interdependent systems and techniques —tanks, circulating water systems, special diets, and methods of hatching and raising larvae to the adult stage. In the South Carolina Sea Grant project, Paul Zielinski and Walter Castro, engineers at Clemson University, have experimented with two types of tanks for rearing the prawn larvae. Their studies not only are advancing the design of tanks, but are also providing new information on circulating patterns within the tanks and on the use of small air-lift pumps. They have found that existing information on air-lift pumps does not apply to the small pumps that lift water less than 15 feet to provide circulation in culture tanks. Their efforts to fill this information gap will have wide application outside the field of aquaculture.

South Carolina's cooperative Malaysian prawn culture program includes two additional projects. John Manzi of the College of Charleston is investigating the value of algae-rich "green" water as a supplemental food source for prawn larvae. Jeanne Joseph of the Marine Resources Institute is studying the fat content of cultured prawns and the influence of diet on this content.

Pilot-scale commercial aquaculture of the species in the United States began in Hawaii and is now underway at several other locations in the United States. Related Sea Grant supported projects are being conducted by the University of Georgia, Hawaii's Department of Land and Natural Resources, University of Hawaii, Florida Atlantic University, and the Micronesian Mariculture Development Center at Palau in the Pacific Trust Territories. The South Carolina Sea Grant investigators are adapting much of the existing culture technology to the State's environment, improving and refining the techniques to fit local conditions. To develop prawns suitable for South Carolina's temperatures, two species of *Macrobrachium* that occur naturally in the state may be hybridized with the Malaysian import. If appropriate culture techniques can be perfected and adopted by industry, prawn growing would provide a new source of income for local residents and a significant new source of high-quality protein. At the Marine Resources Research Institute, postlarval Malaysian prawns are being produced routinely on a laboratory scale. A new hatchery facility now being developed will provide animals for all investigators participating in the program.

Foreign Fishery Developments

Soviet Fisheries Research Submarine, *TINRO-2*, Ready for Serial Production

A miniature Soviet fisheries submarine, used in studying the biological resources of the Continental Shelf, has completed a series of tests in the Black Sea and in the Atlantic Ocean, according to *Vodnyi Transport*.

The sub *TINRO-2* was designed to study fish, underwater plants, and mineral deposits at depths up to 300 meters (about 1,000 feet). It is equipped with navigational and hydroacoustic instruments as well as with television and automatic still and movie cameras. The two-man crew includes a pilot, who serves as the commander of the vehicle, and a research scientist who may be an oceanographer, ichthyologist, or marine geologist depending on the nature of the expedition. *TINRO-2* was designed by "Giprorybflot," the Soviet Federal Design Institute of the Fishing Fleet, primarily for use by the USSR Ministry of Fisheries.

In September 1974 the testing of *TINRO-2* in the Black Sea was completed: in 81 days at sea a total of 29 dives were made. The *Ikhtiandr*, *TINRO-2*'s mothership, left the Black Sea for the Atlantic Ocean carrying the submarine on board in a sort of a "hangar." The two vessels spent about half a year in the Atlantic continuing tests and trial dives. According to *Tass*, *TINRO-2* and the *Ikhtiandr* made two complete crossings of the Atlantic in 160 days, studying bottom structure, fish behavior, and plankton distribution. More than 50 dives were made to depths of 200-400 meters.

By April 1975, both vessels had returned to their home port of Kerch' on the Black Sea. From Kerch' *TINRO-2* is to be shipped to Leningrad to be displayed at "Inrybprom-75," an international exhibition of fish-processing machinery, equipment, and fishing vessels, to be held 6-20 August 1975. Meanwhile, serial production of the *TINRO-2* class of miniature fishery submarines is about to begin.

The Office of International Fisheries, NMFS, NOAA reports that "serial production" of the fisheries mini-submarine vehicle indicates that its prototype performed satisfactorily during the shake-down cruise. In 1960, Soviet underwater research scientists also planned the construction of a larger sub with an independent surface cruising range of 600 miles. This vessel, to be known as *TINRO-1*, would need no mothership and could remain submerged up to 20 days. Because of the large inside space, it could be equipped with a wide range of research instruments. A system of lock chambers with double doors would allow divers to leave the submerged vessel to conduct experiments under water. The 7-man crew, including a researcher, pilot, and engine mechanic, would work in two shifts. However, although *TINRO-2* has already gone into serial production, *TINRO-1* seems to have remained more or less "on the drawing board."

