

available for use by the general public so long as the levels and kinds of uses do not detract from or alter the natural setting."

Camping, for instance, will be permitted in the sanctuary, but no special facilities (such as roads or campsites) may be constructed. Similarly, oyster harvesting, which is now only accom-

plished in the South Slough of all of Coos Bay, will continue to be permitted and the area leased for harvesting may be enlarged. Uses permitted to limited degrees include farming, timbering, logging, and the operation of motor vehicles.

The Oregon State Land Board will own and manage the sanctuary, aided

by a nine-member team composed of representatives from the Oregon Fish and Wildlife Department, Natural Areas Committee, Department of Environmental Quality, Division of State Lands, University Institute of Marine Biology, and the Coos County Commission. Additionally, a full-time manager will be hired.

Foreign Fishery Developments

Fishery Development Plans Aired by Kenya

In a recent interview with the *Nairobi Daily Nation*, John Mumba, Assistant Director of Fisheries in the Ministry of Tourism and Wildlife, surveyed Government plans for developing Kenya's fishing industry. The principal objectives of the Fisheries Department's long-term program are the modernization of fishing operations and an improvement of marketing techniques.

Since less than 10 percent of the registered vessels engaged in coastal fishing are motorized, Mumba announced that the Fisheries Department would help cooperatives purchase more modern boats through a fishermen's loan program. The shipbuilding industry, owned by local craftsmen, will be advised how to construct more seaworthy craft capable of operating on the high seas. The Fisheries Department has improved traditional fishing gear for use by commercial enter-

prises. The Department has also promoted the construction of fish-landing depots, slipways, jetties, and boat-repair workshops. In addition, coastal fishermen have benefitted by the establishment of cold storage facilities and ice-making plants.

According to Mumba, the major problem currently facing Kenyan fishermen is the marketing of their catch. Through Government efforts, fishermen's cooperatives have been formed along the coast with the goal of eventually replacing the marine produce dealers who currently control the distribution of the catch of coastal fishermen. The new cooperatives have been able to regulate prices for the benefit of the fisherman. A new cooperative, being organized in Mombasa, will join those already established in Lamu, Tana River, Kilifi, Msambweni, Shimani, and Vanga.

Fisheries Department research pro-

grams have been oriented towards solving practical problems facing Kenyan fishermen. More resources, however, are spent on experimental surveys to identify different coastal fish species and locate new fishing grounds. Future development of marine fish and crustacea farming on a commercial scale is planned. While still in the research stage, such a project will be carried out at the new "Mariculture Complex" being built at the Fisheries Department's Mombasa headquarters. Mumba also indicated that plans exist for the construction of a fish cannery with private capital.

According to the NMFS Office of International Fisheries, a subsequent discussion with the Director of the Fisheries Department somewhat muted Mumba's optimistic description of Kenya's commercial fishing potential on the coast. The fish cannery for instance, has received only perfunctory interest so far in the Ministry of Tourism and Wildlife, which has yet to do even a feasibility study for such a venture. Likewise, mechanization of coastal fishing craft has consisted of the purchase of one deep-sea vessel.

The structure of Kenya's fishing industry presents sizable obstacles to the development of large-scale commercial enterprises. Coastal catches accounted for less than 15 percent of total fisheries landings in 1974 and the bulk of the commercial catch is coming from freshwaters such as Lake Victoria and Lake Rudolf (Fig. 1). Kenya's marine fisheries catch has declined from 7.9 metric tons (t) in 1970 to only 3.6 t in 1974 (Table 1). More recent data is not available.

The predominance of artisanal fishermen, using traditional gear, contributes to a heavy labor intensity (the 2,000 registered coastal fishing vessels

Figure 1.—Kenya and neighboring countries.

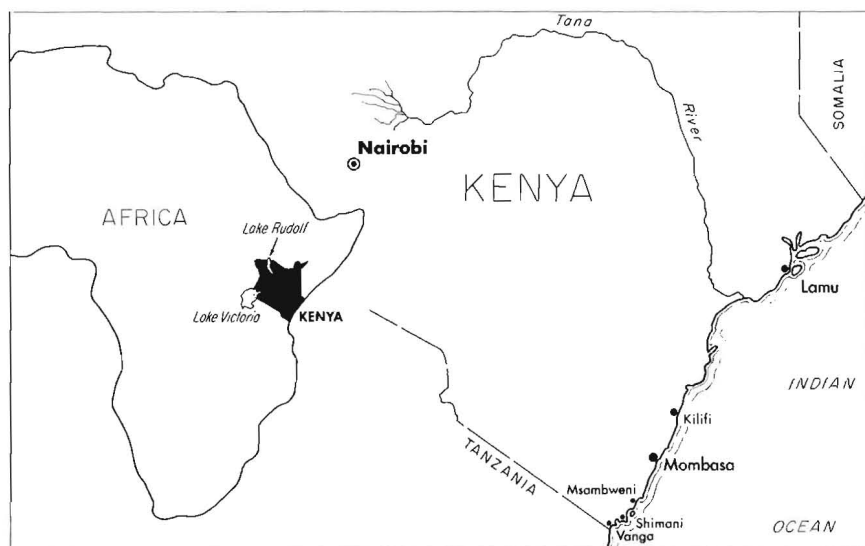


Table 1.—Kenyan fisheries catch, by major fisheries, 1970-1974.

Year	Quantity (metric tons)			Marine as a % of total
	Fresh-water	Marine	Total	
1970	25.8	7.9	33.7	23%
1971	21.3	6.9	28.2	24%
1972	22.3	7.7	30.0	26%
1973	25.0	4.0	29.0	14%
1974	25.8	3.6	29.4	12%

Source: FAO "Yearbook of Fishery Statistics," 1974.

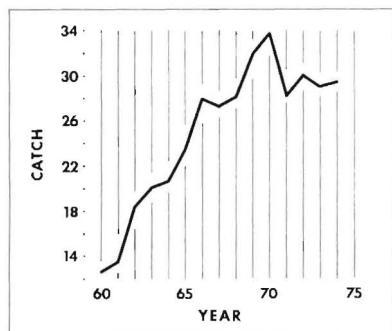


Figure 2.—Kenyan fisheries catch in metric tons, 1960-1974. Source: FAO "Yearbook of Fishery Statistics," 1974.

are owned by over 10,000 persons). The Government has decided against extensive capital investment in this industry as modernization of the industry could result in reduced employment. Development objectives have, instead, focused on improving fish marketing services, expanding existing fish breeding research programs, and promoting fish farming in suitable areas. The overall goal is to increase the fisheries catch, which has actually decreased since 1970 (Fig. 2).

Fishermen's cooperatives, while providing useful extension services, have proved a disappointing experience in many cases. The major problem, according to Government sources, has been the inability to use the cooperatives as a conduit for short-term credits. Weaknesses in cooperative management have made most cooperatives poor credit risks.

Funds extended under the Fishermen's Loan Program will continue to go to only those cooperatives with successful repayment records. Another factor reducing the effectiveness of the cooperative movement in the fishing industry is the resistance of individual fishermen to communal organization. Having failed through exhortation and

incentives to expand cooperative membership, Government officials have frequently resorted to fines and boat confiscation.

