2% in 1969.

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KOREAN & TAIWANESE TUNA FLEETS GROW STRONGER

In January 1970, Taiwan had about 80 tuna vessels in the Atlantic Ocean and the Republic of Korea (S. Korea) around 70. Together, they had almost four times as many vessels in the Atlantic as Japan (40 longliners). Their operations extended from north of the equator to off Brazil. Most of the vessels concentrated on albacore.

In January 1970, there were 60 Taiwanese, 50 South Korean, and only 3 Japanese longliners operating out of American Samoa. ('Suisancho Nippo,' Jan. 22, 1970.)

Dominate American Samoa Scene

In November 1969, the Korean tuna fleet out of American Samoa had 73 long liners. Taiwan had 58 long liners, and Japan only 7. The Japanese are steadily withdrawing their long liners because of smaller profits. ('Katsuo-maguro Tsushin,' Dec. 4, 1969.)



MID EAST

UNITED ARAB REPUBLIC

FISHERIES AFFECTED BY ASWAN DAM

Partly because of the Aswan Dam, United Arab Republic (UAR) fishery catches have declined steadily since 1964. This is disclosed in a report by FAO's General Fisheries Council of the Mediterranean: 'GFCM Studies and Reviews, No. 43, Marine Resources of the United Arab Republic.'

It covers the years up to 1967. It notes that catches of marine and freshwater fish increased from about 52,000 metric tons in 1952 to about 125,000 tons in 1962. Over the next 5 years, average annual total was about 106,000 tons.

Catches Drop After 1964

After the Aswan High Dam became operational in 1964, catches began to drop along the northern coast. Sardine catches that previously averaged 15,000 tons a year decreased to 4,600 tons in 1965, and to 554 in 1966. Total UAR catches reached a record 135,000 tons in 1964, declined to 102,400 tons in 1965, and dropped to 85,000 in 1967.

Decreased Water Fertility

The report attributes the decline to the dam. In checking the periodic Nile floods, the dam reduced the flow of water rich in natural fertilizers--phosphates, nitrates, and other nutrients--into the Mediterranean. The coastal fisheries, especially sardine, had thrived on these. The lowered water fertility discouraged fish concentrations and migrations in the area.

Increased Erosion and Salinity

The report recognizes the dam's value in providing water for power, irrigation, and in flood-control. But it emphasizes the need for a close watch on the ecological and physical changes dam has caused. These include increasing salination of the delta's coastal (and eventually lake) waters, and increased coastal

erosion. The Nile used to counteract this erosion by depositing 140 million tons of mud and silt a year in the area. The dam has greatly reduced this natural action.

Other factors contributing to reduced catches are growing water pollution (industry and tankers), overfishing, use of prohibited gear and small-mesh nets, and reclamation of lakes for agricultural purposes.

The Future

However, the report is optimistic about future development. It describes the 'vast' fishery potential of Lake Nasser. When fully realized, the lake will flood 4,200 square kilometers of UAR and Sudanese territory. FAO already has begun a 5-year, US\$2,684,000 project to develop fishery, forestry, water, and other resources.

Inland & Distant-Water Fisheries

The report also recommends development of inland fisheries elsewhere in the country, particularly in the northern lakes. Salt-water fish have been introduced successfully in these lakes to meet their already increased salinity. The possibility of speeding development of a high-seas fleet to fish in international waters is cited.

Coastal Fisheries

It urges wider exploitation of the northern Continental Shelf, where fishing now tends to hug a narrow area between Alexandria and Port Said. The flat, muddy bottom offers excellent trawling possibilities, especially for shrimp. Other recommendations are: development of Red Sea's fisheries, especially for shark-liver oil, fish meal, and shellfish; improved fishery education and training; more marine biological research; and water-pollution control.

The report emphasizes the need for increasing protein production in the UAR. Annual per-capita consumption of animal protein is now only 10 kilograms (22 lbs.). The population of 30 million is expected to double by the year 2000.



AFRICA

SOUTH AFRICA

IMPROVES FISHING FLEET

The 1970 fishing season opened in South Africa on January 1; in South-West Africa, on February 1. In South Africa, the January catch was 41,000 short tons of fish; it was 39,000 tons in January 1969. Weather improves in February and fishing was expected to be better.

New Steel Vessels

This year the fishing fleet was strengthened by nine steel purse seiners, 100 to 120 feet long. (The largest wood vessel is only 85 feet long.)

Seven of the steel vessels were purchased in Norway, and two in Iceland. These vessels are faster, more comfortable, and have refrigeration. All will be used for the Walvis Bay factories, or fish for the factoryships.

Spotter Aircraft Added

Also, a new spotter aircraft was obtained: a twin-engined, short-take-off-and-landing aircraft (STOL). It can cruise from 40 to 200 miles an hour. It flies at night at about 700 feet to help locate fish schools, which appear as readily identifiable luminous patches. ('Cape Times,' Feb. 21.)

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IMPROVES FISHING HARBORS

To provide better facilities for a rapidly growing fleet, South Africa's Fisheries Development Corporation is spending US\$15.4 million on fishing-harbor extensions, according to the 'South African Financial Gazette'.

The work, underway or just completed, is being done at seven fishing ports along South Africa's coast.

The 7 Harbors

The biggest project is at Gansbaai, where \$4.9 million is being spent. Construction of a new breakwater and quay will ultimately increase the little port's berthing capacity by about 50%.

Expenditure at Saldanha Bay is \$3.5 million and includes reclamation work, a new quay, a 1,200-ton slipway, and a new crayfishing jetty. This project will be completed around mid-1970.

The corporation is spending \$3.5 million on construction of a new breakwater, slipway, and coaster berth at St. Helena Bay, further up the west coast.

The corporation also is financing extensions worth \$1.9 million at Hout Bay, \$1.5 million at the Berg River mouth, \$322,000 at Hermanus, and \$280,000 at Lamberts Bay.