TINRO-1 and *TINRO-2* are alike in name only. The vessels, as already described, are very different in structure and operation. *TINRO-2* is small and dependent on a mothership, while *TINRO-1* is larger and built to cruise independently. Both of these underwater research vessels were originally planned for use by the Soviet Pacific Research Institute for Fisheries and Oceanography, whose initials in Russian spell "*TINRO*." Located in Vladivostok, this facility serves as the base

of operations for Soviet fisheries research conducted in the Pacific Ocean. In spite of the fact that *TINRO-2* has been tested so far only in the Black Sea and the Atlantic Ocean, she may still be assigned to the Institute in Vladivostok.

On 25 February 1975, the *Ikhtiandr* and *TINRO-2* were sighted by National Marine Fisheries Service enforcement agents about 40 miles east of Miami off the Grand Bahama Banks. *TINRO-2* was observed in the waters near the *Ikhtiandr*, and it is believed that exploratory and research investigations were in progress. Both vessels were later reported off the Mexican coast on Campeche Banks.

Taiwanese Fish Catch Drops Sharply in 1974

The Republic of China's (Taiwan) fish catch in 1974 totaled 697,800 metric tons, a sharp reduction of about 60,000 tons from the 1973 output of 758,000 tons. The decline was attributed primarily to the reduced deep-sea catch, which fell 45,000 tons below the previous year's figure. The decline also ended the 3-year upward trend that had marked Taiwan's fish production (1971, 650,000 tons; 1972, 694,000 tons; and 1973, 758,000 tons). The tuna catch recorded 99,700 tons, comprising one-seventh of the total. Other important catches included shrimp (47,000 tons), shark (36,800 tons), sardine (36,700 tons), and cutlassfish (34,500 tons).

Source: *Suisan Keizai Shimbun.*

Korea Proceeding with Moroccan Fish Investment

The June 1974 fisheries agreement obligating the Republic of Korea (ROK) to invest US$13 million in the development of Morocco's fishing industry is being actively implemented according to a report in *La Vie Economique*, Rabat, Morocco.

Five companies have been established to carry out the agreement. The Société Générale Marocaine de Pêche (SOCEP), located in Agadir, is already in operation. The other four companies are: the Société de Pêche Maroco-Coréene (PEMACO), the Société Dongwon de Pêche, the Fisheries Corporation of Morocco and Korea (FIMACO), and the Compagnie Internationale de Pêche et d'Armement (CIMPA). All are close to the start of operations. The Moroccan part of the agreement is under the supervision of Dahmane Layachi, the Director General of the Moroccan Office of Fisheries (Office National des Pêches).

India's Fishery Exports to U.S. Increase in 1974

India's fishery exports to the United States increased both in quantity and value from 1973 to 1974 (see Table 1). The increase in value (from $19.8 million to $33.7 million, or 70 percent) was greater than the increase in quantity (from 10,235 metric tons to 14,633 tons, or 43 percent), an indication that Indian exports benefited from the world-wide increases in the price of fishery products, notes the Office of International Fisheries, NMFS, NOAA.

The largest single export commodity was shrimp, representing about 91 percent of the total quantity of Indian fishery exports. The largest amount of shrimp exports were peeled, but otherwise unprocessed (except for freezing). The average price of "peeled raw" shrimp exports increased by 5 percent (from $0.81 per pound to $0.85 per pound). This rise was far below the price increases which several other countries commanded in their shrimp exports to the United States; for instance, in 1974 while Panama's exports to the U.S. declined from 10.4 million pounds (1973), to 10.1 million pounds, the value increased from $1.61 per pound (1973) to $2.39 per pound in 1974 (a 48 percent increase); Mexico's exports to the U.S. increased from 76 million pounds valued at $1.46 per pound in 1973, to 78 million pounds valued at $1.84 per pound in 1974 (a 27 percent increase).

The lower average prices of Indian shrimp indicate the quality control problems which beset the Indian shrimp exports to the United States. The U.S. Food and Drug Administration has repeatedly impounded large amounts of Indian shrimp, primarily because of decomposition.

Table 1.—India's fishery and related exports to the United States by quantity and value for 1973 and 1974[1].