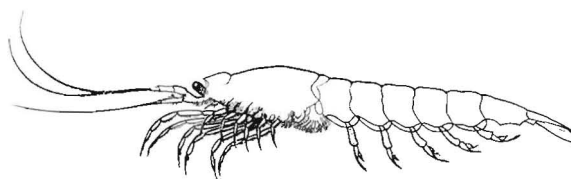
A sportsman's paradise, Kenya is only beginning to develop the commercial potential of its freshwater and marine fisheries. The country remains a net importer of fish and fish products,

primarily fish meal. Per capita domestic consumption of fish, on the other hand, is extremely low. Large-scale processing facilities will be uneconomical unless total production increases substantially—a feat which seems to involve a significant social transformation in addition to financial investment. (Source: U.S. Embassy, Nairobi.)

GERMANS RESEARCH ANTARCTIC KRILL

The two-vessel German krill-research expedition to Antarctic waters returned to the Federal Republic of Germany on 14 June 1976. The research vessel *Walther Herwig* (2,250 GRT) and a Government-chartered stern factory trawler *Weser* (2,176 GRT) traveled 94,000 nautical miles and spent over 8 months on the project, part of the \$8 million program to investigate the commercial potential of krill. Scientists of the United Kingdom, France, South Africa, and Argentina participated in the expedition which explored the Scotia Sea, between South Georgia and the South Orkney Islands, the Weddell Sea, and waters south of Africa. The vessels

layers to a depth of 300 meters, with specially designed sonar. Large quantities can be caught using pelagic trawl nets (catches of 30 t per hour have been reported, as well as nets torn due to the immense weight of largest catches), though further experiments will be necessary to adjust catches to processing capacity aboard trawlers. A major unresolved problem is the transport of raw frozen krill from the Antarctic to more populous parts of the world, as krill decomposes rapidly during freezing, storing, and thawing processes. If these problems can be resolved, however, fishery biologists estimate that Antarctic krill stocks would permit a commercial harvest of



Krill, *Euphausia superba*, actual size.

conducted the research in three phases and were based in Montevideo, Uruguay. Each phase (trip) lasted about 3 months.

The German Government, faced with increasingly restricted catch quotas in areas traditionally fished by the German fishermen and extensions of fishing limits, began the krill program in an effort to investigate a possible future fishery. Antarctic krill stocks have grown to an estimated 200-400 million metric tons (t), as the number of whales which feed extensively on the crustacean has been substantially decreased.

Preliminary results of the expedition reveal that it is possible to locate krill schools, which move in upper water

60 to 100 million t per year. These figures, as well as the biomass estimates above, are highly speculative.

Development of a krill fishery will depend upon consumer acceptance of krill products offered at competitive prices. Toward this end, extensive experiments were directed at producing: 1) krill paste from shelled raw krill by steam treatment; 2) comminuted krill meat from boiled krill; 3) fried krill portions from deep-frozen krill comminuted; and 4) a soup-like preparation obtained through an enzymatic process using nonboiled krill. The experiments resulted in products which varied from a firm substance to a soft, malleable paste. The appearance and consistency of the paste resembled that of salami

sausage with a sweetish aroma and a pronounced liver-like taste. The soup-like preparation differed significantly from the first three products. Its color ranged from orange to tomato red and its taste resembled that of crabmeat soup.

In addition to new seafood products for human consumption, the project also explored the possibility of processing krill into edible protein concentrates and animal feed. Preliminary results indicate that the production of krill meal does not appear to pose major problems, but that the production of protein concentrate would require further research.

The relatively high cost of the expedition has evoked criticism from West German fish processors who would have preferred closer-to-home research with more immediate prospects of tangible results. They recommended that more money be appropriated to improve catches from European waters and that research aimed at maximizing the exploitation of known fishery resources be intensified. Nevertheless, the German Government is contemplating the continuation of krill research in the Antarctic as the results have been judged sufficiently encouraging. The proposed program would continue through 1979 and cost approximately US\$16 million. Although focused primarily on krill, the program would also extend to other Antarctic fish species. (Source: U.S. Consulate General, Bremen.)

Japan Establishes Panel on Fisheries

Japan's Ministry of Agriculture and Forestry has established a new advisory panel composed of widely respected individuals to discuss the future direction of Japanese fishery policy. While the panel is without power to make official policy, since it has a broad mandate to discuss differing viewpoints and will report directly to the Minister, it may play a pivotal role in the current Japanese domestic debate about the appropriate response to changes in international fishery jurisdictions. The advisory panel includes internationally well-known members from the Fuji Bank and Tokyo University, but has only one

representative from the Japanese fishing industry, the Japan Fisheries Association.

The Japanese fisheries trade press was sharply critical of the lack of industry representation on the new panel and also objected that it is a time for action, not more study. The Japanese fishing industry has raised fears about the consequences of a new international system of 200-mile fishery zones which would hurt Japan's distant-water operations and deprive the Japanese nation of an allegedly necessary source of animal protein. While these industry views are well publicized through public relations campaigns in the foreign and domestic press, there is little evidence that public opinion is unified behind the position taken by Japan's distant-water fishing companies. The public is somewhat skeptical of the fishing industry's predictions of disaster, seeing in this some special pleading for vested economic interests.

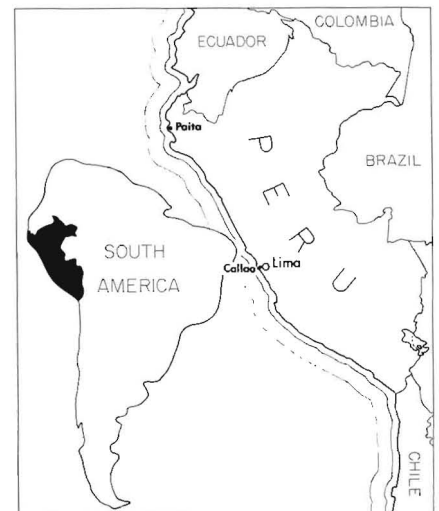
In choosing the members of the advisory panel, the Japanese Ministry selected representatives of several academic disciplines, from the press, and from Japan's International Cooperation Foundation. The composition of the panel and its broad mandate to hear views of those outside the fishing industry appears to indicate broad questions of future fishery policy, including the appropriate response to extensions of fishery jurisdictions, will be studied. (Source: *Suisan Shuho*.)

According to the NMFS Office of International Fisheries, the decision Japan's Government makes with regard to extensions of fishery jurisdictions will affect current U.N. Law of the Sea negotiations as well as U.S.-Japan bilateral fishery talks and Japanese fishery relations with other countries around the world. A new international fisheries regime will affect different sectors of the diverse Japanese fishing industry in different degrees. While the fishing operations of major Japanese fishing companies may suffer, for example, the importing and marketing operations of the same companies may benefit. A flow of Japanese capital to coastal nations in both developed and developing nations, which desire to expand or revitalize their domestic fishing industries, may be stimulated

by these changes. Foreign investment and an international transfer of technology may lead to shifts in producing and trading patterns, to changes in the dietary patterns of Japanese consumers, and in the marketing of overseas fishery products in Japan.

Japan, Peru Sign Fish Cooperation Agreement

Japan and Peru signed a Technical Cooperation Agreement in Tokyo on 7 June 1976, providing for the development of food fish for the domestic Peruvian market. The Agreement details Japanese cooperation in the construction of a fisheries processing center at Callao, near Lima (see map), at a total estimated cost of 900 million yen (US\$9 million). This will be the first research center in Peru dedicated solely to fish processing.



