

INTERNATIONAL

U.S.-Japan Agree on Fishing in U.S. Contiguous Zone

U. S. and Japanese delegations adjourned discussions on May 9 after agreeing on the nature and extent of Japanese fishing off the U. S. coast. The agreement provides:

1. Japan will take necessary measures to ensure that her nationals and vessels fish only in the waters listed below, which are contiguous to the U. S. territorial sea and extend to 12 nautical miles from the baseline from which the U. S. territorial sea is measured.

(1) (i) Crab fishing off the Pribilof Islands.

(ii) Drednet and long-line fishing:

(A) off the Bering Sea coast of the Aleutian Islands:

- (a) between $166^{\circ}45'$ and 173° W. longitude; between 174° and $174^{\circ}40'$ W. longitude; and west of 176° W. longitude;
- (b) from March 1 through August 31: between 173° and 174° W. longitude; and between $174^{\circ}40'$ and 176° W. longitude;
- (c) from December 1 through May 31: between 165° and $166^{\circ}45'$ W. longitude.

(B) off the Pacific coast of the Aleutian Islands:

- (a) between 169° and 173° W. longitude; and west of $178^{\circ}30'$ W. longitude;
- (b) from March 1 to August 31 inclusive: between 166° and 169° W. longitude; and between 173° and $178^{\circ}30'$ W. longitude.

(C) off the Pribilof Islands.

(iii) Tuna fishing in all waters, except off U. S. mainland (including Alaska), Puerto Rico, Virgin Islands, Panama Canal Zone, and Hawaii, Maui, Molokai, Oahu, Kauai, Lanai, and Niihau of the Hawaiian Islands.

(iv) Whaling in all waters off Alaskan coast, except off Pacific coast between 150° and 163° W. longitude.

(2) Loading operations:

(i) On east side of Kayak Island in Alaska between $59^{\circ}52'$ and $59^{\circ}56'$ N. latitude west of $143^{\circ}53'$ W. longitude, and on west side of Kayak Island between $59^{\circ}56'$ and 60° N. latitude.

(ii) On west side of Sanak Island in Alaska in waters bounded on north by $54^{\circ}36'$ N. latitude, on south by $54^{\circ}26'$ N. latitude, on west by $163^{\circ}05'$ W. longitude, and on east by $162^{\circ}40'$ W. longitude.

2. Nothing in arrangements prejudices claims of either Government concerning jurisdiction of a coastal state over fisheries.

3. The arrangements will become effective May 9, 1967, and continue until December 31, 1968. In one instance, the end of effective date will be May 31, 1969--for drednet and long-line fishing off Bering Sea Coast of Aleutian Islands, between 165° and $166^{\circ}45'$ W. longitude.

The 2 Governments will meet before December 31, 1968, to review the operation of the arrangements and to decide on future ones.

Also, the representatives reached understanding concerning certain restrictions on Japanese fishing beyond the U. S. 12-mile zone, and on Japanese fishing for salmon within the 12-mile zone in the Western Aleutian area. (U. S. Embassy, Tokyo, May 19, 1967.)



Mexico and U.S. Discuss Jurisdiction Over Marine Fisheries

Representatives of Mexico and the U. S., meeting in Washington May 15-25, discussed the recent changes their nations made in laws relating to jurisdiction over marine fisheries within the contiguous zone off their territorial seas. They discussed the conditions under which U. S. fishermen may be permitted to continue their traditional fisheries in that zone.

The Mexican law establishes an exclusive fisheries zone between 9 and 12 miles off the coasts. It provides, under certain conditions, that foreign fishermen may continue their traditional fishing within that zone for 5 years beginning 1968.

High-Level Representatives

The Mexican delegation was headed by the Ambassador to the U. S., Dr. Hugo B. Margain; it included Ambassador Dr. Oscar Rabasa, Legal Adviser to the Secretariat of Foreign Relations, Capt. C. G. Gilberto Lopez Lira, Secretariat of the Navy, and Dr. Jorge Echaniz R., Director General of Fisheries, Secretariat of Industry and Commerce.

The U. S. delegation was headed by Ambassador Donald L. McKernan, Special Assistant for Fisheries and Wildlife to the Secretary of State; it included H. E. Crowther, Director, U. S. Bureau of Commercial Fisheries, Raymond T. Yingling, Legal Adviser for Special Functional Problems, Department of State, and William M. Terry, Assistant Director for International Affairs, BCF. Both delegations were assisted by advisers representing their Pacific and Gulf Coast industries.

Prepare Joint Report

The areas of agreement, reservations, and suggestions are incorporated into a joint report to the Governments. The report contains points that can be a basis for continuing traditional fishing by nationals of each country within the exclusive fishery zone of the other country during a limited period. (Department of State, Washington, D. C. May 25, 1967.)



U.S.-Honduras Fishing Negotiations Begin

Delegations of Honduras and the U. S. began discussions to reach agreement on fishery problems in waters of the Atlantic Ocean. Negotiations centered on continuing traditional U. S. fishing in areas of exclusive Honduran fisheries jurisdiction within 12 miles of the latter's coast.

The discussions began in Tegucigalpa, Honduras. A U. S. proposal formulated as a basis for these discussions is being studied by Honduras. The discussions will continue at a time and place agreed upon by the Governments. (U. S. Department of State, May 8, 1967.)



U. S. Approves IATTC 1967 Yellowfin Tuna Limit

On May 11, the U. S. Secretary of the Interior approved recommendations by the Inter-American Tropical Tuna Commission (IATTC) pertinent to yellowfin tuna fishing in the Eastern Tropical Pacific Ocean during 1967. On June 16, U. S. Secretary of State also approved them. The notice of approval was published in the "Federal Register" on June 20.

The recommendations were part of a resolution adopted by IATTC at its annual meeting in San Jose, Costa Rica, April 4-6.

The Commission recommended action to:

1. Establish a catch limit (quota) on the total catch of yellowfin tuna for calendar 1967 of 84,500 short tons from the regulatory area defined by the Commission on May 17, 1962.
2. Reserve part of that quota to allow for incidental catches of tuna vessels when fishing for other species in regulatory area after unrestricted fishery for yellowfin tuna has been closed.
3. Close the fishery during 1967 when quantity already caught, plus expected catch by vessels at sea with authority to fish without restriction, reaches 84,500 short tons--less the portion reserved for incidental catches. Such closing date would be determined by Director of Investigations.

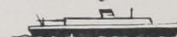
Vessels would be permitted to enter the area after closure of the yellowfin tuna fishery with permission to fish only for other species. But they would be allowed to land not more than 15 percent by weight of yellowfin tuna in the catch of all marketable species caught within regulatory area during closed season.



FAO and BCF Schedule Conference on Research Craft

The Second Technical Conference on Fishery Research Craft will be held in Seattle, Wash., December 11-15, 1967. The UN's Food and Agriculture Organization (FAO) and the U. S. Bureau of Commercial Fisheries are cosponsors. The theme will be modern fishery research craft with emphasis on unusual advanced and integrated vessels. Special attention will be given to problems in data collection and processing.

A "call for papers" was issued May 1. Contributors were asked to concentrate on problems and their solutions rather than on descriptions of vessels. The provisional agenda lists these topics for discussion: (1) craft requirements in relation to type of research activities; (2) craft requirements in relation to conditions of operation; (3) design and construction of fishery research vessels (4) arrangements and fixed equipment on board; (5) operational problems; (6) cost per day/scientific output efficiency; (7) use of other craft for fishery research; and (8) trends



World Fish Meal Production Declines Slightly

World fish meal production in January-March 1967 showed a small decline from the 1966 period. Peruvian output was below the high level of early 1966. Chilean production also was down. South African production declined substantially.

Most principal countries producing fish meal submit data to the International Association of Fish Meal Manufacturers monthly (see table).

Country	Mar.		Jan.-Mar.	
	1967	1966	1967	1966
. (Metric Tons)				
Canada	3,597	4,953	17,854	18,918
Denmark	1,911	6,565	13,917	19,856
France	1,100	1,100	3,300	3,300
German Fed. Repub.	5,558	7,088	17,721	20,000
Netherlands	1/	512	1/	1,051
Spain	1/	1/	1/	1/
Sweden	280	342	1,346	768
United Kingdom	5,333	10,681	20,568	26,437
United States	4,013	4,359	13,320	8,788
Zagala	1/	3,805	1/	13,484
Iceland	12,513	11,376	22,513	24,206
Norway	52,962	57,590	96,522	90,175
Peru	163,512	194,309	560,642	616,019
S. Afr. (including S.-W. Afr.)	49,985	32,595	86,796	54,276
Belgium	375	375	1,125	1,125
Chile	8,294	13,521	45,120	74,062
Morocco	1/	1/	1/	1/
Total	309,433	349,171	900,744	972,465

Data not available.
 Note: At present, Japan does not report production to the International Association of Fish Meal Manufacturers on a monthly basis. In 1965, Japanese production of fish meal was 356,000 metric tons, according to the Food and Agriculture Organization Yearbook of Fishery Statistics, 1965" vol. 21.



Antarctic Whale Oil Output Declines in 1966/67 Season

Production of baleen whale oil in the 1966/67 Antarctic pelagic season, which began December 12, 1966, and ended April 7, 1967, is estimated at 71,155 short tons. This compares with 83,955 and 158,244 tons in 1965/66 and 1964/65, respectively.

Production data for sperm whale oil are not yet complete, but output by Japan and Norway declined 16 percent. Total production likely will be markedly below the 59,232 tons produced in 1964/65.

Production of Whale Oil in the Antarctic Pelagic Season^{1/}

Participating Country	Baleen Oil		Sperm Oil ^{2/}	
	3/1966/67	1965/66	3/1966/67	1965/66
. (Short Tons)				
Japan	34,222	44,589	2,203	2,849
Soviet Union	4/22,035	21,317	5/	34,676
Norway	14,898	18,049	4,966	5,707
Total	71,155	83,955	5/	43,232

^{1/}Converted from original unit at rate of 170 kilograms, or 374.78 pounds of oil, per barrel.
^{2/}Including catch of sperm whales north of latitude 40° S, on voyage to and from Antarctic.
^{3/}Preliminary.
^{4/}Estimate based on catch of 1,069 blue whale units, with assumed outturn of 110 barrels of oil per blue whale unit.
^{5/}Not available.
 Source: "Norwegian Whale Gazette," Oslo.

Blue Whale Catch

The total Antarctic catch this season amounted to 3,503 blue whale units (BWU). Based on official figures, baleen whale oil output by Japan declined. Norway's output also declined as a result of reduced oil yield per BWU caught. Russian output is estimated to have increased; however, actual production has not yet been reported officially.

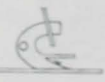
During the 1966/67 Antarctic pelagic season, 9 factoryships and 120 catcher boats were in operation--1 factoryship less and 8 catcher boats less than in the previous season. ("Foreign Agriculture," May 29, 1967, U. S. Department of Agriculture.)



Polish-FAO Cooperation in Fisheries

Paul Lamartine-Yates, Deputy Director General for Europe of the UN's Food and Agriculture Organization (FAO), talked with Polish officials April 27-May 3 about FAO-Polish cooperation in fishery matters. They discussed in particular technical assistance by FAO to organize Polish deep-sea fishing and to construct in Polish shipyards fishing vessels for developing countries. ("Trybuna, Ludu," May 3, 1967.)

In 1966, Poland asked the United Nations Development Program (Special Fund) for US\$1.2 million to assist in establishing a "research center for high-seas fisheries." The funds would be used to expand the facilities and programs of the Marine Fisheries Institute at Gdynia.



Japan and USSR Extend Kelp Agreement

A 2-year extension of the Japan-USSR kelp agreement was signed in Moscow on May 15, 1967, by the president of the Japan Fisheries Society and the Soviet Chief of the International Bureau, Fisheries Ministry. The agreement, concluded in 1963, permits Japanese fishermen to collect kelp in the Nemuro Strait off Shigunarinui Island (Kuril Islands, north-east of Hokkaido) during the season--June 10-September 30. The Japan Fisheries Society will pay kelp harvesting fees of 12,000 yen (US\$33.34) per vessel to the Soviet fisheries agency. ("Nihon Suisan Shimbun," May 17, 1967.)



Mexico and Poland Talk Trade

Poland has proposed to sell several tuna vessels to Mexico and also the machinery for a plant to process the fish. In return, Poland would agree to purchase at world market prices all the processed fish. The vessels would be constructed in Poland and the processing machinery and equipment for the plant would be acquired by Poland from Czechoslovakia. Selection of the plant site and other details of the proposal were studied by members of a Polish team and Mexican technicians. (U. S. Embassy, Mexico.)