Commodity	1973 Quantity (lb)	1973 Value (US$)	1974 Quantity (lb)	1974 Value (US$)
Fish				
Cod blocks	29,898	21,972	—	—
Other blocks	184,905	80,198	85,150	63,238
Fish, frozen	—	—	3,100	1,767
Fillets	7,440	2,827	—	—
Fish, dried-unsalted	—	—	243	407
Fish, smoked	—	—	400	320
Canned fish	—	—	364	643
Total, fish	222,243	104,997	89,257	66,375
Shellfish				
Crabmeat	—	—	1,155	1,772
Lobster, live	—	—	4,050	5,640
Rock lobster tails	1,096,829	1,633,221	651,322	1,503,863
Lobster, n.o.s.[2]	66,189	91,099	132,990	273,013
Scallops	—	—	25,022	21,361
Shrimp, shell on	2,255,749	2,564,615	4,068,052	6,730,821
Shrimp, canned	1,715,788	1,494,163	3,352,571	3,560,850
Shrimp, peeled raw	16,561,237	13,360,222	23,958,277	20,408,329
Total, shellfish	21,695,792	19,143,320	32,193,439	32,505,649
Other fishery products	599,819	514,618	1,345,476	1,100,563
Grand total, fish products	22,517,854	19,762,935	33,628,172	33,672,587
Frogs				
Frogs, n.o.s.	3,306,456	3,452,367	3,658,864	5,306,273
Frogmeat	23,650	19,734	15,700	22,933
Total, frogs	3,330,106	3,472,101	3,674,564	5,329,206

[1]Source: U.S. Bureau of the Census.
[2]Not otherwise specified.

Additional agreements were reached in November 1974, during a visit to Rabat of Dong Soo Kim, the former Director of the ROK Office of Fisheries. These agreements included the sending of two Korean aquaculture specialists to Morocco and the establishment of 10 scholarships, five of which will be financed by the Korean Government. The two Governments are reportedly discussing a further broadening of the existing agreements.

Spanish Fishery Imports and Exports Compared

Spain imported 183,000 metric tons of fishery products in 1963, about 6 percent less than 5 years earlier when her imports reached almost 195,000 tons (Table 1), the Office of International Fisheries, NMFS, NOAA reports. The exports, on the other hand, increased during the same period from 133,000 tons to 188,000 tons—41 percent.

An even more significant shift occurred during the 1969-73 period in the relative importance of various commodities traded. The imports of fish meal, for example, decreased by 73 percent (from 141,000 tons in 1969 to 38,000 tons in 1973), while the imports of fresh and frozen fish increased by 260 percent (from 14,000 to 52,000 tons). Similarly, the imports of fresh and frozen shellfish quadrupled from an estimated 12,000 tons in 1969 to over 60,000 tons in 1973.

The improved fishery balance of trade is the direct result of a large expansion and modernization of the Spanish fishing fleet, which now ranks third in the world in terms of gross registered tonnage (after the Soviet Union and Japan). This made possible a larger catch. During the last decade (1964-1973) the Spanish catch increased from 1.2 million metric tons to about 1.6 million tons.

Table 1.—Spanish fishery exports and imports, in metric tons, 1969 and 1973.

Commodity	Imports		Exports	
	1969	1973	1969	1973
		metric tons		
Fish				
Fresh fish	4,910	11,495	2,199	4,042
Tuna and tuna-like, frozen	4,983	6,119	2,612	11,426
Other fish, frozen	4,556	34,660	6,478	15,797
Total, fresh or frozen	14,449	52,274	11,289	31,265
Salted and dried cod	5,832	8,021	48,883	26,148
Salted and dried cod-like	[1]	10,218	[1]	11,841
Salted anchovy	620	3,851	8,490	3,426
Other fish, cured	428	1,038	2,834	3,581
Total, cured	6,880	23,128	60,207	44,996
Canned anchovy fillets	1	1	4,321	4,511
Canned sardines	7	9	17,914	28,978
Canned tuna and tuna-like	—	2	3,163	2,786
Other fish, canned/processed	327	670	4,271	3,122
Total, canned/processed	335	682	29,669	39,397
Total, fish	21,664	76,084	101,165	115,658
Shellfish				
Mussels, fresh	—	—	8,107	9,420
Cephalopods, frozen (squid, etc.)	[2]	27,148	[2]	48,330
Other shellfish, fresh/frozen	12,297	33,051	16,899	1,264
Total, fresh/frozen shellfish	12,297	60,199	25,006	59,014
Mussels, canned	34	3	1,976	4,347
Cephalopods, canned	—	—	1,976	2,846
Other shellfish, canned	789	2,667	531	539
Total, canned shellfish	823	2,670	4,483	7,732
Total, shellfish	13,120	62,869	29,489	66,746
Marine oils	18,699	6,163	2,497	3,905
Fish meal	141,427	37,807	49	1,981
Grand total	194,910	182,923	133,200	188,290
Percentage of increase or decrease		−6.2%		+41.4%