Peru will disburse a total of 600 million yen (US\$6 million), or approximately 65 percent of the total cost by providing a 40,000 square meter location and a 6,700 square meter building. The Japanese grant, which will be financed through the budget of the Japanese Foreign Ministry through the Japan International Cooperation Agency (JICA), will amount to 300 million yen (US\$3 million), or approximately 35 percent of the total cost. This will include pilot plants for freezing, canning, and fish paste processing, laboratory equipment and the assignment of Japanese scientists, engineers, and

other experts. Minoru Okada, former director, Utilization Division, Tokai Regional Fisheries Research Laboratory of Japan Fisheries Agency, has already been assigned to provide technical assistance in building the Center.

The Center will have the following three functions: 1) technological development of fish processing for human consumption; 2) training of Peruvians in fish processing technology; and 3) marketing and distribution surveys. Organizationally, the Center will have four divisions: 1) test processing; 2) scientific research) 3) training; and 4) marketing. The test processing division will have four laboratories (freezing, canning, fish paste, and salted/dried fish) with a possible addition of two laboratories (fish oil and seaweed) in the future.

Two Japanese prefeasibility survey teams were sent to Peru (January and October 1974) to provide technical assistance in planning the construction of the Center. This is one of the projects commemorating 100 years of friendship between Japan and Peru. In April 1975, agreed minutes were signed during a visit by a Japanese feasibility study team to Peru. The domestic economic situation, however, had prevented Peru from signing a formal agreement until recently. Source: U.S. Embassy, Tokyo.)

According to the NMFS Office of International Fisheries, in an effort to increase Peru's production of food fish, the Peruvian Government corporation, Empresa Publica de Servicios Pesqueros (EPSEP) formed a joint venture company, Challwa del Peru, S.A. (CHALLPESA), in December 1973. CHALLPESA is 34 percent owned by EPSEP, and 66 percent by three Japanese fishing companies, Mitsubishi Corporation (33 percent), Taiyo Gyogyo Kabushiki Kaisha (25 percent), and Nihon Hogeï Kabushiki Kaisha (8 percent). Experimental fishing was carried out as a result of an agreement between the Peruvian Government and another Japanese joint venture company, Ballenera del Kinkai del Peru.

CHALLPESA has two processing plants; the first is located in the fishing complex at Paita and the second in Callao. The Paita plant processes blocks of hake fillets and hake paste (surimi). The plant is presently sup-

plied by a 200-GRT vessel servicing a number of catcher boats. Plans call for the eventual expansion of the Paita plant to process 120,000 t of hake annually.

In Callao, CHALLPESA will build a cannery with a daily capacity of 2,000 cases of bonito, menhaden, jack mackerel, and club mackerel. In addition, CHALLPESA has purchased the sausage plant formerly operated by the Ballenera de Kinkai company and a cannery formerly owned by a Peruvian subsidiary of Taiyo. The sausage plant has the capacity to produce 20,000 units a day and the cannery can produce 800 cases a day. The plants are supplied by a 700-GRT vessel, *Challwa I*.

TAIWAN'S LOBSTER FISHERY REVIEWED

The lobster industry of Taiwan is catching, processing and marketing two distinct types of lobster; the spiny lobster *Panulirus* sp. and the slipper lobster (*Ibiscus ciliatus*).

Taiwan's spiny lobster includes six species: *Panulirus japonicus*, *P. dasyopus*, *P. penicillortus*, *P. versicolor*, *P. ornatus*, and *P. longipes*. Spiny lobsters in Asian waters are found along the eastern coasts of Japan and Taiwan, and off southeast Asian countries. In Taiwan they are found along the eastern and southern coasts from Suao in the north to Luichiu in the southwest and in the Pescadores (Fig. 1). They are caught near the shore on rocky bottom in shallow water.

The spiny lobster is caught mainly by independent divers who also bring in incidental catches of abalone. Small

Figure 1.—Taiwan and the Pescadores.



quantities are caught by fishermen aboard powdered 5-gross-ton boats using tangle nets. The catch is kept alive in tanks or cages until it is marketed.

Lobsters are harvested the year-round in Taiwan, but the catches are largest in northern Taiwan from March to October and in southern waters, from October to March. Spiny lobsters are caught within Taiwan's 3-mile fishery zone. No lobster smaller than 20 cm in size may be retained. Annual catches fluctuate considerably. In 1974, a total of 163 metric tons (t) was harvested, more than in most years, but less than in the record year of 1971 (Table 1).

Table 1.—Taiwan's spiny lobster and slipper lobster catches in metric tons, 1965-1974.

Year	Quantity	
	Spiny lobster	Slipper lobster
1965	113	—
1966	115	786
1967	89	957
1968	143	1,372
1969	126	1,877
1970	161	1,918
1971	185	2,103
1972	120	3,709
1973	124	1,968
1974	163	2,199

Source: Ocean Fishery Development Administration, Taiwan, 1975.

Almost the entire spiny lobster catch is consumed in Taiwan, although a nominal amount is shipped to Japan. Japan's import statistics for 1974 show 3 t of live lobster imports from Taiwan. Because the spiny lobster is marketed live, shipping beyond Japanese ports is virtually impossible.

In contrast to the spiny lobster industry, Taiwan's slipper lobster industry is primarily targeted at exporting frozen lobster tails to the United States. The slipper lobster is an incidental catch of Taiwan's trawl fishermen operating in the East and South China Seas.

From 1966 through 1972 the catch of this species (Table 1) continued to increase rapidly each year. In 1972, it almost doubled, but the year after it decreased below the 1971 level. The reasons for these fluctuations are not known.

Immediately after being caught, the

slipper lobsters are frozen whole on board the fishing vessels. Once landed, lobster is either transported in refrigerated trucks to Kaohsiung and Keelung fish markets for public auction, or is taken directly to freezing plants. In the freezing plants, located near Kaohsiung and Keelung, the lobster are partially thawed, headed, deveined, and graded into four classes based on size. The graded lobster tails are frozen, glazed, and packed individually in 5-10 lb boxes, which are then packaged in 50 lb export cartons. The processed tails are inspected by a

Taiwanese Government official from the Bureau of Commodity Inspection and Quarantine and are shipped in refrigerated containers with a capacity of 10 to 20 t each, at a temperature of -18°C . The tails are exported to the main seafood freezing plants in Kaohsiung and Keelung, and by several trading companies in Taipei. Members of the Taiwan Frozen Seafood Exporter's Association set minimum prices of frozen lobster meat and tails for export. Exporters obtain tails through public auctions or from their own trawl operations.

Taiwan's Government maintains quality standards for processing and freezing shrimp and lobster issued by the National Bureau of Standards, Ministry of Economic Affairs. (Source: Ocean Fishery Development Administration, Taiwan, 1975.)

The United States imported 917 t of lobster from Taiwan worth \$5.8 million in 1975. This was a 17 percent increase in quantity and a 36 percent increase in value over the 1974 totals, which were 805 t and \$3.7 million respectively. (Source: *U.S. Import Statistics*, 1974 and 1975.)