South Korea to Invest in Malaysian Fisheries

South Korea and Malaysia have agreed to promote joint fishery ventures, and the former has promised technical assistance. The first venture reportedly will begin this year.

The agreement followed a visit during April 16-21 by a 13-man Malaysian Fisheries Team led by the Minister of Agriculture and Cooperatives. For Korea, negotiations were directed by the Minister of Agriculture and Forestry. (Joint communiqué issued April 21, 1967.)



Romania Participates in ICNAF Meeting for First Time

Four representatives of the Romanian Socialist Republic attended the 17th Annual Meeting of ICNAF in Boston in early June 1967. They were led by eng. Constantin Nicolau, Secretary General of the Romanian Ministry of Food Industries, which has jurisdiction over both fresh-water and marine fishing industries.

Romania began fishing in subarea 5 (Georges Bank) of ICNAF in 1965 with 2 large stern factory trawlers purchased in Japan in 1964. The same two trawlers (the "Galati" and the "Costanta") alternated in fishing on Georges Bank from June to October 1966. The catch was mostly herring.



Japanese Vessel Seized by New Zealand

A Japanese fishing vessel was seized on April 27 by a New Zealand patrol boat on a charge of violating territorial waters. On April 29, the vessel was fined 22 pounds 10 shillings (US\$63) and her catches confiscated. The vessel reportedly was fishing beyond the 3-mile sea limit--about 8 miles from the coast. ("Shin Suisan Shimbun Sokuho," May 2, 1967.)



Japan and New Zealand Agree on 12-Mile Fishery Zone

The Japan-New Zealand talks concerning the latter's 12-mile exclusive fishery zone, which opened in Wellington May 22, reached a settlement on June 3.

The agreement reportedly provides for continued Japanese long-line sea bream fishing within the 12-mile zone at the present scale (15-16 vessels a year) for 4 years; she will cease voluntarily in the fifth year.

In the early stage of negotiations, Japan also had sought recognition of her trawl fishing inside New Zealand's claimed waters but later withdrew this claim because of the relative insignificance of the catches there. ("Suisan Tsushin," June 7, 1967.)



Soviets Protest Argentine 200-Mile Maritime Limits

"Rybnoe Khoziaistvo," official organ of the Soviet Ministry of Fisheries, carried a 2-page lead editorial in its March issue attacking the Argentine Government for extending its maritime jurisdiction to 200 miles. One paragraph linked the Argentine action to that of other South American countries: "After World War II certain capitalist countries began making unilateral attempts to extend their jurisdiction over areas of the high seas. These claims were not recognized by the overwhelming majority of other states and in many cases brought sharp protests. Unfortunately, this practice has not ceased even at present."

The editorial said that Argentina (1) signed all four 1958 Geneva Conventions and is now reneging; (2) adopted the new Law and its Decree hastily, and that the two contradict each other.



Soviet Captain Fined in British Court

On April 29, 1967, the British Fisheries Enforcement vessel "Belton" detained the Soviet medium fishing trawler "SRT-3137" and its crew for fishing illegally within the British 12-mile fisheries zone. The Soviet vessel was observed fishing 9.8 miles off Lamburgh Head (Shetland Islands).

In Lerwick court, the Soviet captain said that he had thought he was fishing 17 miles from the shore. He blamed the mistake on his broken radar set, which had forced him to take radio-direction bearings. He was able to support his contention with excerpts from the vessel's log. He added that he had not really been fishing but only exploring for the Latvian Fishing Fleet, to which his vessel belongs. In view of these mitigating circumstances, and because this was the first time in 16 years of Soviet fishing off the Shetland Islands that a Soviet vessel had violated British fishery laws, the captain was fined only 50 British pounds. Neither gear nor catch was confiscated. ("Fishing News," May 12, 1967.)



Asian Tuna Conference Is Reported Productive

The 2-day Asian tuna conference held in Tokyo May 30-31 attracted over 40 representatives from South Korea, Formosa, Okinawa, and Japan. They discussed production, price, marketing, consumption, management, labor, regulations, and administrative policies. National positions on various issues were clarified. The atmosphere was friendly and cooperative. The conference was initiated by NIKKATSUREN, the Japan Federation of Tuna Fishermen's Cooperative Associations.

The participants agreed to meet annually and picked Formosa for next year's meeting.

Discussion of the tuna price problem drew considerable attention. NIKKATSUREN proposed that this problem be considered from the standpoint of cooperating on all tuna exports, but South Korea and Formosa insisted on limiting discussions to tuna prices at American Samoa, Espiritu Santo, and the Fiji Islands. It was agreed to appoint an 8-man study group (2 members from each country) to look into prices in the Pacific, Atlantic, and Indian Ocean areas. The group was scheduled to hold its first meeting on June 3, 1967. The South Koreans, Formosans, and Okinawans voiced strong dissatisfaction over the present price setting method at American Samoa, where only Japanese trading firms negotiate prices with U. S. packers. They urged that the producers' wishes be reflected more strongly in those negotiations.

Conservation Discussed

Conservation of tuna resources was emphasized by NIKKATSUREN. South Korea and Formosa, while recognizing need to protect the resources, took a negative attitude toward adopting conservation measures immediately. However, all participants agreed to cooperate in resource investigations and to exchange data.

Discussions of production and marketing revealed that South Korea, Formosa, and Okinawa, whose tuna production is increasing annually, do not have their own sales organization or overseas outlets. They export through Japanese trading firms or other agents. They expressed interest in forming an organization that would give them greater independence in sales.

Tuna production and exports in 1966 by South Korea, Formosa, and Okinawa, as well as the size of their tunafleets, are shown below. ("Suisan Keizai Shimbun," June 1 & 2, 1967, and other sources.)

Country	Size of Tuna Fleet		Production (Metric Tons)	Exports (Metric Tons)
	No. Vessels	Gross Tonnage		
South Korea . . .	132	11,532	16,000	16,000
Formosa . . .	701	38,000	43,330	21,848
Okinawa . . .	45	9,206	10,340	7,019



Yellowfin Tuna Fishery Closed June 24

The 1967 yellowfin tuna fishery in the eastern Pacific was closed at noon June 24, reported Gerald V. Howard, BCF Regional Director, Terminal Island, Calif. The action was taken to implement recommendations of the Inter-American Tropical Tuna Commission, at its annual meeting in April, for a catch quota from the eastern Pacific of 84,500 tons for 1967. On June 20, the Commission's Director, Dr. J. L. Kask, recommended to the nations affected that the closure become effective on June 24. Member governments are the U. S., Mexico, Costa Rica, Panama, and Ecuador. Japan and Canada are cooperating in the program.

On June 19, the yellowfin tuna catch was about 68,671 tons. A closure must become effective before the quota is reached to allow for catches yet to be made by vessels at sea when it occurs, and for incidental catches of yellowfin. Fishermen leaving after closure will be permitted an incidental catch of yellowfin tuna not to exceed 15 percent by weight of all marketable fishes taken on a fishing trip.

The yellowfin fishery also operated under a quota in 1966 as part of the Commission's conservation program to rebuild the yellowfin tuna population to maximum production. Enforcement of the U. S. regulations is undertaken jointly by BCF and California's Department of Fish and Game.



Asian Fishery-Oceanography Experts Meet

Thailand, South Viet Nam, and Indonesia are planning to launch a cooperative study of the food resources of the southern part of the South China Sea, reports John C. Marr, BCF Area Director, Hawaii.

The shallow portion of the sea is believed to hold immense resources of valuable bottom fishes. It is not intensely fished at present.

Marr returned last month from a meeting in Bangkok, Thailand, of the International Coordination Group of the Cooperative Study of the Kuroshio and Adjacent Regions (CSK). Marr is the U. S. National Coordinator for CSK and was elected CSK Assistant International Coordinator for Fisheries in 1965.

CSK, which began operations in 1964, is conducted under the auspices of UNESCO's Office of Oceanography with assistance for the fisheries phase of the project from the UN's Food and Agriculture Organization (FAO). CSK is a study of the western Pacific Ocean that has employed ships and scientists from several nations in special research activities.

The decision of Thailand, South Viet Nam, and Indonesia to conduct the survey was influenced by recommendations of the Indo-Pacific Fisheries Council in Honolulu in October 1966.

Meeting Well Attended

Represented at the Bangkok meeting were China, Japan, Korea, Philippines, USSR, United Kingdom (Hong Kong), United States, Viet Nam, Singapore, and Thailand. This was the first meeting since the last two nations joined CSK. Indonesia sent observers and indicated its intention to join CSK in the near future. Dr. Kiyoo Wadati, Japanese meteorologist and International Coordinator for CSK, presided.

Marr extended an invitation from the U. S. to hold the next CSK meeting in Honolulu at the East-West Center of the University of Hawaii. He said: "Several of the delegates had attended the Honolulu meeting of the

do-Pacific Fisheries Council last October and were delighted with the way the meeting was handled by Dr. George Kanahele (Program Director, Conferences and Seminars, East-West Center) and his staff. They looked forward to visiting Honolulu again." The group voted to accept the U. S. invitation, subject to approval of the UN's Intergovernmental Oceanographic Commission, which meets in Paris in October.

The Honolulu meeting of CSK probably will take place in April 1968, the first at which scientific results of CSK studies will be presented. A 4-day symposium will be devoted to these studies, along with the regular business session.



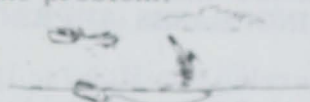
International Symposium on Eutrophication

The first International Symposium on Eutrophication was held in Madison, Wisconsin, June 11-16. It was organized by the U. S. National Academy of Sciences-National Research Council. Nearly 1600 scientists registered for this meeting.

Eutrophication is a condition of waters during which they are rich in dissolved nutrients, are frequently shallow, and have seasonal oxygen deficiency.

Papers were given on the distribution of eutrophication throughout the world, indices of eutrophication, and methods of arresting it. Several instances were reported where eutrophication was arrested by diverting the high nutrient water flowing into lakes; diluting enriched lakes with water of low nutrient content; proper treatment of inflow waters; and by reducing the level of living organic material in lakes.

At the close of the Symposium, the Planning Committee recommended an information program to alert the public to cultural eutrophication and the urgency of solving the problem. It also recommended that large-scale demonstration projects be set up to show the effectiveness of various schemes in solving the problem.



FAO and USSR Arrange Study Tours

FAO and the Soviet Union cooperated in organizing 2 Group Fellowship Study Tours during May, June, and July. A third will be held later this year. The tours are part of the FAO Program of Technical Assistance (UNDP).

Seventeen representatives of 10 nations participated in the Study Tour/Seminar on Freezing and Canning of Fish May 12-June 9. This was the first study tour on fish utilization. It was designed to familiarize fishery technologists and fishery officers of developing nations with planning and operating fish processing establishments. The 17 participants were graduate technologists and researchers from government, industry, and universities. The nations represented were Brazil, Chile, Ghana, Mexico, United Arab Republic, Thailand, India, Costa Rica, Argentina, and Peru.

From June 5-July 8, a Sea-going Tour on Fisheries Biology and Oceanography was held. A series of lectures by Soviet scientists was followed by a cruise aboard the research vessel "Akademi Knipovich," in the Mediterranean. The sea tour was planned to inform fisheries scientists of fisheries methods, equipment, and gear types.



FOREIGN

Canada

PRODUCTION OF INDUSTRIAL FISHERY PRODUCTS INCREASES APPRECIABLY

Atlantic herring reduction facilities to produce oil and meal are expected to reach 7,000 tons a day this year and 10,000 tons a day by 1970, reports H. E. Power of the Fisheries Research Board of Canada, Halifax. Between 1963 and 1965, he said, herring oil production rose from 1,400,000 pounds to 7,140,000 pounds, and meal from 4,667 to 12,783 tons. Since 1964, 15 fish meal plants capable of producing herring meal have been built, or are being planned, on the Atlantic coast. M. S. Strong, Department of Trade and Commerce, Ottawa, notes that world fish meal production of 4,186,500 tons was 200 percent over 1958's figure. World production of fish oils also advanced considerably: in 1966, it was 732,100 metric tons, up 156 percent over 1958.

For nearly 10 years, Peru has been world's largest producer of fish meal--and, since 1962, she has produced about 36 percent of world's production. In 1966, Canada was 8th; Norway, Japan, Chile, and the U. S. followed Peru.

In the production of fish body oil in 1966, Canada ranked 7th. The main producers were Norway, Peru, Iceland, the U. S., and South Africa combined with Southwest Africa.

Export Trade Increases

M. S. Strong adds that the fish meal export trade has gained significantly. In 1966, world exports of 2,316,500 metric tons were an increase of 288 percent over 1958. Peru was first by far, followed by Norway, Chile, South Africa, and Southwest Africa (combined), and Iceland. Canada was 7th.