[1]Not given separately: probably combined with salted and dried cod.
[2]Not given separately, but considerably less than in 1973.
Source: Ministerio de Hacienda. Direccion General de Aduanas. *Estadistica del Comercio Exterior de España*, Madrid 1969 and 1973.

Morocco Seizes Spanish Ships in Contested Seas

A Moroccan patrol launch seized two Spanish trawlers on 7 April in waters close to the median line dividing the two countries' respective coastlines reports the Office of International Fisheries, NMFS, NOAA. The Mediterranean Sea is 65 miles wide at the point of seizure, and Morocco claims a 70-mile Contiguous Fishery Zone, excluding however, the Strait of Gibraltar. Spain does not recognize the 1973 law by which Morocco extended its Territorial Sea and fishery limits.

The first fishing vessel was released within 2 hours when a Spanish destroyer arrived on the scene, but the second was forced to proceed to Tangier when a Moroccan sailor aboard the Spanish trawler threatened to kill her captain. On 10 April, a Spanish frigate sailed to Tangier to return the two Moroccan sailors captured on the first Spanish fishing vessel. In exchange, the seized Spanish trawler, with its crew, was allowed to depart the Moroccan port without payment of a fine.

Both Governments were eager to avoid an escalation of tensions as they are negotiating agreements on a number of sensitive issues. Several other Spanish fishing vessels are reportedly languishing in Moroccan ports pending disposition of their cases.

Rising Costs Mar Future of Peru Anchovy Fishery

The official fishing season for anchovies in Peru closed on 15 May 1975. Some experimental fishing, to determine the status of the resource, followed the closing and the total catch by 5 June amounted to about 3 million metric tons. It is believed that Pesca Peru (a state-owned corporation) will catch a total of about 5 million tons of anchovy in 1975. The extent of future anchovy fishing is clouded by the rising cost of fish meal production. The U.S. Embassy in Lima estimates that the

cost of production is currently about $230 per ton. Substantial increases in the cost of fuel and labor are expected to further escalate the costs of production.

Fish meal stocks as of mid-summer 1975 were estimated at about 500,000 tons. New fish meal sales are believed slow despite Peruvian efforts to enter into contracts with the Socialist countries. Small forward sales to the USSR and Bulgaria appear to lack firm prices. A 450,000-ton contract with West Germany was reported, but 350,000 tons of this appears to be only an option for next year.

France Finds Tuna Export Problems

France requested the European Economic Community (EEC[1]) Council in Brussels to declare a ban on all tuna imports into the EEC earlier this year as the country was having trouble exporting a sizeable portion of its domestic tuna catch, *Le Marin* reports. Were that done, France could have disposed of excess frozen tuna holdings (over 10,000 metric tons) by exporting them to other Common Market countries.

The Council rejected the French proposal as other EEC nations (such as Italy and Germany[2]) have the processing capacity to handle larger tuna imports than France is capable of supplying. The Council, however, moved to take measures to assist the French in the shortrun. A ban on non-EEC tuna imports into France was expected to be extended from 1 July to 1 August and an additional US$5 million may be appropriated to subsidize cold-storage costs of private companies in Common Market countries. The Council also intended to begin discussions with Japan, the Republic of Korea, and Spain with the hope of obtaining agreement on higher export prices for tuna coming into the EEC.

[1]Also known as the Common Market.
[2]Italy's tuna processing plants can absorb about 90,000 metric tons of frozen tuna a year. The French are exporting only about 25,000 tons of frozen tuna per year.

Sweden Expands Marine Science Programs

The Swedish Government is expanding the scope of its marine science programs according to the U.S. Embassy in that country. Although Sweden has 14,000 kilometers of coastline on the Baltic and North Seas, it is only recently that the concern over increased pollution, and possibilities of finding oil deposits in the Baltic, have stimulated the interest of government agencies and private companies in marine affairs.