GROWTH SEEN FOR TAIWANESE FISHERIES

The annual fisheries catch of Taiwan increased from 16,862 metric tons (t) in 1945 to 770,550 t in 1975, or almost by forty-six times (Fig. 1). The average annual growth rate during these three decades was 10 percent. The Fishery Development Plan, recently announced by the Taiwan Ministry of Economic Affairs, provides for a fisheries catch amounting to 966,000 t by 1981. The average annual growth rate during this 6-year period is forecast at 4.5 percent.

From 1945 to 1973, the fisheries catch increased continuously each year (except for a small decrease in 1949);

the average increase during these 28 years was 25,100 t each year. In 1974, however, Taiwan's catch declined below the 1973 level. This was the first decline in Taiwan's fisheries catch in twenty-five years. The decline was caused by reduced high-seas and outer coastal fishing operations, two sectors where a substantial number of vessels remained idle because of high fuel costs, depressed market conditions, and excessive inventories resulting from the record 1973 catch. In the high-seas fisheries, operations were also affected by restrictions on foreign

fishing off the coasts of other maritime countries. In 1975, on the other hand, the fisheries catch again increased (by 10.4 percent) and reached 770,500 t, representing an increase of almost 73,000 t over the 1974 catch of 697,725 tons (Table 1).

The large fluctuations in the annual fisheries catch, ranging from +33 percent to -9 percent, are shown in Figure 2 and Table 1. It should be noted that catch fluctuations became smaller in the 1960's and early 1970's indicating a more stable fishery. The 1974 decline, explained above, may be a harbinger of other similar declines in the future as extended jurisdictions

Figure 1.—Taiwan's fisheries catch (in 1,000 metric tons) in historic perspective, 1945-81. Sources: "Taiwan Agricultural Yearbook," 1975; *China Post*.

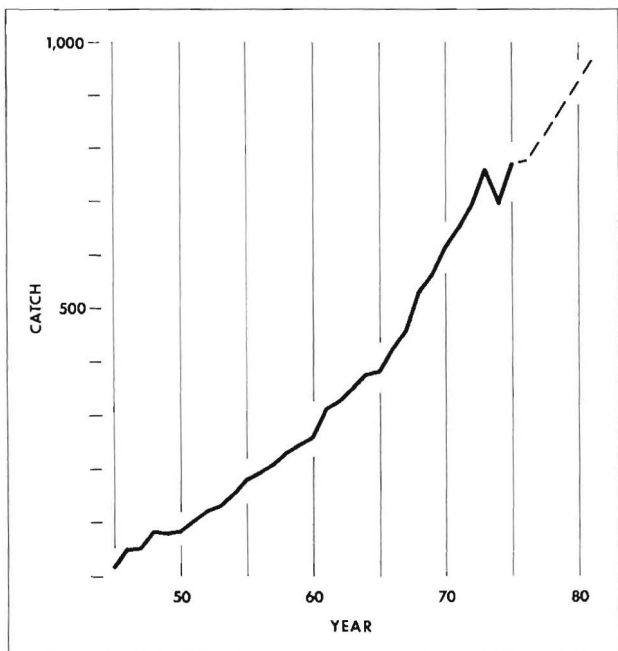


Figure 2.—Annual changes in Taiwan's fisheries catch (in percent of previous year), 1947-81. Sources: "Taiwan Agricultural Yearbook," 1975; *China Post*.

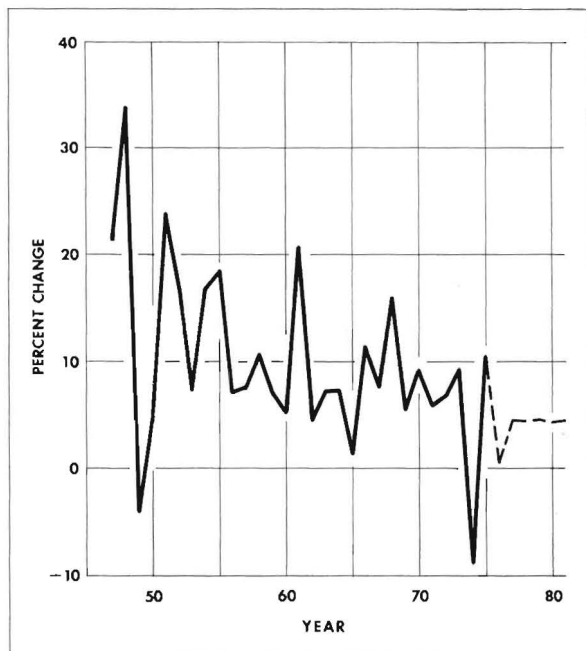


Table 1.—Taiwan's fisheries catch in historic perspective, 1945-1981.

Year	Quantity ¹	Change (%) ²	Year	Quantity ¹	Change (%) ²
1945	16.9		1964	376.4	7.3
1946	51.5	204.7	1965	381.7	1.4
1947	52.5	21.4	1966	425.3	11.4
1948	83.5	33.6	1967	458.1	7.7
1949	80.4	-3.9	1968	531.0	15.9
1950	84.2	4.7	1969	560.8	5.6
1951	104.2	23.8	1970	613.0	9.3
1952	121.7	16.8	1971	650.1	6.0
1953	130.6	7.3	1972	694.2	6.8
1954	152.5	16.8	1973	758.4	9.2
1955	180.6	18.4	1974	697.7	-8.7
1956	193.4	7.1	1975	770.5	10.4
1957	208.1	7.6	1976 ³	775.0	0.6
1958	230.0	10.5	1977 ³	810.0	4.5
1959	246.3	7.1	1978 ³	846.0	4.4
1960	259.1	5.2	1979 ³	886.0	4.7
1961	312.4	20.6	1980 ³	924.0	4.3
1962	327.0	4.7	1981 ³	966.0	4.5
1963	350.7	7.2			

¹Quantity in 1,000 metric tons.

²Increase or decrease (—) in percent of previous year.

³Fishery Development Plan forecasts.

Sources: *Taiwan Agricultural Yearbook*, 1975, for 1945-1974 data; and the *China Post*, for 1975 data and for 1976-1981 estimates.

and diminishing world fishery resources take their toll. The Taiwanese Government has projected a large leveling off of its fisheries catch during the next 6 years to an average growth rate of 4.5 percent each year (Fig. 2).

DANES EXPAND WHITING QUOTA

The Danish Government announced on 1 September that it would increase its quota of whiting to 114,000 metric tons (t) in response to rising demands by the fishing industry. The Northeast Atlantic Fisheries Commission (NEAFC) had initially set the Danish 1976 whiting quota at 74,000 t, but the Danes announced in early spring that they were increasing it to 94,000 t and have now raised it an additional 20,000 t, bringing the total allocation to 114,000 t.

The Danish Government officially objected to the NEAFC whiting quota when allocations were established and was therefore free to exceed the quota under the rules of the Commission. The Danish haddock and cod quotas were also almost filled, but the Government had not discussed increases in those quotas. The whiting quota was 96 percent filled when the decision to increase it was made; the 1976 Danish haddock quota (40,350 t) was 85 percent filled and the cod quota (43,700 t) about 80 percent filled, as of August.

Fisheries Minister Poul Dalsager was under heavy pressure from the fishing industry to increase either the whiting quota or Government assistance to the fishing industry, and chose to expand the quota. Whiting is a fish caught as a by-catch for reduction to fish meal; it comprises approximately 20 percent of the directed fisheries for sprat and Norway pout, the two major species of the Danish reduction fishery.