In 1966, exports of fish body oils rose 442,000 metric tons from 1958's 139,000. The ranking of exporting countries: Peru, Iceland, Denmark, Norway, South Africa and Southwest Africa combined, and the U. S. Canada shipped only 8,000 tons.

Largest importers of fish meal are West Germany and Britain. With the Netherlands, they account for over 50 percent of world con-

sumption. Japanese imports, quintupled since 1961, are exceeded by only the 4 major importing countries.

Main consumers of fish body oils are Britain, Netherlands, Germany, Sweden, and France. But even in Europe, usage varies considerably.

M. S. Strong foresees increasing imports of fish meal by other West European countries. The expansion of the compounding industry in eastern Europe also should lead to increased demand there, he predicts.

Fish meal futures now are traded on the New York Produce Exchange and in London. ("Canadian Fisherman," June 1967.)

* * *

AMENDS FISHING VESSEL ASSISTANCE REGULATIONS

The Canadian Federal Department of Fisheries has announced that all applications for financial assistance to build fishing vessels must be received before a start is made on constructing these vessels. This change in the Canadian Fishing Vessel Assistance Regulations became effective April 26, 1967; full enforcement began June 15, 1967.

Under Fishing Vessel Regulations, the Canadian Minister of Fisheries is empowered to enter into agreement with Provincial fishermen's loan agencies--fishermen's loan boards or, in Quebec Province, the Minister of Industry and Commerce--to contribute toward building vessels.

What Agreement Specifies

Such an agreement stipulates that Federal Government would provide:

(1) Twenty-five percent of approved cost of fishing vessel having a minimum length of 35 feet and maximum of less than 45;

(2) Thirty percent of approved cost of constructing fishing vessel with a minimum length of 45 feet and maximum size of less than 10 gross tons; or

Canada (Contd.):

(3) Forty percent of approved cost of any wooden fishing vessel having minimum size of 100 gross tons.

To be eligible for assistance, fishing vessels under 15 gross tons must be inspected and earn Minister's approval. Before financial aid is considered for vessels of 15 gross tons or larger, a certificate from the Board of Steamship Inspection is necessary. (Canadian Department of Fisheries, June 15, 1967.)

* * *

TESTS IRRADIATION RESERVATION OF WHITEFISH

Experiments with low-level gamma radiation have demonstrated that the storage life of fresh whitefish can be extended considerably by irradiation. The experiments were conducted at the Winnipeg fish inspection laboratory of the Canadian Federal Department of Fisheries, in cooperation with Atomic Energy of Canada Limited and the University of Manitoba.

Dressed whitefish in a sealed plastic bag were exposed to a low level of gamma irradiation for a short period. As a result, 99.9 percent of the bacteria, which contribute greatly to spoilage of fish, was destroyed. Thus treated, the package could be kept on ice, in fresh condition, for up to 29 days.

Cobalt-60 Unit Used

Equipment used to irradiate samples was a mobile Cobalt-60 gamma irradiation unit designed and constructed by Atomic Energy of Canada Limited.

Discussing the experiments, a Canadian scientist said: "While the process used in our research is too costly for the average fish packer and processor, no doubt engineering in the field of radiation will substantially reduce this cost in years to come." (Canadian Department of Fisheries, May 25, 1967.)

* * *

FIRST QUARTER LANDINGS DOWN AT 1966 PACE

Canadian sea fisheries landings (including Newfoundland) during January-March 1967 were 315.6 million pounds with an ex-vessel value of C\$10.9 million; in the same period of 1966, landings were 314.9 million pounds worth \$12.6 million. (Excludes seaweeds.)

("Monthly Review of Canadian Fisheries Statistics," March 1967.)

Landings and exvessel value of principal species were:

Species	Jan.-Mar.		Jan.-Mar.	
	1967	1966	1967	1966
	Landings		Value	
	(1,000 Lbs.)		(1,000 C\$)	
Atlantic Coast:				
Cod	41,244	71,966	1,914	3,319
Haddock	25,650	31,057	1,882	2,205
Pollock	9,027	5,768	355	224
Flounder and sole	31,003	18,447	1,079	659
Herring	99,844	31,606	1,117	380
Swordfish	30	60	26	47
Lobsters	622	858	523	839
Scallops	1,539	2,298	823	917
Pacific Coast:				
Halibut	-	-	-	-
Herring	78,059	118,195	1,288	1,950
Salmon	41	64	20	29

* * *

FISHERIES TRADE MISSION VISITS EAST EUROPE

Some prospects for fishery exports to Czechoslovakia were reported by a Canadian Fisheries Reconnaissance Mission that visited eastern Europe February 20-March 2, 1967. Canned sardines and frozen turbot were said to be the most encouraging possibilities in the near future; various species of frozen groundfish presented a longer term prospect.

Sales prospects in other Communist countries visited--Romania, Hungary, and Yugoslavia--were reported marginal at present. (U. S. Embassy, Ottawa, June 1, 1967.)

* * *

KENNEDY ROUND RESULTS EASER ACCESS TO U. S. MARKET

Government officials said the results of the Kennedy Round will increase opportunities for Canadian exporters of everything from fish sticks to television sets. They attribute this gain to tariff cuts by the U. S. and other nations.

Canada's most important general gain is easier access to the U. S. market. The Canadian-U. S. changes are expected to boost the present \$13 billion in trade between them. Already, each is the other's largest trading partner.

Some areas of mutual tariff eliminations by the U. S. and Canada are extended to all nations under the most favored nations agreement. These include fresh and frozen fish, some agricultural products and minerals.



LATIN AMERICA

Cuba

FISHERIES EXPANSION IS PUSHED VIGOROUSLY

Cuba has doubled her fish catch--to over 50,000 tons a year--in the 7 years since Castro won power. At first the increase was produced by reviving the boatbuilding industry and by organizing cooperatives to fish the inshore waters. But with Soviet aid, Cuba has reached out to deeper waters and much larger vessels. She plans to catch 200,000 tons a year by 1970.

In Cuban plans, fish are an important source of protein in the diet because meat, while in sufficient quantity, is a major export commodity. The export of meat has to be increased to pay for imported machinery and capital equipment needed to modernize and strengthen the economy. The Government is moving rapidly to develop a major fishing industry.

The trawlers used in distant-water fishing--there are "dozens" of them--were built to order in foreign shipyards, mainly Spanish. The crews, totaling about 2,000 men, were trained by Soviet fishermen who sometimes accompany them. The trawlers operate on Atlantic and even Pacific fishing grounds.

The crews of trawlers--and of inshore fishing boats--receive 6 or 12 months' training at a school for seamanship and navigation in Havana; there too is a College of Navigation for skippers and mates of the deepwater fishing fleet.

Research Aided by Soviets and Japanese

Research is shared by 2 Havana-based institutes: Instituto Nacional de la Pesca, Empresa Conserva de Pescados y Mariscos; and Instituto de Oceanologia. The former has 9 research vessels, plus one Soviet vessel, all about 100 tons. Soviet scientists have been working there since 1962. In 1963, they were joined by Japanese scientists. The institute gives top priority to the sardine--for eating and for producing fish meal. There also is a pilot scheme to use fish meal for human consumption.

The Oceanographic Institute has 12 Cuban research workers and some student helpers.

It has no vessels of its own, but 2 Soviet vessels have been made available. Its program includes research into the home production of agar-agar. Cuba's annual need is 50-100 tons; she pays \$8,000 a ton in foreign exchange.

Boatyards Spring Up

Since the revolution, boatyards have been built in such places as Manzanillo, Gibaro, and Puerto Padre. These yards first built small boats for inshore fishing on the "shelf" of the Cuban Archipelago. The Manzanillo yard, which started operations in 1962, built 75-foot-long fishing cutters of 20-foot beam, 25-ton hold capacity, and engine of 250-hp. motor. Eleven of these boats had been built by the end of 1964. A water shortage stopped production in the first half of 1965. The yard now is building Golfo 66 fishing cutters: 17-foot beam, 150-hp. motors of Soviet origin, crew of 13.

Havana's Chullima boatyard, ready in 1964, started building Lambda 75 fishing cutters. It can build 12 boats at a time. The successor to the Lambda 75 is the Sondero 67, smaller but using the same stem piece.

Also following the revolution, a state Fishing Company (Empresa Estatal de Pesca) was organized to operate a new fleet. The fleet was designed to run on Soviet lines with Soviet technical and other help. Today, the state-owned fleet has 3 main individual operating units: Flota Cubana de Pesca (Cuban Fishing Fleet) operating from Havana's new fishing port, which has all the long-distance vessels; the Flota del Golfo (Gulf Fleet), and the Flota de Cayo Largo (Cayo Largo Fleet).

Vessels operating in these fleets and those used by the many cooperatives use both Cuban- and foreign-built vessels.

Between 1961 and May 1966, Cuban boatyards employing 2,400 men produced 680 new vessels for the fishing fleets. The number is expected to reach 900 by 1970. The Government sees the fishing industry as an earner of foreign revenue and wants it to achieve more. Fishing operations were extended to both the north and south Atlantic. Advised by Soviet experts, Cubans went overseas to buy new distant water vessels.

Cuba (Contd.):

At the beginning of 1967, the Flota Cubana Pesca had 45 vessels operating from the northwest to the southwest Atlantic and across the eastern Atlantic off Africa. By 1970, Cuba expects to have a 700-ship fleet on the high seas--presumably the Lambda class and larger. This fleet, plus the 900 smaller vessels, is expected to boost fisheries production to 200,000 tons a year. Over 4,000 Cubans are being trained for the new fleet. The new fishing port at Havana is equipped to cope with the expected rise in landings.

USSR and Cuba Built Fishing Port

On September 25, 1962, Premier Fidel Castro and USSR Minister of Fisheries Alexander Ishkhov signed an agreement to further develop the Cuban fishing industry. The agreement included the building of a modern fishing port complex at Havana to serve the expanding Cuban fleet and Soviet fleet in the western Atlantic. The USSR provided experts and grants. The port was officially opened exactly 4 years later--September 25, 1966.

Four quays have a total length of 1,000 meters. Three of the 4 are for loading, unloading, and provisioning vessels and are served by seven 5-ton cranes; the fourth, equipped with a 10-ton crane, is used for repairs and general heavy overhauls of vessels or their machinery.

Also, there is a floating drydock with a lifting capacity of 2,800 tons of deadweight. It can accommodate 1 BMRT factory trawler, 2 SRTR medium size trawlers or 1 SRTR, and 2 Lambda-class vessels.

The port is self-contained: 5 electrical generating substations, continuous design operation, and closed-circuit TV control system. There are 7 cold stores with capacity of 10,000 metric tons, and a quick-freezing plant (4 units) with a 30-ton-a-day output. An ice manufacturing plant has a daily output of 60-80 tons. There is a pilot fish-processing plant to prepare fish fillets; it will increase

in size as production increases. Other plants contain ships stores, spares for vessels and machinery, fishing gear store, fishing gear assembly shop, and fish meal storage.

A new 24-hour, 85-person radio station has been built to handle operations of Cuban and Soviet vessels. It can control the workings of ships 500 to 2,000 miles away. Transmitters and receivers, housed separately, are operated by a central control position. (Abstracted from "Fishing News International," June 1967.)



Peru

SEEKS JAPANESE HELP TO DEVELOP FISHERY RESOURCES

Eager to stabilize her depressed fishing industry, and to promote domestic consumption of fish as a source of animal protein, Peru is seeking Japanese cooperation to explore and develop her coastal fishery resources. It is believed Peruvian coastal waters contain an abundance of mackerel, shrimp, and other unutilized species that could be harvested and processed. Peru's interest in developing those resources was heightened by the findings of 2 Japanese fishery teams that recently surveyed fishery conditions in Peru and other Latin American countries.

On May 12, the Vice-President of the Peruvian Fishery Association visited Japan on his way home from the FAO Fisheries Committee meeting in Rome. Reportedly, he conferred with the Fisheries Agency Director and Japanese industry leaders concerning the cooperative development of Peru's fishery resources. ("Suisan Tsushin," May 22, 1967.)



EUROPE

USSR

HOW SOVIETS HANDLE AND FREEZE TUNA ABOARD VESSELS

The best methods for the primary processing of tuna aboard fishing vessels--and the specifications for chilling and freezing--were tested aboard the Soviet tuna-fishing factoryship "Iarkii Luch."

The principal species fished were big-eyed and yellowfin. Both averaged 150-170 cm. (about 59-67 inches) long and weighed 70-90 kg. (154-198 pounds); their fat content ranged from 0.4 to 13 percent.