The Government does not have a central coordinating agency for marine research and development, and the existing 18 governmental organizations are under the control of six different ministries (see Figure 1). The budget for 1975-76, however, includes funds for the establishment of a national Commission for Marine Research and Development as a coordinating agency for all government and private marine research programs.

In 1969, the last year for which there is complete data, there were 88 different public institutions concerned with marine research. Among these were more than 53 university institutes. The amount of Government funds allocated to marine research and development in 1969 was 32 million Swedish kroner (US$6.2 million). At present, the principal areas of marine research are marine meteorology and climatology, marine geology, marine biology, naval medicine, and oceanography and ocean technology.

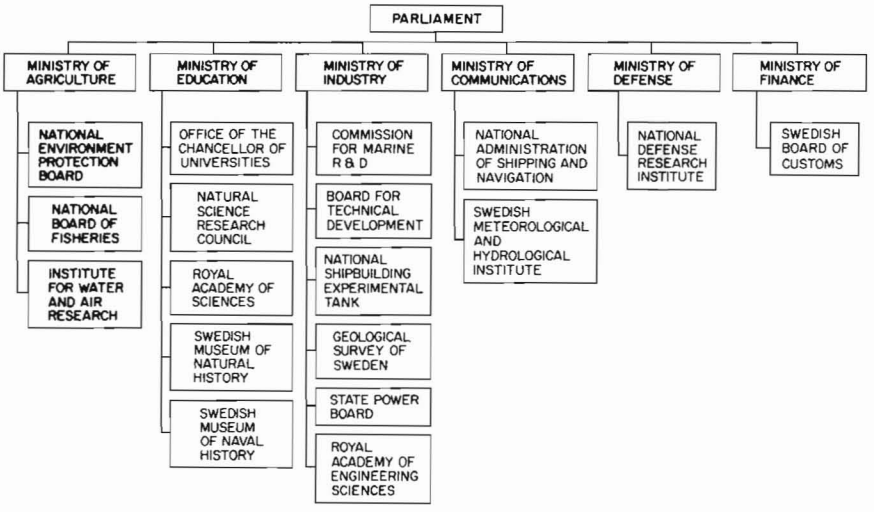


Figure 1.—Governmental marine research and development organizations in Sweden.

French Fishing Vessel Construction Reported

In 1974, French shipyards began the construction of, or delivered 15 large trawlers (5,472 GRT) and 11 tuna seiners (7,473 GRT), according to *La Pêche Maritime*. French fishing companies have ordered two trawlers each, and the Ivory Coast has ordered four seiners. This data does not include the construction of fishing vessels in numerous smaller shipyards which produce small craft for French coastal fisheries. A more detailed breakdown of the tuna seiners is given below.

Tuna vessels delivered, launched, or under construction in French shipyards during 1974.

Vessel name	GRT	Company	Flag
Delivered			
Ille-Aux-Moines	750	Genepêche	France
Mervent	608	Kuhn-Ballery	France
Laurent	555	Grand Lahou Atl. Fisheries	Ivory Coast
Kelerenn	260		France
Total	2,173		
Launched			
F-de Magellan	900	SIPAR	Ivory Coast
Ille Tristan	900	A.C.A.F.	France
Belier	600	SIPAR	Ivory Coast
Cap Bojador	600	Le Garrec	France
Total	3,000		
Under construction			
Jacques Cartier	900	Grand Pêche	France
Gevred	600	Kuhn-Ballery	France
N'Zida	600	Grand Lahou	Ivory Coast
Total	2,100		

FAO Lists 1974 Fishery Activities

FAO's activities in fisheries during 1974 included participation in the third UN Conference on the Law of the Sea which foreshadowed expected changes in marine areas under national jurisdiction or the establishment of exclusive economic zones.

A review of world fish exploitation was submitted by FAO to the Law of the Sea Conference. It indicated that in 1973 the total world catch increased—apart from the Peruvian anchovy catch, which fell again after the decline in 1972. Many of the more attractive species such as lobsters, shrimp, and larger tuna, and the more abundant shoaling pelagic, or mid-water, fish are fully, and in some cases overexploited. The introduction of drastic management measures appears to have helped the recovery of species which had suffered depletion in the Atlantic (menhaden, sardine) and off the coast of British Colombia (herring).

In 1974, FAO operated 89 fishery projects employing 213 experts and funded mainly by the UN Development Program (UNDP). Contributions under bilateral programs increased steadily and will show a sharp rise in 1974-75 with the donation of Can. $2.8 million by the Canadian International Development Agency to the South China Sea Program. Work on this program has started in Manila.