According to the NMFS Office of International Fisheries, Danish fishermen were pleased by the expanded quota in response to what they feel is

an abundant year for whiting and industrial fish. Fisheries Minister Dalsager explained that it was difficult to set catch quotas in advance in areas where the stocks fluctuate so rapidly. Such action cannot, however, be beneficial to the international position of the Northeast Atlantic Fisheries Commission, which initially set the quotas. In a related development, Scottish fishermen threatened to exceed their quota for haddock unless the United Kingdom pressed for a 50-mile fisheries limit within the Common Market. (Source: *Berlingske Tidende*.)

Russia Produces New Fishing Vessel Classes

Two fishing vessel classes with similar names but different purposes, the *Piatdesiat Let SSSR* and the *Piatidesiatiletie SSSR*, went into serial production in the Soviet Union in the early 1970's. Both classes were named in honor of the fiftieth anniversary of the USSR, a celebration which took place in 1967. *Piatdesiat Let SSSR* means "Fifty Years of the USSR", while *Piatidesiatiletie SSSR* means "The Fiftieth Year of the USSR".

The *Piatdesiat Let SSSR*, which became operational in 1973, is a three-deck refrigerated transport vessel built at the Kommunar's Shipyard in Nikolaev on the Black Sea. This vessel is the prototype of the new *Piatdesiat Let SSSR* class, which was formerly called *Beringov Proliv* class. It is designed to transport fish and fishery products from the fishing grounds, and to supply trawlers with fuel, fresh water, and food. The vessel's engines operate automatically

and all loading and unloading operations are mechanized. Containers can also be carried on board.

A second vessel in the series, the *Druzhba Naroda*, was built in 1973. Dozens of vessels of this class are planned for construction, which is reportedly to last until 1990. The new transports will ply the waters between the ports of the European USSR and those of the Soviet Far East.

The other new class, *Piatidesiatiletie SSSR*, formerly *Pos'et* class, is a series of five fish-meal and fish-processing factory baseships under construction at the Admiralteiskii Shipyard in Leningrad. This class is exceeded in size and capacity only by the *Vostok*, the flagship of the Soviet fishing fleet. Vessels of this class are designed to operate with a fleet of catcher vessels and to assist in the development of presently underutilized marine species. The major productive capacity of the class is geared for the reduction of fish into meal and oil. Two vessels in the series have so far been built, *Piatidesiatiletie SSSR* and *Vasilii Chernyshev*.

<i>Piatdesiat Let SSSR</i>	Specifications	<i>Piatidesiatiletie SSSR</i>
18,500-19,630 DPL	Displacement	26,500-29,100 DPL
172.1 m	Length	197.3 m
23.0 m	Width (beam)	26.4 m
8.1 m	Draft	7.8 m
13,083 GRT	Gross register tons	18,454 GRT
11,300 DWT	Deadweight	13,041 DWT
16,200 t	Storage capacity	18,000 t
	Processing capacity	750 t/day total 600 t/day fishmeal and oil
19 knots, max.	Speed	14.5 knots
6DKRN74/160-3	Engine number	6DKRN74/160-2
diesel	Engine type	diesel
11,600	Horsepower	9,000
	Engine rpm	115
7,100 m ³	Fuel capacity	8,800 tons
90 days	Endurance	30 days
25,000 miles	Range	
	Crew	500
Air-refrigeration plant can maintain temp. at -28°C; anti-pollution equipment	Special equipment	

Foreign Fishing Boat Seizures Increase Off U.S. Coastline

The number of foreign vessels seized off U.S. coasts has increased dramatically since 1967. In that year, the U.S. Coast Guard began enforcing a 9-mile Contiguous Fishing Zone (CFZ), which was legislated by Congress in October 1966. Foreign vessels fishing in the CFZ are subject to seizure and prosecution under the Bartlett Act (16 U.S.C. 1081-1086). The vessel and its entire gear and cargo may be forfeited, while the captain may be imprisoned up to one year or fined up to \$100,000, or both. Often, however, seizures for violations of the Bartlett Act are not brought to trial; instead, settlement in the form of a fine is decided upon by the two parties. The defendants plead no contest, a judgment is entered by the court, and the case is closed with payment of the agreed fine.

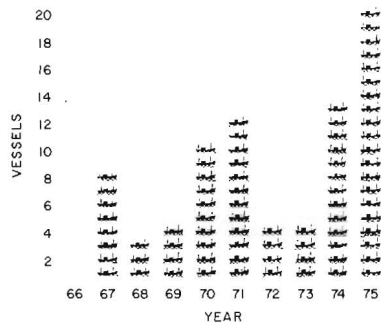


Figure 1.—Foreign fishing vessels seized by the United States, by number and year, 1966-75. Source: Division of International Fisheries Analysis, NMFS, NOAA, U.S. Department of Commerce.

Between 1967 and 1973, the number of foreign fishing vessels seized each year by the United States fluctuated between 3 and 12; in 1974, however, 13 vessels were seized, and by the end of 1975, the number had reached 20 (Fig. 1). This sudden increase in vessel seizures resulted partly from stricter enforcement of the CFZ by National

Marine Fisheries Service (NMFS) enforcement agents and Coast Guard personnel. Another important factor, however, was the initiation of seizures for Continental Shelf Fishery Resource (CSFR) violations.

The Bartlett Act, besides CFZ provisions, also prohibits foreign fishermen from intentionally taking and retaining lobster, crab, and other creatures of the Continental Shelf¹. The CSFR violations carry the same penalties as CFZ violations, but were not enforced strictly until late 1974. At that time, the U.S. Government issued warnings to the captains of foreign vessels fishing off the coasts of the United States. According to CSFR

¹The Bartlett Act defines Continental Shelf fishery resources as "the living organisms belonging to sedentary species; that is to say, organisms which, at the harvestable stage, either are immobile on or under the seabed or are unable to move except in constant physical contact with the seabed, or the subsoil of the Continental Shelf."

Table 1.—Foreign fishing vessels seized off the U.S. coasts by country, number of vessels, and fines levied in U.S. dollars; 1967-1976.