When kept in the open at 20°-25°C. (68°-77°F.), biochemical changes set in so quickly that the first signs of spoilage became evident after no more than 5 hours: the eyes whitened; a slight smell of decay was noticed in the gills; and the meat became flabby.

To extend the storage period, the tuna were chilled with flake ice on board the fishing vessels. Before chilling, the fish were bled (the blood loss averaged 2 percent) and washed with sea water (weight loss was around 1 percent). With a fish-to-ice weight ratio of 1:1, the fish remained fresh for as long as 1½-2 days. On the third day, the muscular tissue softened although the meat's appearance was good. During this period, the temperature in the insulated hold of the vessel was kept at 4°-6°C. (39°-43°F.) whereas that of the freshly caught tuna was 23°-25°C. (73°-77°F.). When the fish-to-ice ratio was 1:0.5, the flabbiness appeared after only two days. The weight loss of tuna during 12-16 hours of storage in the hold was 0.42 percent.

Transferred to Factoryship

The fish were transferred to the factoryship, where they were washed thoroughly with sea water. The weight loss was around 1 percent after draining. Then, they were stowed in a refrigerated holding area until canned or frozen. The temperature there was maintained at about -1° to -3° C. (30°-37° F.). With an initial temperature of 10°-20° C. (50°-68° F.) the fish were stowed in bulk and covered with ice in the ratio 1:1. The temperature of the fish dropped at a rate

of 1 C. per hour during a storage time of 10-11 hours. After 20 hours of storage, the fish temperature was -1° C. (30° F.) at a meat depth of 5 cm. (2 inches), and plus 0.5° C. (32.9° F.) at 10 cm. (3.9 inches).

Experimental batches of tuna were kept in the holding area and covered with ice in the ratio of 1:1 for 10, 20, 30, and 40 hours. The microbiological and enzymatic processes were slowed down at storage temperatures of -2° to -3° C. (26.6° to 28.4° F.). Partial ice formation in the fish tissues is possible at such temperatures and can lead to a rupture of the meat tissues. However, no deterioration in quality was noticed.

The active acidity (pH) and water retention of muscular tissue also were determined during the storage period.

In fish muscles, rigor mortis set in after 4 or 5 days of storage in ice at hold temperatures of -1° to -3° C.; water separation from the tissues increased to 27 percent. Once rigor mortis was complete, the water retention of tuna meat rose, and considerably less juice was separated; on the 14th day, the quantity separated was 12 percent. Considerable softening of the muscular tissue was observed during this period.

Two Weeks May Be Maximum

The parallel determinations of pH illustrate the effect of storage time on meat quality. While pH after death was 7.2, it dropped with onset of rigor mortis to 5.9, and rose after 40 days of storage to 7.5--when fish were seen to deteriorate significantly and a distinctive stale odor emanated from gills. Hence, the longest storage period under these temperature conditions should not exceed 2 weeks. Canned tuna "in natural juice" made from such meat was very well received by Soviet consumers.

Most tuna was canned, but when the catches were large some were frozen, either whole or gutted. The total freezer capacity was 10 metric tons of fish per 24 hours. The freezing cycle lasted 22 hours. The natural weight loss of round gutted tunas during freezing was 0.72 percent, of whole tunas 0.84 percent.

USSR (Contd.):

After freezing, the fish were passed through a glazing machine consisting of a tank with a chain conveyor fitted with claws. The tuna were glazed with fresh water of 10^o-15^o C. (50^o-59^o F.). The glazing time was 5 seconds, and the glaze thickness only 0.94 percent of the fish weight (compared with 4 percent prescribed by Soviet standards). Then, the fish were packed in matting bales and slid down a spiral chute into the storage hold. This method caused part of the glaze to chip off, and tuna also were mechanically damaged.

Spray Fish With Sea Water

The frozen fish were kept in the hold at -25^o C. (-13^o F.). After one month, the natural weight loss was 1.43 percent; after two months, 3.27 percent of original weight. These losses are explained by changes in hold temperatures caused by frequent opening of hold during loading and unloading.

Both fresh and frozen tuna were used for canning. Before dressing, the frozen fish were thawed to -1^o C. (30.2^o F.). The quickest thawing--completed within 8-9 hours--was effected in a tank of sea water at 24^o C. (75^o F.) with a water-to-fish ratio of 2:1. However, due to the vessel's roll, the fish rubbed against each other, causing mechanical damage; the meat swelled and acquired a bad commercial appearance. This method was abandoned.

Thawing in the open air at 23^o-24^o C. (73.4^o-75.2^o F.) took 20-21 hours and resulted in considerable contamination of the fish and occupied a great deal of deck space.

The method of thawing finally accepted was to spray the fish with sea water. This technique combines the positive aspects of both methods: the speed of the first one, and the absence of mechanical damage of the second. The thawing time was 14-15 hours. (From article by Ionov and Semenov in Soviet periodical "Rybnoe Khoziaistvo," Dec. 1966.)

* * *

SHARK FINS ARE USED

Large Soviet tuna canning vessels (purchased in 1964-65 from Japan) catch some sharks and other species in addition to tuna.

Various products are being made from shark meat; a shark cannery reportedly was set up at Murmansk and, recently, the Soviets began to use shark fins. The processing technique is described in the magazine "Rybnoe Khoziaistvo" (Nov. 1966).

Shark fins--pectoral, dorsal, and anal--are exceptionally tasty and nutritious and in great demand in international markets. Essentially, their processing aboard fishing vessels is as follows:

The fins, cut from the body, are thoroughly scrubbed with hard brushes in sea water, or in 3-5 percent salt solution, and then scrubbed and rinsed with fresh water. Some authors recommend soaking scrubbed fins in saturated brine for one hour to allow the salt to penetrate into the meaty base of the fins. After pickling, the fins are soaked in fresh water for 10 minutes and thoroughly rinsed with fresh water.

The washed fins are placed on a screen, drained, and hung by a string threaded through the meaty part. The fins should be spaced so not to touch each other when hung vertically.

Sun and Room Drying

It is recommended that the fins be dried in bright sunny weather, under a tent, during the first 3 days, and then in the open, or in drying rooms at a temperature of 40^o-50^o C. (104^o-122^o F.) with intensive air circulation. The quality of sun-dried fins is better than room-dried fins.

If the fins bend during drying, they should be straightened. Since bent fins cannot be packed tightly, they require more room and deteriorate more rapidly due to air in their interspaces.

For room drying, the fins are spread on wire frames. The drying time depends on fin size and drying conditions. Under favorable conditions, the drying time of medium-size fins in the open is 15-20 days; in a drying room, 5 to 8 days.

Correctly dried fins have a relatively straight, completely dry, dull surface, without folds and bends. The meaty base should be dry throughout and the thin parts resilient and elastic, but not brittle.

The dried fins are packed in clean boxes made of wood, plywood, or cardboard, and

USSR (Contd.):

lined with greaseproof paper, which also should cover the fins below the lid. Each box is filled to 3-5 cm (1.2-2.0 inches) above the rim. Then the lid is closed and weighted, and the box sealed and marked.

The sealed boxes are stored in dry, well-ventilated cool stores (holds) at a temperature not above 15° C. (59° F.), and with air humidity not over 75 percent. When stored in a humid atmosphere, fins are attacked by molds.

* * *

SOVIETS GROW SEAWEEDS

The Soviet Far Eastern Fisheries Administration plans to increase production of agar-agar. It is constructing a large agar-manufacturing plant.

To increase resources of "Ahnpheltia" seaweeds, the raw material from which agar-agar is produced, scientists of the Pacific Scientific Research Institute of Fisheries and Oceanography planted the bottom of Peter the Great Bay near Vladivostok with "Ahnpheltia" (red algae). The underwater fields are developing well. Additional and larger areas of the bay will be planted this year.

* * *

SOVIETS ARE PREPARING NEW FISHING FLEET MANUAL

A Leningrad conference last year examined the third draft for the new Service Manual of Soviet commercial fishing vessels. The drafts were prepared by the Soviet Federal Fishing Fleet Design Institute and reviewed by a special Editorial Commission of the Ministry of Fisheries, comprising almost 50 senior fishing captains and chief engineers. The Commission was headed by I. M. Semenev, Director of the Soviet Fishing Fleet Inspection Service. It was decided at the conference that the revised manual will contain 15 sections on the duties and rights of various persons aboard fishing vessels, and a supplement listing signals and commands used during a vessel's maneuvers.

The Captain's Role

The book will emphasize the captain's position as the sole responsible commanding

officer. But, in his daily duties, he must rely on the Communist Party organization aboard the vessel. The vessel's Council will have 6 persons (captain, first and second mate, chief engineer, secretary of vessel's CP group, and secretary of vessel's Trade Union Committee). The Council will discuss all major problems, but the final decision will be the captain's. The Council's function is primarily advisory.

To insure efficient operations, 2 new posts will be introduced: A senior fisherman in charge of fishing operations, and another of fish processing. The chief radio-technician will be in charge of depth-finders, as well as communications and radionavigation.

A new section on fishermen's safety (which did not exist in the previous Manual) will be added. The revised Manual was approved by the Ministry of Fisheries in March 1967 and was scheduled for the printer.



Norway

FIRST-QUARTER 1967 EXPORT TRENDS

Norwegian exports of frozen cod and haddock fillets in first-quarter 1967 were down from the 1966 period. But shipments of coalfish fillets were up--and total shipments of frozen fillets were about the same as in Jan.-Mar. 1966.

In early 1967, exports of canned brisling were running somewhat behind the previous year, when shipments were exceptionally high. Exports of small sild sardines were up about 17 percent. The main canning season for brisling and sild sardines begins in the spring

Exports, Jan.-Mar. 1967		
Product	Jan.-Mar.	
	1967	1966
	.. (Metric Tons) ..	
Frozen fillets:		
Haddock	1,536	1,912
Cod	5,146	7,239
Coalfish	7,152	4,403
Herring	1,956	2,381
Other	1,278	1,395
Total frozen fillets	17,068	17,330
Frozen herring	4,017	4,814
Canned fishery products:		
Brisling	1,584	2,342
Small sild sardines	3,779	3,218
Kippers	830	817
Shellfish	149	285
Other	1,110	1,118
Total canned fish	7,452	7,780
Fish meal	115,250	66,526
Herring oil, crude	13,573	14,853

Norway (Contd.):

Industrial Fish

Exports of fish meal in Jan.-Mar. 1967 were up sharply from the previous year. The large stocks on hand at the start of 1967 contributed to the gain. Landings of fish for industrial purposes continued at a high level in early 1967, and fish meal output was running slightly ahead of the 90,000 tons produced in Jan.-Mar. 1966. The gain was due to larger landings of capelin and mackerel. ("Fisketslag," April 27, 1967, and April 28, 1966, and other sources.)

* * *

VESSEL COSTS ARE CUT BY USING STANDARD DESIGN

A Norwegian shipyard says that it cut construction costs of coastal long-liners up to 25 percent by using a standard design for a series of vessels. At first, the concept was rejected by fishing interests, but later they changed their minds.

The first vessels have been delivered and 15 sisterships are expected in the first series. The vessels are 50 feet long, of laminated construction, pressure-impregnated material, and with a 150 hp. motor. A speed of 9.5 knots was reached during trial runs, 2 knots faster than normal for this vessel type. ("Ingeniøren's Ugeblad," May 5, 1967.)

* * *

WINS NO. 5 POSITION IN WORLD FISHERIES

Norway replaced the U. S. in 1966 as the world's fifth largest fishing nation.

Her fishermen set an all-time Norwegian record of 2,650,500 metric tons of fish--28 percent above the 1965 catch.

They achieved this despite a two-month ban on fishing for reduction purposes. Their larger herring catches--winter and fat--strengthened a trend that became apparent in 1964. Cod production increased slightly. So did the combined yield of other fish species, due mainly to record catches of capelin and mackerel. The first-hand value of the fish catch reached 1.3 billion kroner; this included 164 million kroner in Government subsidies

(7.14 kroner = \$1). Greater supplies of fish raw materials and largely satisfactory marketing conditions stimulated increased production in all major fish processing industries. Fish exports rose by nine percent to nearly 1.6 billion kroner. The U. S. share of exports rose to 9.2% from increased deliveries of frozen fillets and fish meal.

The short-term outlook for Norwegian fisheries is promising, but marketing conditions are deteriorating for several major fish products, notably fish meal and frozen fish fillets.

Major seasonal fisheries in first-quarter 1967 have recorded even better results than the 1966 period.

First-Hand Production and Value

The exvessel value of the 2.6 million metric tons reached a record 1,309 million kroner. This included 164 million kroner in State support and transfer to the fishermen of over 100 million kroner from the Herring Price Stabilization Fund.