The Eastern Central Atlantic project for the development and rational management of fish resources in an area stretching from Gibraltar to the mouth of the Congo River became operational in 1974. The present annual catch for the region is about 3 million tons, and the project aims at increased fisheries participation by the African States, promoting cooperation between the latter and other nations that fish the area, and assistance in training personnel and improving facilities. The 4-year project will receive over 1 million dollars from the UNDP, another million dollars from Norway, and substantial contributions in kind from African countries. Canada, Cuba, France, Italy, Japan, the Republic of Korea, Poland, Spain, and USA have expressed their willingness to help.

The Indian Ocean Program (IOP), supported by the Norwegian Development Agency and UNDP, completed arrangements for an acoustic survey from Somalia north of Mogadisciu to Pakistan, starting early in 1975. Norway's substantial contribution to this undertaking includes a 400-ton vessel, the *Dr. Fridtjof Nansen*, which was commissioned in October and has been made available to FAO. In conjunction with the Swedish Development Agency (SIDA), the IOP sent a mission to study investment and development opportunities for fisheries in Bangladesh, India, Malaysia, Sri Lanka, and Thailand.

The trend towards regional projects gained impetus during 1974. While increased production may be expected from large industrial fleets, it should also be achieved by improvements in small-scale fisheries operating on an artisanal or individual basis. FAO's plans for regional projects assisted by highly mobile teams of specialists who would help governments to establish fishermen's cooperatives, set up training programs, and introduce appropriate fishing practices have been endorsed by UNDP and the development agencies of industrialized countries. Prevention of waste is one of the objectives, by improving storage, processing and marketing facilities.

Preparations are under way for a World Conference on Aquaculture—or fish farming—to be held in Japan in 1976. Increased output from this source might eventually exceed 40 million tons yearly if governments are willing to provide resources and facilities for research and set aside areas for breeding. Meanwhile FAO has sponsored the preliminaries of a draft convention based on the work of the European Inland Fisheries Advisory Committee and designed to avert the spread of communicable fish diseases to which aquaculture might give rise through international traffic in live fish and fish eggs.

Consultations were organized by FAO to explore the feasibility of harvesting unconventional or unfamiliar species, such as the Atlantic krill, which require promotional support in order to gain acceptance as food by the general public. Concerted action against indiscriminate fishing and pollution included the preparation by FAO of a convention sponsored by the General Fisheries Council for the Mediterranean to protect the living resources of that sea.

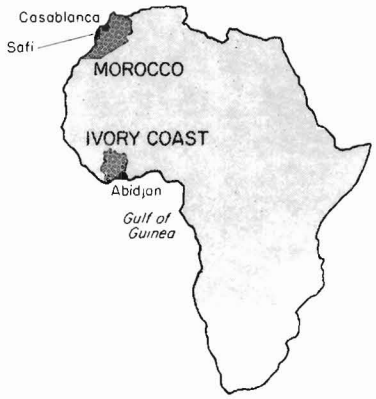
Well established fishing industries received FAO help in exploring investment opportunities in developing countries and with cooperating in surveys and pilot operations. FAO assisted in the negotiation of agreements enabling local enterprise to draw on the skill and experience of developed countries.

The ninth session of the Committee on Fisheries took place in Rome and was attended by 71 FAO member countries, the USSR, and ten international organizations. It stressed the need for increased fish production in the developing countries and the importance of training and education in all aspects of fishery activities.

Source: *FAO in 1974.*

Morocco Enters Tuna Fishery

Morocco's first high-seas tuna vessel, the *Tarfaya*, returned to Casablanca with 250 metric tons of frozen yellowfin tuna during the week of 12-18 May 1975, according to a report in *Le Marin*. The tuna varied in weight from 40 to 80 kilograms each. The vessel had also unloaded 150 tons of frozen tuna in the port of Safi, Morocco, before reaching Casablanca.



The *Tarfaya* was purchased by the Maropêche company in late 1974 and was sent to the Gulf of Guinea in November 1974. During its fishing season in West Africa, the vessel landed 851 tons of tuna in Abidjan, Ivory Coast.

Japan Tuna Fishery Bankruptcies Mount

Severe management difficulties confronting Japanese distant-water tuna vessel owners are resulting in mounting cases of bankruptcy, vessel tie-ups, and curtailment of business, according to the *Suisan Keizai Shimbun*.