Country	Total	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967
U.S.S.R.											
Number	10	1	1	1	—	2	2	—	—	—	3
Fines	1,145,000	410,000	100,000	250,000	—	250,000	100,000	—	—	—	35,000
Japan											
Number	21	2	5	2	1	2	1	4	3	—	1
Fines	3,217,000	580,000	1,178,000	750,000	230,000	180,000	115,000	160,000	19,000	—	5,000
Canada											
Number	28	—	2	6	2	—	5	5	1	3	4
Fines	26,588	—	1,000	6,000	—	—	5,755	10,589	419	1,105	1,720
W. Germany											
Number	1	—	—	—	—	—	—	1	—	—	—
Fines	20,000	—	—	—	—	—	—	20,000	—	—	—
Cuba											
Number	8	1	2	1	—	—	4	—	—	—	—
Fines	90,500	40,000	—	25,000	—	—	25,500	—	—	—	—
Bulgaria											
Number	2	—	1	1	—	—	—	—	—	—	—
Fines	550,000	—	425,000	125,000	—	—	—	—	—	—	—
Romania											
Number	1	—	—	1	—	—	—	—	—	—	—
Fines	125,000	—	—	125,000	—	—	—	—	—	—	—
Mexico											
Number	1	—	—	1	—	—	—	—	—	—	—
Fines	3,900	—	—	3,900	—	—	—	—	—	—	—
Italy											
Number	2	—	2	—	—	—	—	—	—	—	—
Fines	65,000	—	65,000	—	—	—	—	—	—	—	—
Poland											
Number	4	—	4	—	—	—	—	—	—	—	—
Fines	1,245,000	—	1,245,000	—	—	—	—	—	—	—	—
Rep. of Korea											
Number	3	1	1	—	1	—	—	—	—	—	—
Fines	1,035,000	530,000	415,000	—	90,000	—	—	—	—	—	—
Spain											
Number	2	1	1	—	—	—	—	—	—	—	—
Fines	125,000	100,000	125,000	—	—	—	—	—	—	—	—
Taiwan											
Number	1	—	1	—	—	—	—	—	—	—	—
Fines	205,000	—	205,000	—	—	—	—	—	—	—	—
Grand total											
Number	84	6	20	13	4	4	12	10	4	3	8
Fines	7,852,988	1,660,000	3,759,000	1,284,900	320,000	430,000	246,255	190,589	19,419	1,105	41,720
Average fine per vessel	93,488	276,666	187,950	98,838	80,000	107,500	20,521	19,059	4,855	368	5,215

¹Data through 4 May, 1976; 1 Japanese vessel had not been fined as of that date. Source: Law Enforcement Division, F35, National Marine Fisheries Service, NOAA, U.S. Department of Commerce, Washington, D.C.

regulations, creatures of the Continental Shelf must be returned to the sea immediately after they are brought on board a vessel and retrieved from the nets. All such catch, no matter how small, must appear in the vessel's log-book.

The first seizures for CSFR violations occurred in early 1975. Penalties have been stiff; one Bulgarian vessel, for example, was fined \$425,000 for lobster retention. Fines for vessel seizures in general have become progressively higher since 1967. In that year, the average penalty per vessel was only \$5,215. In 1970, the figure increased to \$20,521, and by 1975 it had reached \$187,950. (For complete statistics on seizures and fines, see Table 1.)

According to the NMFS Office of International Fisheries, the average annual fines do not show the wide fluctuation in the penalties paid by individual vessels from various countries. For example, in 1975 two Canadian vessels were seized and fined \$1,000, or a vessel average of \$500. That same year, four Polish vessels were fined \$1,245,000 for an average of \$311,250 each.

The amount of the fine depends, to a large extent, on the circumstances of the violation. The U.S. Coast Guard and NMFS fishery enforcement agents had noted several infractions by Polish vessels before the actual seizures took place in 1975. Inspections showed that Polish vessels were fishing in a river herring closure area prohibited to them under the terms of the U.S.-Poland Mid-Atlantic Bilateral Agreement. Also, Polish vessels had been reported fishing for herring in the Gulf of Maine, although Poland had no catch quota there under the International Commission for Northwest Atlantic Fisheries (ICNAF).

Canadian vessels are most often seized off U.S. coasts for the violation of international conventions protecting Pacific halibut, sockeye salmon, and pink salmon. (U.S. vessels are also governed by these conventions.) Fines for such seizures are lower because they represent only the value of the illegal fish catch on board, rather than the value of the entire vessel with its gear and cargo, which is the penalty for violations of the Bartlett Act. If a vessel is seized for a second or third

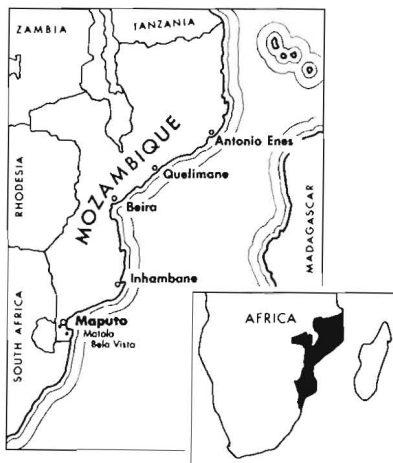
offense, the fines can go higher, perhaps eventually leading to confiscation of the vessel. However, Canadian and U.S. fishing captains have not in the past been multiple offenders, and the fines have remained relatively low.

The Fishery Conservation and Management Act of 1976 (P.L. 94-265) was signed by President Gerald R. Ford on 13 April 1976 and goes into effect on 1 March 1977. Under this Act, the catch quotas allocated to individual foreign nations fishing within 200 miles of U.S. coasts will be determined, in part, by the cooperation they have shown U.S. fishery enforcement programs in the past. Foreign fishermen with a poor record of cooperation can expect to have their quotas curtailed at least to some extent by this measure.

Mozambique Reports Shrimp Developments

New Mozambique regulations have increased prices for most grades of shrimp sold in both domestic and export markets. Some prices were reduced for shrimp sold heads-off for export. The higher shrimp prices were implemented as the result of increasing fuel and labor costs.

The Mozambique Department of Commerce on 6 January 1976 set new shrimp prices for domestic sales effective in the Districts of Maputo (formerly Lourenco Marques), Bela Vista, Matola, Gaza, Inhambane, and Beira. The new domestic retail shrimp prices for whole shrimp varied from a high of US\$3.33 per kg for the jumbo grade to a low of US\$1.17 per kg for the very small grade (Table 1).



A second notice from the Mozambique Department of Commerce on 14 January 1976 also changed the FOB minimum export prices for heads-on and heads-off shrimp (Tables 2, 3). Shrimp for export fall into the first five grades only; the Government does not permit the exportation of the last two grades (2 and 3) of very small shrimp (shrimp with a count of over 101 per kg). Minimum export prices are set for those Mozambique marine ports which

Table 1.—Mozambique whole shrimp prices (US\$/kg) by grade on domestic markets, 1976.

Grades	Count per kg	Length in cm ¹	Price ²	
			Wholesale	Retail ³
Jumbo	< 14	>20	3.00	3.33
Large	14-25	18-20	2.50	2.83
Medium	26-40	16-18	2.33	2.67
Small	41-60	14-16	1.83	2.17
Very small (1)	61-100	12-14	1.50	1.83
Very small (2)	101-400	8-12	1.17	1.50
Very small (3)	>400	< 8	0.83	1.17

¹The length of the shrimp is measured from the telson to the rostrum. For headless shrimps the domestic sale prices may be increased by 50 percent.

²Prices are calculated at an exchange rate of 30 Mozambique escudos equals US\$ 1.00.

³The Mozambique Government allows retailers to charge 10 escudos per kg (US\$0.33) over the wholesale price.

Table 2.—Mozambique minimum export prices (US\$/kg, FOB) for heads-on shrimp, 1976, compared with 1975.

Grade	Count per kg	Price ¹	
		1976	1975
Jumbo	< 14	4.66	4.00
Large	14-25	3.50	2.83
Medium	26-40	3.16	2.50
Small	41-60	2.66	2.00
Very small (1)	61-100	2.33	1.66
Very small (2)	Exports not permitted		
Very small (3)	Exports not permitted		

¹30 escudos = US\$1.

Table 3.—Mozambique minimum export prices (FOB) for heads-off shrimp.