The bulk of the increased yield resulted from record catches of capelin and mackerel, but substantially increased catches also were recorded for some other major species: notably winter herring, haddock, saithe, fat herring, and sand eel. The yields of dogfish, porbeagle, redfish, Norway pout, and crustaceans continued downward. Due to the world oversupply of fish meal and record stocks at home, Norway banned fishing for reduction purposes during November-December 1966.

Herring and Sprat

Aggregate catches of herring, traditionally largest catch, increased by ten percent to record 1,186,000 metric tons. Herring fishermen received 402 million kroner, price support included, 13 percent above 1965. The increased quantity resulted from larger catches of winter herring, fat herring, and Icelandic herring; this more than compensated for reduced yields from the North Sea and small herring fisheries. About 90% of the herring was caught by purse seiners.

The winter herring fishery remained the single most important coastal fishery. (North Sea herring and mackerel are mainly fished in international waters.) During February-March 1966, 460,900 tons of winter herring

Norway (Contd.):

were landed, over twice the 1965 amount. The bulk was taken by about 300 power-block purse seiners off the west coast.

The North Sea herring fishery yielded 454,900 tons, one-third less than 1965. Contributory causes were a concentration of herring shoals within British fishery boundary in Shetland area during the summer months, and Norwegian ban on fishing for reduction purposes.

Concentration of purse seiners in North Sea during second-half 1966, as in 1965, had immediate effect on participation in Icelandic herring fishery. Total yields in this fishery were 42,600 tons, 21% above 1965. The total yield of fat herring, small herring, and fiord herring was 227,600 tons in 1966, seven percent more than 1965.

The 1966 catch of sprat, raw material for the Norwegian brisling "sardine," was 13,000 tons, 25% above 1965.

Cod Catch Increases

The long-term downward trend in the cod fisheries was reversed in 1965 and a minor increase also took place in 1966. But there is overexploitation of Barents Sea Arctic cod stock--the basis for 2 of Norway's most important seasonal cod fisheries (spawning cod and Finnmark young cod). Unless Norwegian fishing in distant waters is intensified, the improvement in total cod yields may prove temporary. According to an official estimate, the number of sexually mature Arctic cod in the Barents Sea is now only ten percent of the 1957 stock.

The aggregate yield of codfish, roe and liver included, increased 8% in 1966--to 209,700 tons. Its first hand value, support payments included, reached 272 million kroner, 11.5% above 1965.

The spawning cod fishery yielded 63,500 tons in 1966, one-third more than 1965. The Lofoten area catch, traditionally the fishery's center, was 24,000 tons, compared to 1965's 19,500 tons. Purse seiners continued to be banned in Lofoten, and the number of fishermen continued downward. Catches of spawning cod in other areas in North Norway and off west coast also were better in 1966 than 1965.

The catch of Finnmark young cod (also called capelin cod) increased 8.5% to 47,400 tons. This was due mainly to appearance for second successive year of large schools of capelin off North Norway. Other cod fisheries in Norwegian and distant waters brought 98,900 tons in 1966, 4.2% below 1965.

Other Fish Species

The yield of all species other than herring, sprat, and cod rose over 60% to record 1,242,000 tons. As in 1965, the bulk of increase was produced by the power-block purse seine fleet fishing for capelin, mackerel, and other shoal fish. Catches of capelin reached 379,600 tons, 75% above 1965, the previous record year. A much higher yield would have been possible but for limited reduction plant capacity in North Norway.

The most spectacular gains in all fisheries in 1966 were made in purse seining of mackerel in North Sea. The mackerel fishery yielded 484,300 tons, triple the 1965 catch. Catches of saithe and haddock--together with cod the most important raw materials for fish-freezing industry--increased 7.8% and 24%, to 142,000 tons and 62,400 tons, respectively.

The yield of pout was reduced by more than half, to 25,300, reflecting the purse seiners' concentration on better-paying North Sea herring and mackerel. The catches of all species of crustaceans were significantly lower in 1966, partly due to overfishing. The yields of dogfish, porbeagle, and redfish continued downward.

Disposition of Catch

Deliveries of fish for fresh consumption increased 6.2% to 105,100 tons. Deliveries of winter herring almost quadrupled to 19,900 tons, replacing porbeagle as single most important species for fresh consumption.

The Norwegian freezing industry processed a record 258,700 tons in 1966, 13% more than 1965. This was due to several improved major fisheries and satisfactory marketing conditions abroad during most of 1966. The increased fish deliveries to the freezing industry were largely accounted for by winter herring, spawning cod, haddock, and saithe. Freezing of dogfish and porbeagle was further reduced in 1966, reflecting the downward trend resulting from overexploitation of the fish resources.

Norway (Contd.):

There were greater supplies of cod and related species (cusk, haddock, saithe, ling) and improved marketing situations abroad. Fish deliveries to stockfish and klipfish industries increased significantly in 1966. Total deliveries to the fish drying industry (stockfish) rose 17% to 109,700 tons. The fish salting industry received 106,200 tons of raw fish except herring, or 23% more than 1965; most was processed into klipfish. Herring salting, a major fish industry a decade ago, claimed only 23,300 tons of fish raw material (138,000 tons in 1956), about the same in 1964 and 1965. Fish deliveries to the canning industry increased by one-quarter to 2,000 tons, mainly as a result of increased supplies of small herring, sprat, and winter herring.

As in 1965, the most notable gain in production was recorded by the fish meal and oil industry. Total deliveries of herring, mackerel, and other species to reduction plants increased by more than one-third to record 1,988,900 tons. The entire catches of capelin, Norway pout, and sand eel, 88% of herring, and 95% of mackerel catches were delivered to reduction plants. Deliveries of fish for bait were reduced further in 1966; this reflected shift in gear type used. Hand lines and longlines requiring bait are being replaced gradually by purse seines and gill nets.

Exports, Imports, Marketing Conditions

Exports of fish and fish products increased 1% to 1,556 million kroner in 1966; volume, by 0.7% to 642,900 tons. Fish products were 89 percent of exports in 1966--accounted for larger volumes of fish meal and oil, stockfish, klipfish, and frozen fillets.

Exports of fish meal, the number one fish product in 1966, were 262,700 tons, 4.4% more than 1965. The average export price was 322 kroner per metric ton, or 2.6% more than the 1965 average price. This indicates that a substantial part of the exports was sold at the high prices quoted first-half 1966. Exports of fish oil increased from 33,000 tons in 1965 to 80,800 tons worth 97 million kroner in 1966.

Frozen fillet exports rose by only 2.4% to 2,800 tons in 1966; this compared with a 37% increase in 1965. The reduced growth rate

reflected mainly the oversupply of fish fillets in the principal export markets. This was offset somewhat by improved marketing conditions for stockfish and klipfish, which utilize the same fish raw materials as the freezing industry. Exports of stockfish and klipfish rose 1.2% and 16% to 26,000 tons and 36,200 tons, respectively. Export of canned fish remained at its 1965 level of about 29,000 tons.

Exports to U. S. increased from 21,200 tons in 1965 to a record 48,200 tons in 1966. The increase was accounted for by fish meal (22,700 tons in 1966, zero in 1965) and frozen fillets (9,800 tons in 1966, 6,200 tons in 1965). In value, the U. S. took 9.2% of exports, in 1966, compared with 6.8% in 1965.

Imports of fish and fish products into Norway were 28,500 tons, double the 1965 figure. The most important fish products imported were sprat and salted cod for the fish canning and klipfish industries, respectively, and salted herring for domestic consumption. Imports from U. S. were, as in 1965, negligible: 3.7 million kroner--3.1 million kroner for 2,100 tons of fish oil.

Prices and Aid to the Fishermen

The average price received by fishermen per ton of winter herring increased from 293 kroner in 1965 to 330 kroner in 1966. This reflects partly high world fish meal prices during first-half 1966, and partly that a substantially larger portion of the 1966 catch of winter herring than in 1965 was marketed fresh, frozen, salted, and canned. All these latter processing industries paid a higher net to fishermen than fish meal and oil industry.

Species	Price in Kroner per Metric Ton		Percentage Change
	1965	1966	
Halibut	4,308	4,868	+13.0
Spawning cod	1,237	1,326	+ 7.2
Finnmark young cod	1,162	1,224	+ 5.3
Saithe	603	664	+10.1
Mackerel	450	378	-16.0
Tuna	2,423	3,139	+29.1
Dogfish	690	892	+29.3

In 1966, 164 million kroner, 12.5% of first-hand value of catch, was appropriated by the government to support fisheries. No final accounts have been published, but cod and herring fisheries received estimated 56.4 million kroner and 56.1 million kroner, respectively. No price support was paid for reduction purposes. The remaining subsidies,

Norway (Contd.):

or 51.5 million kroner, were used to reduce cost of tackle, bait and modernization.

Outlook

The short-term outlook for production appears promising and is less so for marketing. During first-quarter 1967, total catches of herring, capelin, mackerel, and other shoalfish were 763,000 tons, or 16% more than 1966 period. About 90% of catch was processed by reduction industry. The extraordinarily large stocks of fish meal--primary reason for ban on fishing for reduction purposes last year--were largely sold and shipped from factories by end of first quarter. Judged by the current difficult marketing situation for fish meal, production restrictions also may be necessary this year, especially if mackerel, herring, and other shoalfish continue as bountiful as first quarter. The catching capacity of purse seine fleet increased substantially during 1966 to about 600 units, 400 of them less than two years old.

Total yields of spawning cod and Finnmark young cod--the major cod fisheries during the first quarter--were 58,900 tons, or 2.6% more than one year earlier. About 8,900 tons were processed into fillets, compared with 15,100 tons in first-quarter 1966. This reflected the current oversupply in fish fillet market. According to a spokesman for Frionor A/S, the sales organization of about 120 fish freezing plants, frozen fillets are currently uncompetitive in the European Economic Community. Norway's exports of fresh fish also are declining.



United Kingdom

FISHERY LOAN INTEREST RATES REVISED

The British White Fish Authority announced that its interest rates on loans made from April 1, 1967 would be:

For fishing vessels of not more than 140 feet, new engines, nets, and gear: on loans for not over 5 years, 7 percent (decrease $\frac{1}{4}$ percent); on loans for more than 5 years but not over 10 years, 7 percent (no change); on

loans for more than 10 years but not over 15 years, $7\frac{1}{8}$ percent (no change); on loans for more than 15 years but not over 20 years, 7 percent (decrease $\frac{1}{8}$ percent).

The rate for processing plants on loans for not more than 20 years was set at $7\frac{5}{8}$ percent (decrease $\frac{1}{8}$ percent).

The rates on loans made before April 1 were unchanged. ("Fish Trades Gazette," April 8, 1967.)



Denmark

SHIPYARD COMPLETES 38TH FREEZER-TRAWLER FOR USSR

With the launching of the M/S "Kovdor" on April 27, a Copenhagen shipyard completed its 38th freezer-trawler for the USSR. The Kovdor is the 17th in a series of 2,500-ton deadweight freezer-trawlers built for the Soviets by the shipyard. The other vessels ranged from 800 to 1,600 tons deadweight.

The Soviets also have a license to build diesel motors designed by the Danish firm. (U. S. Embassy, Copenhagen, May 5, 1967.)

* * *

FUR SEAL PRICES DECLINE AT DANISH AUCTION

At a fur seal auction in Copenhagen, April 12, 1967, average prices were substantially lower than a year earlier. Also, sales were made for only 78 percent of the skins offered. This was attributed to a general weakening of the market for seal and other fur skins. (U. S. Embassy, Copenhagen, May 17, 1967.)



Iceland

REPORTS FISHERY LANDINGS, USES AND EXPORTS

In 1965-1966, Icelandic fishery landings by principal species were:

Iceland (Contd.):

Species	1966	1965
	• • (Metric Tons) 1/ • •	
cod	231,413	244,001
dog dock	36,028	53,703
herring	20,988	24,901
capelin	4,693	5,158
codling (catfish)	8,052	7,599
stockfish	2,107	2,264
Atlantic perch	23,109	29,910
halibut	929	984
herring	769,152	762,930
capelin	124,933	49,735
tramp	1,790	901
other	15,250	16,942
Total	1,238,444	1,199,028
Weight of whole fish.		

Utilization of Principal Landings

How Utilized	1966	1965
	• (Metric Tons) 1/ •	
Herring and Capelin for:		
Oil and meal	802,410	714,709
Freezing	24,923	32,961
Salting	64,602	61,081
Groundfish for:		
Freezing & filleting	163,370	185,409
Salting	82,644	88,832
Stockfish (dried unsalted)	53,977	54,364
Oil and meal	2,171	3,159
Molluscs for:		
Freezing	5,184	4,416
Canning	63	190
Home consumption	10,791	14,581
Weight of whole fish.		
Source: "Aegir," March 1967.		