Estimates based on studies made by Japan's Fisheries Agency, lending institutions, and industry indicate that, as of the end of April 1975, there were 36 cases of bankruptcy involving 56 vessels, 23 cases involving 24 vessel tie-ups, and 40 cases of business curtailment affecting 53 vessels, totaling 99 cases and 133 vessels. In addition, about 101 enterprises are threatened with bankruptcy. The removal from the fishery of over 10 percent of the high-seas tuna fleet (of about 1,200 vessels) is indicative of the grave crisis confronting the Japanese fishing industry.

Although tuna imports from South Korea have contributed partly to the plight of the Japanese tuna vessel owners, the Fisheries Agency's view is that the problem was the outcome of weakening management structure compounded by the energy crisis that struck the industry. The Agency, which in 1974 had provided 9 billion yen (US$30 million) to help the tuna industry recover from the energy crisis, has declared that steps will be taken to aid the industry, but no specific measure has yet been developed.

Publications

New Manuals Promote Seafood Quality

The production of fresh and appealing seafood products requires strict quality control, say Texas A&M University Sea Grant Marine Advisory Services specialists. To help insure high seafood quality, they have produced three seafood quality control manuals, two of which are bilingual.

The first, **Seafood Quality Control: Processing Plants,** is designed to help plant managers recognize sources of bacterial contamination, while making recommendations for improved handling practices and product environment after harvest.

Seafood Quality Control: A Manual for Processing Plant Personnel, a bilingual English/Spanish booklet, stresses the importance of sanitary precautions by employees.

Seafood Quality Control: Vessels/ Embarcaciones, covers handling of seafood between harvest and delivery to the processing plant. Condition of the deck and handling the product on the deck, the hold, and in storage are discussed and vividly illustrated in this bilingual edition.

The seafood quality control series, authored by Ranzell Nickelson, III, and translated into Spanish by Manuel Pina, Jr., is available without charge from the Sea Grant Program, Texas A&M University, College Station, TX 77843.

Mexican Fisheries Publications Listed

The Mexican National Fisheries Institute has issued a bibliography of its 1973-74 publications (in Spanish). The Institute is the Government agency responsible for coordinating fisheries research in Mexico. The studies deal primarily with certain fish and shellfish (sardine, anchovy, shrimp, abalone, lobster, turtles, mackerel, tilapia and snook), other marine resources (ichthyoplankton and seaweed), vessels and gear, and a number of general articles on the present state and development of the Mexican fishing industry. Anyone interested in obtaining a copy of the 3-page bibliography should write: Dennis M. Weidner, Office of International Fisheries, F41, NMFS, NOAA, Commerce Department, Washington, DC 20235.

Impacts of Offshore Oil Forecast in URI Report

Offshore Petroleum and New England, a report of the potential on-shore impacts of oil development on Georges Bank, is available from the University of Rhode Island Sea Grant Program. Author Thomas A. Grigalunas, URI resource economist, estimated impacts from high and low off-shore finds, high and low prices for oil and gas, and one and three regional refineries. The economist said development of a large oil find in the Georges Bank area would not go far in alleviating New England's employment or energy problems, but that a large find could eventually make the region self-sufficient in natural gas and provide substantial employment in selected coastal areas.

The 118-page report contains chapters on hypothetical production from Georges Bank; potential offshore petroleum and refinery investment; regional economic impacts; estimates of offshore oil and gas pipeline transportation costs; and estimates of possible royalties. Copies may be obtained for $5 each from the Marine Advisory Service, University of Rhode Island, Narragansett Bay Campus, Narragansett, RI 02882. Checks should be made payable to the University of Rhode Island.

FAO Publications Catalog Available

Publications on nutrition, commodity production and marketing, world agriculture, plant and animal sciences, food additive control, forestry, and fisheries are described in the Food and Agriculture Organization of the United Nations' fully annotated catalog of publications. The 99-page catalog lists all in-print titles, including series publications, monographs, manuals, maps and atlases, periodicals, statistical compilations, and standard international reference works.

Also available is an illustrated FAO filmstrip catalog describing standard single- and double-frame filmstrips on nutrition, crop cultivation, fertilizers, animal husbandry, irrigation, farm equipment, agricultural extension training, and public health. The catalog of publications and the filmstrip catalog are available free on request from Unipub, Box 433—Murray Hill Station, New York, NY 10016.