Grade	Count per kg	Prices ¹ (US\$/kg)			
		White shrimp		Brown shrimp	
		1976	1975	1976	1975
Jumbo	<23	5.33	5.00	6.00	—
Large	23-33	4.66	4.33	—	—
Large	34-44	4.33	5.00	4.17	—
Medium	45-55	4.00	3.66	—	—
Medium	56-66	3.66	3.33	3.67	—
Small	67-88	3.33	3.00	—	—
Small	89-110	3.00	2.67	3.00	—
Very small	111-132	2.67	2.50	—	—
Very small	133-154	2.50	2.33	2.50	—

¹30 escudos = US\$1

Source: U.S. Embassy, Maputo.

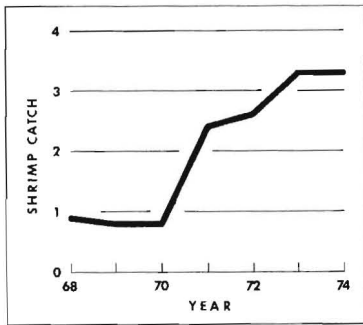


Figure 1.—Mozambique shrimp catch, 1968-1975, in thousands of metric tons. Source: FAO, "Yearbook of Fishery Statistics," various years.

Table 4.—Japanese and United States imports of Mozambique shrimp by quantity (t) and value (US\$1,000) 1974-75.

Country, Import	1975		1974	
	Quantity	Value	Quantity	Value
Japan				
Shrimp (frozen)	989.9	3,909.5	485.3	1,901.8
U.S.				
Shrimp (frozen) ¹	0.0	0.0	0.6	2.4
Other ²	13.9	18.0	21.4	25.9
Total U.S.	13.9	18.0	22.0	28.3

¹Shell-on.

²Other shellfish includes various shellfish pastes and sauces, but excludes rock lobster imports.

³Based on the exchange rate of US\$1 = 303 yen, valid on 31 December 1975.

⁴Based on the exchange rate of US\$1 = 299.8 yen, valid on 31 December 1974.

Source: Japanese Ministry of Finance, *Japan Exports and Imports 1974, 1975*, and U.S. Department of Commerce, Bureau of the Census.

are reached by international shipping. For smaller ports, reached only by coastal vessels, a deduction of US\$0.17 per kg is allowed.

SHRIMP CATCH

Mozambique's 1974 shrimp catch of 3,300 metric tons (t) represents a 270 percent increase over the 900 t harvested in 1968 (Fig. 1). Catch data for 1975 is not yet available.

SHRIMP EXPORTS

Japanese imports of frozen shrimp from Mozambique increased significantly in 1975. In 1974, Japan imported 785 t of Mozambique shrimp worth US\$1.9 million. By 1975, the quantity of shrimp imports increased to 990 t worth US\$3.9 million. United States imports of Mozambique shrimp are negligible (Table 4).

OTHER DEVELOPMENTS

The new Mozambique Government has begun to reorganize the country's fishing industry. Cooperatives have

reportedly been established and administrative boards have been appointed to manage two of the largest fishing companies in Mozambique, IMPESCAL and COPESCA, both of which were nationalized by the FRELIMO Government. Due to reports of activity by Mozambique gunboats, many of the South African shrimp trawlers, which operated off Mozambique, have withdrawn from that fishery and are being converted for lobster fishing along the South African coast.

The first 8 of 25 new fishing vessels ordered from Brazil were to be delivered to Mozambique last April. The vessels have reportedly been ready since July 1975, but their delivery was delayed due to negotiations with

Mozambique authorities and the changing political situation there. In addition, 17 shrimp trawlers are now being built at the INCONAV Shipyard in Niteroi, Brazil. The 31 meter, all-purpose trawlers are powered by 1,200 hp engines and equipped with radar, echo sounders, and refrigerated holds. The vessels will operate off Quelimane and Antonio Enes (see map).

The catch will be deep-frozen in a cold storage plant to be built near Beira. The new vessels will significantly increase the capacity of Mozambique's shrimp fleet. ARPEM, the Portuguese company, which ordered the 17 new shrimp trawlers, previously operated a fleet of only three wooden and three steel trawlers from Mozambique ports.

Thai Shrimp Fishery, Exports Show Growth

CATCH

In the last 20 years Thailand's shrimp catch has increased dramatically (Fig. 1), according to data from the "Yearbook of Fishery Statistics" of the United Nations Food and Agriculture Organization. From 13,500 metric tons in 1959, the Thai shrimp catch soared to a peak of 107,500 metric tons in 1973. A 96,200-metric ton catch was recorded in 1974.

PRICES

Shrimp prices rose on the Bangkok market during the first half of 1976. Tiger shrimp on the Bangkok market rose gradually from a maximum large

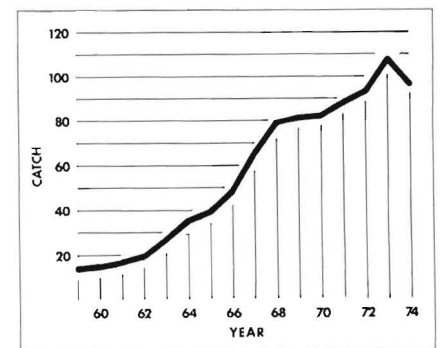


Figure 1.—The Thai shrimp catch in 1,000 metric tons, 1959-1974. (Source: FAO "Yearbook of Fishery Statistics.")

shrimp price of \$5.50 per kilogram to \$5.70 per kilogram, king shrimp from \$4.00 to \$5.00, pink shrimp from \$3.75 to \$4.75, and white shrimp went from a price of \$4.90 to \$5.50 per kilogram (Table 1).

Table 1.—Thai monthly marine shrimp prices (in US\$/kg) at Bangkok fish market, Jan.-July 1976.

End of month		Tiger			White			King			Pink		
		L	M	S	L	M	S	L	M	S	L	M	S
Jan.	Min.	5.00	3.50	1.75	4.00	2.75	1.00	3.50	1.50	1.00	3.00	1.00	0.50
	Max.	5.50	4.50	2.25	4.90	3.25	1.75	4.00	2.00	1.50	3.75	1.40	0.80
Feb.	Min.	4.50	3.00	1.50	3.50	2.50	1.25	3.00	1.50	0.75	2.50	1.20	0.50
	Max.	5.00	3.50	2.25	4.00	3.25	1.75	3.75	2.00	1.25	3.00	1.40	0.80
March	Min.	5.10	3.50	1.75	4.30	2.25	1.10	3.50	1.75	1.15	3.25	1.30	0.75
	Max.	6.00	4.75	2.25	5.00	3.50	1.50	4.00	2.70	1.50	4.30	2.25	1.10
April	Min.	5.50	3.75	2.00	4.00	2.50	1.40	3.75	1.75	1.40	3.90	1.50	0.90
	Max.	5.90	4.50	2.50	4.90	3.50	1.75	4.40	2.25	1.50	4.25	2.00	1.25
May	Min.	5.00	3.50	2.00	4.65	3.00	1.25	4.00	2.00	1.50	4.00	1.75	0.75
	Max.	5.75	4.50	2.50	5.50	3.75	1.75	4.50	2.50	1.75	4.50	2.00	1.25
June	Min.	4.75	3.50	2.00	4.25	3.00	1.15	3.75	2.25	1.25	3.75	1.50	0.75
	Max.	5.70	4.50	2.40	5.10	3.75	1.70	4.75	2.75	1.75	4.70	2.15	1.25
July	Min.	5.25	3.50	2.25	4.00	2.50	1.10	4.00	2.50	1.25	3.75	1.75	0.75
	Max.	5.70	4.50	3.00	5.50	3.50	1.75	5.00	3.00	1.75	4.75	2.00	1.25

Source: American Embassy, Bangkok. Thai baht is converted to U.S. dollars at 20:1.