Exports of Selected Products

Compared with 1965, Iceland exported in 1966 more fish meal, fish oil, and salted herring, but less frozen fish fillets and stockfish. (Icelandic "Statistical Bulletin," February 1967.)

Icelandic Exports of Selected Fishery Products, 1965-1966						
Product	1966			1965		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
	Metric Tons	1,000 Kr.	US\$ 1,000	Metric Tons	1,000 Kr.	US\$ 1,000
Salted herring	42,217	581,814	13,512	39,027	491,054	11,404
Other salted fish	28,165	546,765	12,698	31,912	545,137	12,660
Stockfish	8,745	309,882	7,196	12,243	375,944	8,731
Herring, frozen	26,200	169,521	3,937	25,621	184,033	3,809
Fish fillets, frozen	40,952	1,059,495	24,605	49,125	1,148,033	26,661
Shrimp & lobster, frozen	1,274	179,637	4,172	1,002	129,810	3,015
Fish and whale oil	129,298	908,657	21,102	85,238	705,811	16,391
Fish meal	172,305	1,262,590	29,322	147,161	1,100,995	25,569

Note: Values converted at rate of 1 krona equal 2.32 U. S. cents.



NEW UNDERSEA FEATURES IN GREENLAND SEA AREA REVEALED

A scientific treatise entitled "Bathymetry of the North Greenland Sea," published by the U. S. Naval Oceanographic Office, shows for the first time the part of the Mid-Atlantic Ridge that is in the Greenland Sea. It is part of a 40,000-mile long range of underwater mountains that circles the earth.

The Mid-Atlantic Ridge was previously thought to extend through the Greenland Sea because of the number of earthquakes that occurred in the area. The north-south mountain system in the Greenland Sea has the typical rift valley--the bottom of which is over 10,000 feet. The Ridge is offset by a fracture zone, the bottom of which is at approximately 14,000 feet. This fracture zone suggests that Vestspitsbergen was once north of Greenland and that by continental drift, the two islands moved apart. Another fracture zone located between the Mid-Atlantic Ridge and Greenland separates two small, very flat plains with a 1,500-foot difference in level.

Surveys done previously in the Greenland Sea area (some as far back as the early 1900's) are also summarized in the study made by the Naval Oceanographic Office.

ASIA

Japan

POLE-AND-LINE TUNA FISHING IS GOOD OFF JAPAN

Good pole-and-line skipjack tuna fishing prevailed in mid-May off the Japanese coast of Choshi, Chiba Prefecture (east of Tokyo). Catches of around 400 metric tons were landed daily at Yaizu. Most of the fish were small, around 4.4 pounds, but the quality was good--and local packers bought at exvessel 72-75 yen a kilogram (US\$181-189 a short ton). However, the yield from such small fish was low, and the packer's profit was said to be very small.

Pole-caught albacore tuna catches off Japan also were reported good. Landings at Yaizu and Shimizu totaled around 200 tons a day. Prices were holding at about 155-165 yen a kilogram (\$391-416 a short ton). ("Kanzume Nippo," May 18, 1967.)

* * *

TUNA PRICES STRENGTHEN

Japanese albacore tuna export prices, which declined steadily since late 1966 began to show signs of reversing that trend in early May as U. S. packers showed some buying interest. Export prices for ship-frozen round albacore (which dropped to around \$440 a short ton c.i.f. from the fall 1966 high of \$555 a short ton c.i.f.) were believed stabilized. They are expected to move up gradually as the export market recovers with the improvement in U. S. canned tuna sales.

Japanese summer albacore, quoted at 140-160 yen a kilogram exvessel (\$353-403 a short ton) in Japan, are expected to sell for around \$405-410 a short ton c.i.f. to the U.S. market. The Japan Federation of Tuna Fishermen's Cooperative Associations (NIKKAT-SUREN) plans to begin buying summer albacore if prices drop below 140 yen a kilogram.

Atlantic-caught frozen gilled & gutted yellowfin for export to Italy in early May sold at around \$450-470 a metric ton c.i.f., but the market was reported soft. ("Suisan Tsushin," May 15 & 12, 1967; "Suisancho Nippo," May 10, 1967.)

* * *

TUNA IMPORTS INCREASED IN FY 1966

Japanese imports of tuna and tuna-like fish in fiscal year 1966 (April 1966-March 1967)

Country of Origin	Quantity	Value
	Metric Ton	US\$
Okinawa	5,169	2,059,536
Formosa	1,930	717,831
South Korea	1,343	385,050

totalled 10,796 metric tons worth US\$3,795,822, an increase over FY 1965 imports. Purchases from Okinawa, Formosa, and South Korea comprised 80 percent. ("Suisancho Nippo," April 18, 1967.)

* * *

CANNED TUNA IN BRINE PRICES DOWN

The Japan Tuna Packers Association, May 16, established these standard prices for canned tuna-in-brine exports to the U. S. in business year 1967 (April 1967-March 1968):

Can & Case Size	New	Old	Net Price Decrease
	Base Price		
.(US\$/Case f.o.b. Japan)			
White meat:			
7-oz. 48's	10.20	11.50	1.30
13-oz. 24's	10.00	10.80	0.80
4-lb. 6's	11.65	12.65	1.00
Light meat:			
7-oz. 48's	8.15	9.15	1.00
13-oz. 24's	7.80	8.60	0.80
4-lb. 6's	9.40	10.40	1.00

Source: "Suisan Tsushin," May 17, 1967.)

* * *

NORTH PACIFIC SALMON PRICES ARE UP

The Japan Federation of Salmon Fishermen's Association (NIKKEIREN) and the Northern Water Mothership Council reached agreement May 7 on 1967 prices for fresh and frozen salmon to be delivered by catcher vessels to motherships:

Species	Price		Percentage Increase
	1967	1966	
.(Cents/Lb.)			
Red	31.3	31.3	0
Chum	19.2	17.9	7
Pink	14.9	14.4	3
Silver	20.9	19.6	7
King	20.9	19.6	7

Japan (Contd.):

The price increase for 1967 is reported to be the lowest in recent years. However, earnings per vessel this year are expected to increase by around 800,000 yen (US\$2,200) above 1966--due to allocation of larger quotas to catcher vessels and anticipated good harvest of pink salmon. An early good run of Alaskan reds also is predicted.

Fishing Armada Sails

Eleven salmon motherships, accompanied by 369 catcher vessels, departed Hakodate May 15 for the North Pacific. They were expected to reach the fishing grounds around May 20.

The 1967 quotas allocated to mothership and land-based fleets are: Area A (north of 50° N. latitude) 52,500 metric tons (48,000 tons in 1966, 56,000 tons in 1965); Area B (south of 45° N. latitude) 55,500 metric tons (48,000 tons in 1966, 59,000 tons in 1965); total, 108,000 metric tons. ("Suisan Tsushin," May 16; "Nihon Suisan Shimbun," May 10, 1967, and other sources.)

* * *

BILL SEEKS TO REGULATE FOREIGN FISHING

A bill to regulate port calls and fishing in Japanese waters by foreign nationals was introduced in the Diet on April 26--"in view of the recent trends in fishing operations conducted by foreign nationals." The measure would authorize the Minister of Agriculture and Forestry to grant permits for exceptions and transshipping. Foreign vessels would be allowed to come into port without a permit to avoid disaster, deliver routine freight shipments, and to deliver catches that would not hinder the maintenance of normal order in the fisheries of our country." The Minister would deny a permit to enter port if this "will increase the fishing potential of the foreign fishing vessel."

Penalties for violations include imprisonment at hard labor up to 3 years, a \$500 fine, confiscation of vessel, gear, and catch--or an equivalent value in fines if confiscation is not feasible. (Fishery Attaché, U. S. Embassy, Tokyo, May 12, 1967.)

* * *

TO GILL NET HERRING IN BERING SEA AND SALMON IN ARCTIC OCEAN

The Japanese Fisheries Agency issued a one-year license on May 10 to the Hoko Suisan Company to fish salmon experimentally in the Arctic region and to gill net herring in the Bering Sea north of 58° N. latitude and east of 170° W. longitude (northeast of Pribilof Islands).

On May 12, the firm sent the "Dairin Maru No. 10" (299 gross tons) to the Bering Sea to fish herring with gill nets in order to determine the feasibility of using these nets. The vessel was scheduled to fish herring until June 20, then proceed to the Arctic for salmon fishing. Three other fishing firms also applied for similar licenses, but the Agency authorized only Hoko Suisan. The results of the trip will be made available to the other 3 firms. Hoko Suisan initiated the Arctic salmon operation in 1966 with the 204-gross-ton "Dairin Maru No. 8." ("Minato Shimbun," May 14, 1967.)

* * *

LICENSES EXPERIMENTAL TRAWLING IN EASTERN PACIFIC

The Japanese Fisheries Agency licensed 3 factory mothership fleets on May 22 to conduct experimental trawl fishing in the eastern Pacific--east of 135° W. longitude between 50° N.-10° N. latitudes (Canada to Central America) from September 1, 1967-August 31, 1968. The 3 fleets are: "Yuyo Maru" (5,043 gross tons) with 6 catcher vessels, operated by Taiyo Fishing Company; "Kashima Maru" (7,163 gross tons) with 11 catcher vessels, operated by Nihon Suisan; and "Kazushima Maru" (3,757 gross tons) with 6 catcher vessels, operated jointly by Hoko Suisan and Hokoku Suisan.

The fleets will fish for hake, cod, Alaska pollock, and Pacific Ocean perch. Combined production targets are 102,900 metric tons of hake, Alaska pollock and cod, and 25,900 tons of Pacific Ocean perch. Catches will be either frozen or processed into fish meal and mince meat (ingredient for fish sausage) aboard the factoryships. Most of the area within the designated zone has never been trawled before by Japanese vessels. In 1966, the Agency licensed 3 trawlers to fish experimentally in the northwest Pacific east of

Japan (Contd.):

135° W. longitude and north of 30° N. latitude, but the operations reportedly were not successful.

Agency Sets Conditions

In licensing the operation, the Agency stipulated these conditions: (1) fleet operators will observe provisions of the Japan-U. S. fishing agreement relative to the U. S. 12-mile exclusive fisheries zone; (2) exploratory operations will follow procedures established by the Agency; and (3) operations will be conducted outside regulatory areas designated in U. S.-USSR fishery agreement on U. S. 12-mile zone. ("Suisan Tsushin," May 30, 1967, and other sources.)

* * *

FIND POSSIBLE YEAR-ROUND
TUNA FISHERY OFF
MARSHALL-CAROLINE ISLANDS

The Japanese fishery guidance vessel "Chiba Maru," 495 gross tons, owned by the Chiba Prefectural Government, returned recently to Misaki from a 3-month exploratory trip to the central-west Pacific off the Marshall and Caroline Islands. Its purpose was to determine practicability of starting a tuna fishery in offshore waters of those islands.

On the trip, 130 metric tons of fish (unidentified) were taken in 70 sets, averaging 1.8 tons per operation. This exceeded expectations somewhat and indicated possibility of a year-round fishery. The survey also revealed that the relative proximity of the area to home islands eliminates need to stop at foreign ports and saves 170,000-200,000 yen (US\$47-56) in port entry fees. ("Suisan Keizai Shimibun," May 9, 1967.)

* * *

VESSEL LICENSE RENEWALS SCHEDULED

The Japanese Central Fisheries Coordination Council, an advisory body on licensing and regulation of fisheries, agreed April 21 on standards and regulations of the Fisheries Agency for nationwide license renewals during May 1 to July 31. During this period, all owners of vessels operating in 8 designated

fisheries must file license renewal applications, according to "Suisan Keizai Shimibun," April 24, 1967.

The number of vessels to be licensed for the designated fisheries for the 5-year period September 1, 1967-August 31, 1972, are:

Designated Fishery	No. Vessels Permitted Operation
Offshore trawl fishery	154
Isei (west of 130° E.) medium trawl . .	710
<u>Distant-water trawl fishery:</u>	
Southern waters	91
Northern waters	218
Northern water long line-gill net . . .	22
<u>Mothership-type trawl fishery:</u>	
Bering Sea--motherships	12
" " catcher vessels	226
Okhotsk Sea--motherships	3
" " catcher vessels	39
Distant-water tuna fishery	1,287
Offshore tuna fishery	1,678
<u>Mothership-type tuna fishery:</u>	
Motherships (over 450 gross tons) . . .	39
Portable boats (under 20 gross tons) .	102

* * *

FISHING VESSEL CONSTRUCTION
ROSE IN FY 1966

In fiscal year 1966 (April 1966-March 1967) 1,158 vessels totaling 174,759 gross tons were licensed for construction. The data were compiled by the Japanese Fisheries Agency's Fishing Vessel Section. There were 612 steel vessels (154,397 gross tons) and 546 wooden vessel (20,362 gross tons), up 43 percent in number and 81 percent in total tonnage over FY 1965. The increases were 10 percent in number and 55 percent in tonnage above average for the past 10 years.

The sharp rise in FY 1966 is attributed to construction of many replacements for vessels built in 1961-63; and construction of new vessels by firms that anticipated the Government would not revise standards for the general renewal of vessel licenses scheduled for May-July 1967. Construction in FY 1966 trended towards an increase of vessel size in all fisheries. In tuna fishery, most of newly built steel vessels were in 200- to 300-ton class ("Suisan Keizai Shimibun," May 2, 1967.)

* * *

FORM NATIONAL SQUID COUNCIL

A new Japanese squid organization, tentatively named All-Japan Squid Fishery Council, was formed in Tokyo on May 11. It was created to promote domestic production to

Japan (Contd.):

meet growing demand for squid in Japan-- and to cope with problems arising from growing imports of squid and extension of Soviet squid fishing into waters off Hokkaido.

Japan's annual squid production in recent years has been around 500,000 metric tons. ("Minato Shimbun," May 7, 1967.)

* * *

GOVERNMENT RESEARCH
VESSEL LAUNCHED

The Japanese Fisheries Agency's new research vessel, the 3,200-gross-ton, 71-man "Kaiyo Maru," largest of its kind in Japan, was launched on April 24 at the Kanasashi Shipyard in Shimizu. The vessel is a stern trawler type designed for deep-water trawling and capable of operating under all climatic conditions. She will carry a portable boat to operate drift-net, surrounding-net, and long-line gear. Completion is scheduled for September 10.

Specifications: total length 84.65 meters (262.4 feet); beam 15 meters (49.2 feet); draft 9.2 meters (30.2 feet); speed about 13.5 knots. ("Suisan Keizai Shimbun," May 1, 1967.)

* * *

TAIYO CO. WILL FISH
TANNER CRAB IN BERING SEA

Taiyo Fishing Co. plans to conduct experimental tanner crab fishing this year in the Bering Sea with the Banshu Maru No. 5 (3,678 gross tons). The vessel, assigned to the Bering Sea gill-net herring fishery, also will harvest the unutilized tanner crab resource in Bristol Bay and other Bering Sea areas.

Production target is 100-150 tons of frozen crab meat. If this operation is successful, Taiyo plans to send a canning factory-ship to the Bering Sea for full-scale operations aimed at producing annually 375,000 cases (48 ½-lb. can) of canned crab meat for export. ("Suisan Keizai Shimbun," April 17, 1967.)

* * *

POLLUTION DAMAGE TO FISHERIES
IS RISING SHARPLY

The Japanese Fisheries Agency reports that water pollution damage suffered by the coastal fisheries in 1965 reached an estimated 12.7 billion yen (about US\$35.3 million). This corresponds roughly to 5 percent of production value. The figure is based on damages caused by industrial waste, city sewage, oil and bilge water from vessels, discharges from refineries, pulp factories, and other plants. It does not include contamination from human waste, agricultural chemicals, and numerous unknown pollutants. Total pollution damage is considered to be far greater than the Agency's figure.

The rapidly increasing pollution of water parallels the economic growth of Japan. The problem is said to nullify coastal fishery improvement projects, such as construction of artificial reefs, being carried out with a government subsidy. In 1958, the Government enacted a water quality control law to protect coastal fishery resources, but it has failed to control pollution. Growing public concern over water contamination has led the Government to draft pollution control measures, which will be submitted to the current Diet. However, observers believe, because of the strong opposition of certain industrial groups, and jurisdictional arguments among government agencies, there is little hope of passing any effective conservation measures sought by the fishing industry.

Over 1,000 members of the National Fishermen's Council for Water Pollution Control Measures were scheduled to assemble in Tokyo, May 9, to demonstrate against the Government's ineffective control measures and to demand protective legislation. ("Shin Suisan Shimbun," May 8, "Nihon Shimbun," May 5, 1967.)

* * *

PLAN TO STABILIZE
ALBACORE TUNA PRICE

The Japan Federation of Tuna Fishermen's Cooperative Associations (NIKKATSUREN) plans to purchase albacore tuna if prices decline below a certain level. It will do this in an effort to stabilize tuna prices in view of prospects of a good summer pole-and-line albacore season and the gloomy outlook on canned tuna exports.

Japan (Contd.):

NIKKATSUREN will buy 5,000 metric tons of summer albacore: 2,000 tons will be frozen and stored, and 3,000 tons processed into canned tuna in oil for sale in Japan. The group will pay packers about 50 yen (about 14 cents) per case to process the raw material. It will have the major trading firms and wholesalers sell the product in Japan.

However, this plan is reported meeting opposition from packers anticipating a decline in albacore prices. Some packers claim they cannot cooperate in a program that would result in increasing their raw material costs. Packers normally process in a year about 25,000 tons of summer albacore. Since NIKKATSUREN would be unable to carry out its program without packers' cooperation, it hopes to explain its program to packers and distributors, and to tuna producers.

Plans Greater Efforts

The group plans to intensify its price stabilization efforts this year because predictions are for over 30,000 tons of summer albacore landings. It appears likely that albacore price will decline considerably in view of present frozen and canned tuna exports and tuna price developments in other countries.

NIKKATSUREN's idea of stabilizing tuna prices by promoting domestic sales of canned albacore in oil was developed in 1965. That year saw excellent summer albacore landings (around 43,000 tons) produce sharp price reductions. However, in 1966, summer albacore prices soared to nearly 200 yen per kilogram exvessel (US\$504 a short ton) in Japan. This was due to light landings of under 20,000 tons. As a result, packers declined to put up albacore for domestic sale. Only about 4,000 cases of canned albacore in oil were sold in 1966 under NIKKATSUREN's domestic canned tuna promotion program. ("Kanzume Nippo," April 24, 1967.)

* * *

SETS 1967 QUOTA FOR
NORTH PACIFIC WHALING

On April 14, the Japanese Government announced a whale catch quota of 1,001 blue-whale units for the 16th (1967) North

Pacific Whaling Expedition; it is the same quota as 1966. The catch limit for fin whales, however, was reduced by 11 percent, to 1,126 whales.

On April 22, the Fisheries Agency licensed the operation of 3 whaling fleets scheduled to participate in the 1967 expedition. The catch targets assigned to them are:

Name of Firm	Whaling Fleet	Catch Quota
		Blue-Whale Units
Kyokuyo Hoge	"Kyokuyo Maru No. 2"	467
Taiyo Gyogyo	"Nisshin Maru"	267
Nihon Suisan	"Tonan Maru"	267

Scheduled fleet departures were: Nisshin Maru May 12; Kyokuyo Maru No. 2 May 13; Tonan Maru May 15. ("Suisan Tsushin," April 24; "Suisan Keizai Shimbun," April 17, 1967.)

* * *

A YEAR-ROUND FISHERY OFF U. S.
WOULD POSE PROBLEMS

The Japanese trawler "Taiyo Maru No. 32" (364 gross tons), owned by a Taiyo Fishing Co., returned to Japan April 28 after a 5-month exploratory trip off the U. S. east coast. The vessel explored the area from 10° N. (West Indies) to 40° N. latitudes (New York), seeking primarily sea bream and shrimp. Its objective was to investigate possibilities of establishing year-round trawl operations in the northwest Atlantic, based on Taiyo's plans to fish north of 40° N. latitude in the summer and south of 40° N. in the winter.

It found herring abundant off New York, but the poor results in shrimp and seabream fishing indicated the difficulty of setting up a profitable trawl fishery. However, a decision on year-round operations will not be made until the "Kaimon Maru" (2,500 gross tons), recently sent to northwest Atlantic by Japan Overseas Trawlers Association, completes her survey. ("Shin Suisan Shimbun," May 8, 1967.)

* * *

1966 FISHERY CATCH WAS RECORD

The Japanese fishery catch in 1966 hit a record of 7.07 million metric tons--up 160,000 tons, or 2.3 percent, from the 1965 catch of 6.91 million metric tons. This information

Japan (Contd.):

was published by the Ministry of Agriculture and Forestry on May 23.

By type of fishery, the distant-water accounted for 1.7 million tons; offshore fishery 1.99 million tons; coastal fishery 1.86 million tons; shallow-water culture 380,000 tons; and inland water fishery 140,000 tons.

Production increase was attributed largely to good catches in the pole-and-line skipjack fishery, 170,000 tons--up 28 percent over 1965--and the North Pacific mothership-type trawl fishery, 540,000 tons, up 25 percent.

Tuna production by the distant-water long-line fishery, 400,000 tons, fell 8 percent below 1965 landings. This was due primarily to poor fishing conditions in the Atlantic Ocean. Whale production totaled 3,445 blue whale units (BWU), a 34-percent decrease from 5,230 in 1965. The sharp decline was attributed mainly to the drastic reduction in Japan's whale catch quota for the 21st (1966/67 season) Antarctic Whaling Expedition (from 2,340 BWU in 1965/66 to 1,633 BWU in 1966/67.) ("Suisan Keizai Shimbun," and "Minato Shimbun," May 25, 1967.)

* * *

SAURY FISHERMEN FORM ASSOCIATION

The Japanese National Saury Fishermen's Association was formed on May 18. Its objectives are to help the economically depressed saury fishermen and to improve their competitive position in view of expanding Soviet fishing operations off northeastern Japan.

This year, the Association will: (1) expand resource investigations and improve fishing condition forecasts; (2) explore and develop new fishing grounds; (3) conduct research to develop labor-saving devices; (4) seek revision of present laws to obtain more benefits for saury fishermen; and (5) accumulate more knowledge about Soviet fishing activities off Japan. ("Shin Suisan Shimbun Sokuho," May 19, 1967.)

* * *

LOOK TO NORWAY FOR
NEW SUPPLIES OF FISH

Norwegian newspapers reported that several Japanese processors expressed interest in using capelin for human consumption during a visit. Samples of frozen Norwegian capelin reportedly are being sent to Japan. Last year, the Norwegian capelin catch went entirely for meal and oil. (U. S. Embassy, Copenhagen, May 19, 1967.)



Communist China

FISHES FOR TUNA IN INDIAN OCEAN

The tuna fisheries of the People's Republic of China seem to be in the infant stage, reports a visitor to the Canton Trade Fair (April 15-May 15). A few tuna vessels of the 350-ton class from Canton are operating in the Indian Ocean. They probably will turn to the Atlantic Ocean in the future.

At present, the tuna are sold frozen to Europe. It is possible that the Chinese may begin to can tuna in the future.



South Vietnam

FISHING INDUSTRY GREW
APPRECIABLY IN DECADE

The fishing industry of South Vietnam is very important to the country's economy because of its current size, growth rate, and potential.

The industry is producing each year 380,000 metric tons of fish, shellfish, and other aquatic products. This is the main protein source for much of the population. The fisheries employ 250,000 people, about three percent of the civilian force.

Most of the catch comes from marine waters along 2,600 kilometers of coast. In-shore areas yield fish, shrimp, lobsters, and other shellfish. Rivers and canals supply much freshwater fish. Pond fisheries produce about 20 percent of the country's catch.

South Vietnam (Contd.):

Industry Growth

The fishing industry has grown encouragingly in the past decade, mostly through mechanization of fishing boats. In 1966, 16,700 of about 65,00 fishing boats were motorized. The catch increased from 52,000 tons in 1954 to 380,500 tons in 1966--287,000 tons came from marine waters, and 65,000 tons from fresh waters. Shellfish catch was 28,000 tons. The war--and the resulting diversion of fishing vessels to public transportation--has slowed that growth somewhat in the last few years.

Industry Has Good Potential

The construction of cold storage and ice-making plants, fish-landing piers, fish culture stations, mechanization of fishing junks and the use of synthetic nets--all these will help the industry fulfill its potential as a leading factor in the economic development of South Vietnam.

The development programs for the industry are a cooperative undertaking of the Government and the U. S. Agency for International Development (USAID). Plans for a continued and progressive use of fishery resources have been made, and effective technical guidance in advanced fishery techniques is being provided. It is hoped that training of fishermen and fishing specialists, and the procurement of essential equipment and supplies, will lead to optimum production from marine and fresh-water waters.

* * *

RECEIVES FISHERY AID

The U. S. has agreed to contribute US\$2,012,000 to the Food and Agricultural Organization (FAO), under the Freedom from Hunger Campaign, to assist a U. N. Development Program (UNDP) fisheries project in South Vietnam.

Under the agreement, the U. S. aid will help expand the scope of the project FAO is carrying out for the UNDP at Viet-Nam's request. Recent experience in the South China Sea indicated that a great increase in fish catch would be possible if traditional Vietnamese coastal operations could be modernized and expanded to include deep-water operations. Since fish provide a large portion of the protein in the Vietnamese diet, this project could result in a much needed improvement in the food supply.

UNDP Project Is Broadened

The original UNDP project, calling for \$1 million from the Special Fund and \$336,000 as Viet-Nam's counterpart contribution, consisted of coastal surveys and feasibility studies. The U. S. contribution will pay for investigations and feasibility studies for offshore and high-seas operations. It will enable FAO to pay for the charter of a deep-water trawler, necessary equipment, and personnel, including a U. N. expert.

The Netherlands also plans to contribute to this enlarged project. (U. S. Department of State, May 26, 1967.)



Taiwan

TUNA VESSELS WILL TRANSSHIP FROM SOUTH AFRICA

The Walvis Bay harbor is to be used by 6 fishing vessels (five 300-gross tons and one 1,000-gross ton) of the Republic of China to transship tuna catches. The vessels are all fishing off coast of southwestern Africa and are registered in Taipei (Taiwan). Mainly, they long-line for tuna beyond the Continental Shelf off Southwest Africa. ("Namib Times," April 21, 1967.)



SOUTH PACIFIC

Australia

FISHERY EXPORTS AND IMPORTS, JUNE-DECEMBER 1966

Australian shrimp exports for July-December 1966, the first half of the 1966/67 fiscal year (July-June), were worth US\$1,875,000--up 58 percent over the same period in 1965/66. This was reported in "Australian Overseas Trade in Marine Products," published by the Fisheries Branch, Commonwealth Department of Primary Industry.

The quantity of shrimp exported for the half-year was 1,755,000 lbs.--533,000 lbs. more than July-December 1965.

A feature of trading was the sharp increase in exports to the U. S.--154,000 lbs. valued at \$189,000, compared with 63,000 lbs. worth \$54,000 in the 1965/66 half year to December 31. Japan remained Australia's best customer, importing 1,132,000 lbs. valued at \$1,250,000.

Abalone exports also rose in quantity and value during the half-year. The 1,077,000 lbs. of meat were worth \$551,000, a rise of 73 percent over the 1965 period. Of that amount, canned abalone was worth \$401,000. Malaysia, Singapore, and Japan took the bulk of exports.

But Total Value of Exports Dropped

Total value of marine products exported for the 6 months to December 31, 1966--\$10,247,000--was \$208,000 less than the 1965 period. This was due mainly to a 30 percent drop in value of spiny lobster tail exports. Lobster tail shipments for the first half-year in 1965/66 were particularly heavy because of a carryover from the previous year due to shipping difficulties. Exports for the 6 months to December 31, 1966, were valued at \$3,838,000, compared with \$5,482,000 the previous year.

Scallop exports dropped by \$24,000 in December but were up by \$25,000 for the 6-month period.

The value of cultured pearl exports for the half-year was \$1,732,000--up \$552,000.

Marine Products Imports Down A Little

There was a slight fall in the value of marine products imports for the half-year ended December 31, 1966. They totaled \$17,562,000, compared with \$17,680,000 for the first 6 months in the 1965/66 year.

The value of fish fillet imports in packages of one pound or less jumped 81 percent to \$2,855,000, but imports of similar fish in packs greater than one pound fell 4½ percent, to \$1,972,000. ("Australian Fisheries Newsletter," April 1967.)



American Samoa

ALBACORE PRICES RAISED FOR JUNE DELIVERIES

The price agreement reached between Japanese trading firms and U. S. packers in American Samoa for June 1967 tuna deliveries resulted in a \$10-per-ton increase for albacore: \$350 per short ton for frozen round fish and \$335 per ton for iced fish.

Other tuna prices for June (with May price comparisons): yellowfin frozen \$290 (down \$5), iced \$275 (unchanged); big-eyed frozen \$185 (up \$5), iced \$170 (unchanged). ("Suisancho Nippo," June 3, 1967.)

* * *

ASIAN TUNA PRODUCERS TO PARTICIPATE IN SAMOAN PRICE TALKS

The 8-man tuna price study group, formed after the Asian tuna conference in Tokyo, May 30-31, held its first meeting June 3. It adopted the following proposals: (1) representatives from Formosa, South Korea, and Okinawa will take part in the monthly tuna price negotiations in American Samoa between Japanese trading firms and U. S. packers; (2) the Japanese firms will handle direct negotiations but reflect the will of tuna producers of the 4 participating countries; (3) a determination of price will be considered the decision of the 4 countries; and (4) when non-Japanese members cannot attend the negotiations, the Japan National Federation of Tuna Fishermen's Co-

American Samoa (Contd.):

operative Associations (NIKKATSUREN) will notify them of the price settlement.

On June 5, NIKKATSUREN informed the concerned Japanese firms of the new plan. ("Suisancho Nippo," June 6, 1967.)



CARIBBEAN

Barbados

SHRIMP INDUSTRY GROWS

For one seafood company, 1966 was a successful year. It exported about 2.4 million pounds of shrimp, principally to the U. S. During 1967, the company will export an estimated 3 million pounds and, during 1968, 3.5 million.

During 1966, another firm began to build a \$160,820 facility to peel and devein shrimp; 150 new employes will be needed. When completed in June 1967, cold-storage facilities will be provided for 300,000 pounds of shrimp, and processing capacity will be 30,000 pounds a day. The firm shipped a few thousand pounds of shrimp to the U. S. by air last year but, according to company officials, the cost was too high to do this routinely. It also tried to export flyingfish to the United Kingdom in small quantities, where the product was fairly well received. However, there are no immediate plans to pursue this activity on a large scale because the company is handling all it can now.

The shrimp trawler fleet is scheduled to be expanded from 24 vessels to over 35 by July 1967. With increased storage capacity, the fleet could be expanded to 100 vessels--but there is a shortage of docking space. (U. S. Embassy, Bridgetown, Apr. 25, 1967.)



CRAYFISH DESCRIPTION AND THEIR HABITS

Crayfish, lobsters, shrimp and crabs are relations in the class "crustacea," all bearing 2 pairs of antennae and at least 5 pairs of legs. The head and thorax of these marine animals are fused into one piece, called the cephalothorax, and form a protective sheath over the animal. This sheath, or crust, suggested the class name "crustacea."

Crayfish are abundant in streams and freshwater ponds of all the continents, wherever there is a sufficient amount of calcium carbonate in the water. Some live in rapidly flowing streams and others, also called crawfish, live in stagnant ponds or in wet meadows and marshes.

Crayfish lurk patiently under flattish stones, with just their heads protruding from their hiding places. Two pairs of waving antennae--one pair short and the other pair long and slender--keep tabs on passing visitors. When a small fish or other tasty creature passes within reach, the crayfish grabs it with his pincer claws.

When its watery world is calm and quiet, the crayfish crawls forward around the bottom slowly and jerkily. But if disturbed, it shoots backward rapidly by contracting its abdominal muscles and folding its tail fin underneath its body. It is to this swift ability to retreat that a person refers when he says someone has "crawfished" out of an undertaking. (Reprinted, with permission from Science News, weekly summary of current science, copyright 1966 by Science Service, Inc.)

AFRICA

South-West Africa

FISH OIL YIELD DROPS

The quality of pilchards caught off Walvis Bay in early May deteriorated, and the oil yield dropped from about 20 gallons a ton of fish at the beginning of April to only nine. This is a marked change in the usual pattern of oil yield, which rises sharply during May and June and declines again in July. The fish were found very close inshore. Vessels had been going out for up to five hours for fish. ("Namib Times," Walvis Bay, May 5, 1967.)



Senegal

SETS TUNA PRICES

The Government of Senegal, on March 18, 1967, issued a decree governing the 1966/67 tuna fishing season. The basic provisions carry over from the 1965/1966 season: tuna prices remain at 82.50 francs CFA (\$0.34)/Kg. (\$340 a metric ton) for albacore, and 55 francs CFA (\$0.22)/Kg. (\$220 a metric ton) for skipjack.

The French import quota of 11,000 tons of canned tuna from Senegal continues to be allotted among Senegal's 3 canneries. (U. S. Embassy, Dakar, April 22, 1967.)



Mauritania

DEVELOPS FISHING INDUSTRY

Mauritania is pushing a vigorous fishery development plan with financial assistance from France and Spain, according to the Japanese Fisheries Agency. Mauritania plans to construct in Port Etienne a 1,800-ton cold-storage plant (with 75-ton freezing capacity), a fish meal plant with a processing capacity of 300 tons of fish a day, and a 280-meter-long fish unloading wharf. Also, a fishing fleet build-up program is reported under way.

In the first phase, a fleet of 16 fishing vessels (14 reported under construction) will be built: two 52-meter (170-foot) trawlers and six 33-meter (108-foot) trawlers powered by

1,300-hp. engines; six 21-meter (69-foot) purse seiners powered by 360-hp. engines; and two 2,000-ton refrigerated carriers. Construction of vessels and plants are to be financed by France. ("Nihon Suisan Shim-bun," May 17, 1967.)



Ghana

REPORT ON FISHING INDUSTRY

Ghana's current demand for fish outdistances the available supply considerably. The Fisheries Division, Ministry of Agriculture, estimates the present annual demand at 250,000 metric tons. Its provisional figure for supply from all sources is 130,000 tons, perhaps optimistic. While official predictions suggest a slight increase in fish production and consumption in 1967, the gap between supply and demand is not expected to narrow significantly.

The 1966 catch was 99,236 tons, an increase of 10,554 tons over 1965. Canoe landings accounted for 25,115 tons; motor fishing vessels, 49,350 tons; and Soviet vessels on contract, 24,776 tons. More than half the increase resulted from an improved tuna catch--from 7,716 to 13,196 tons.

In 1966, 18,930 tons of fish were imported (5,699 tons in 1965), while fish transhipped out of Ghana amounted to 7,794 tons (6,869 tons in 1965). Figures for the 1966 fresh-water catch are not available, but the amount must be small. The largest source for this type of fish is, of course, the Volta Lake, which currently supplies about 300 tons annually.

20% of Work Force in Fishing

About 20 percent of Ghana's working population is engaged in some aspect of fishing; 67,000 fishermen operate 10,212 canoes, half fitted with outboard motors. Also, 412 local motor fishing vessels (32' to 100' total length) ply Ghana's waters. Most fish are purchased, smoked or dried, and later marketed by women hawkers. Some are frozen on the 18 Soviet trawlers leased to Mankoadze Fisheries, and at the State Fishing Corporation's modest-

Ghana (Contd.):

sized freezing facility in Tema. In theory, 50 percent of the fish marketed by this state-owned corporation is transported inland in a limited number of refrigerated trucks. But numerous newspaper complaints regarding empty cold-storage houses in noncoastal areas suggest strongly that most fish are consumed near the country's two ports, Tema and Takoradi. Star-Kist International, at Tema, fishes exclusively for tuna, all exported.

Industry Has Great Potential

The fish industry, if properly encouraged and managed, could hold great potential for Ghana. The internal demand for fish, currently twice the domestic and foreign supply, should encourage increased production. While Ghanaian marine grounds are not considered abundant, efficient exploitation would increase the yield.

The U. S. Agency for International Development, working with the Ghana Government,

is exploring ways to take advantage of the fresh-water fish resources of the Volta Lake.

Fish production could be encouraged by reducing tax on fish, originally imposed for revenue purposes. Currently, a \$1.40 tax must be paid for each ton of fish with an overall length greater than 20 centimeters; 5 percent ad valorem is levied on loads of shorter lengths. Also, a port fee of 93 cents per ton and an identical wharfage fee is exacted from all vessels in port.

If the overcapitalized State Fishing Corporation were sold to private ownership, a move now under consideration, production could be expected to rise, distribution improve, and spoilage decrease. With sufficient private investment and know-how, shrimp exploitation for immediate freezing and air shipment to Europe could prove profitable. The shrimp grounds, thought substantial, should be thoroughly investigated and delineated. (U. S. Embassy, Accra, June 8, 1967.)



FAO NEEDS FISHERY TECHNICIAN

The Food and Agriculture Organization (FAO) has an opening for a Fishery Statistician (P-2) in its Rome office. This is a permanent appointment with a gross starting salary of \$9,050 plus allowances. Qualifications include a university degree in statistics and mathematics, and post graduate studies in these disciplines; three years' experience as a statistician; and a very good knowledge of either English, French, or Spanish. Interested persons should send application with detailed personal history to Chief, Recruitment Section, Personnel Branch, FAO via delle Terme di Caracalla, Rome, Italy.