Table 2.—Thai monthly exports of fresh and frozen shrimps, prawns, and lobsters, 1976.

Month	Quantity				Value			
	U.S.	Japan	Other ¹	Total ²	U.S.	Japan	Other	Total
	Metric tons				US\$ million			
Jan.	75	947	299	1,321	0.4	5.2	0.4	6.0
Feb.	114	669	290	1,073	0.5	3.6	0.6	4.7
March	188	659	344	1,191	0.9	2.8	0.6	4.3
April	124	863	216	1,203	0.6	3.8	0.5	4.9
May	135	664	223	1,022	0.6	5.0	0.2	5.8
June	230	879	270	1,379	1.2	4.5	0.4	6.1

¹ Mostly to Hong Kong.

² Shrimp comprise the vast bulk of the total export figures.

Source: American Embassy, Bangkok.



EXPORTS

Thailand exported more than 1,000 metric tons (t) of shrimp each month during early 1976 (Table 2). Total exports fluctuated a little, going from 1,321 t in January to 1,379 t in June. In June, 230 t went to the United States, 879 t to Japan, and 270 t went to other destinations, mainly Hong Kong. According to official trade statistics, shrimp exports were worth \$31.8 million in the first half of 1976.

Table 3.—Thai shrimp exports in metric tons, 1957-1975.

Year	U.S.	Japan	Other	Total
1957	—	—	7	7
1958	—	—	39	39
1959	24	—	174	198
1960	20	—	922	942
1961	14	—	875	889
1962	131	42	1,106	1,279
1963	567	456	1,030	2,053
1964	413	1,079	1,922	3,414
1965	1,066	1,773	2,041	4,880
1966	1,381	3,621	2,880	7,882
1967	1,493	5,104	2,232	8,829
1968	1,720	4,248	1,322	7,290
1969	1,115	4,949	2,069	8,133
1970	1,152	3,643	1,626	6,421
1971	469	3,447	1,677	5,593
1972	1,260	3,864	1,601	6,725
1973	1,741	10,926	2,208	14,875
1974	1,588	6,577	2,086	10,251
1975	1,362	9,533	2,640	13,536

Source: Bank of Thailand Monthly Bulletin, April 1976.

Exports of Thai shrimp have also increased (Table 3). In 1964 Japan replaced the U.S. as the largest single customer for Thai shrimp. Since then, Thai exports to the United States and elsewhere, excluding Japan, have remained fairly constant. But since 1965,

Greece Reports 1975 Fish Catch Decline

The total Greek fisheries catch in 1975 was 98,000 metric tons (t), or 17 percent less than the 117,000 t caught in 1974. Declining catches in the Atlantic, Mediterranean, outer coastal, and coastal fisheries were due to increasingly limited fishing grounds and stocks. The inland water fishery, consisting of 15 lakes and 50 lagoons, was the only sector where the catch increased, primarily because of expanded trout culture (Table 1).

Total value of the 1975 fisheries catch was US\$92.6 million compared to US\$119.4 million in 1974, or 22 percent less. Higher fuel costs and license fees, in addition to labor problems, led to losses in income of the average Greek fisherman in 1975.

UTILIZATION

Greek vessels land a wide variety of fish. The most important species are sea bream, European pilchard and mackerel. Attempts to introduce North Atlantic species into the Greek markets have met with only limited success. There is no significant fish processing industry in Greece and practically all domestic production is marketed fresh, chilled, or frozen. Small quantities of the catch are canned, but production does not exceed 500 t annually. Fisheries consumption declined from 13.2 kg per person in 1974 to 10.6 kg in 1975.

Japan has increased its imports of Thai shrimp from 1,773 t per annum to 9,533 t in 1975, a 438 percent increase. Thai shrimp exports, following the Japanese demand, have also increased since 1965, going from 4,880 t to 13,536 t in 1975.

Since 1973, Japan has continued its large purchases of shrimp and now imports about 65 percent of all Thai shrimp exports. The United States imports 13 percent of total Thai shrimp exports, and Hong Kong is the next largest importer. Smaller quantities go to Australia, Italy, the Netherlands, France, New Zealand, Canada, West Germany, and the United Kingdom. (Sources: American Embassy, Bangkok; Bank of Thailand Monthly Bulletin; FAO "Yearbook of Fisheries Statistics.")

Table 1.—Greek fish catch, by fishery in metric tons, 1974-1975.

Fishery	1975	1974	Percent change
Distant-water	23,900	28,900	-17.3
Mediterranean	3,600	6,000	-40.0
Outer coastal	46,000	54,000	-14.9
Coastal	12,000	16,000	-25.0
Inland water	6,500	5,000	+30.0
Subsistence	6,000	8,000	-25.0
Total	98,000	117,000	-17.0

¹ The total for 1974 does not agree with FAO estimated catch in Figure 1.
Source: *Alieia Fishing*.

TRADE

Because the catch is consumed domestically, exports are limited, with the exception of a few specialty products such as eels and shrimp. Fishery imports are used mainly for animal feed and have declined since 1971. In 1974, Greece imported 23,600 t of fishery products compared to 31,000 t in 1973.

FLEET

Approximately 25,000 small craft fish in coastal waters, using longlines, beach seines, and trammel nets. Most fishermen engaged in coastal fishing are subsistence fishermen, marketing little of their catch. The "mid-water" (outer coastal) fishery consists of a fleet of 750 small trawlers, purse seiners, and a few multi-purpose vessels. Half of the Greek landings are caught by the outer coastal fleet.

Table 2.—Greek fishery vessels sighted in sub-area 5 of ICNAF, by type and number of vessels, 1961-1975.

Year	Type of vessel ¹			Total	Type of vessel ²			Total
	Stern	Me- dium	Sup- port		Stern	Me- dium	Sup- port	
1968	—	1	—	1	—	1	—	1
1969	—	2	—	2	—	1	—	1
1970	—	2	—	3	—	1	—	1
1971	—	4	—	4	—	2	—	2
1972	—	3	—	3	—	2	—	2
1973	1	—	—	1	1	—	—	1
1974	2	—	—	2	1	—	—	1
1975	—	—	—	—	—	—	—	—

¹Figures are the sum of monthly sightings including duplicate sightings.
²Figures represent individual vessels sighted during the year, exclusive of duplication.
 Source: Law Enforcement Division, NMFS, NOAA, U.S. Department of Commerce.

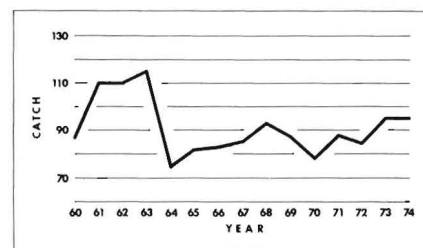


Figure 1.—Greek fisheries catch, 1960-1974, in 1,000 metric tons. Source: FAO "Yearbook of Fisheries Statistics," 1974.

CONCLUSION

The Greek fisheries catch has not expanded significantly during the past 10 years and continues to fluctuate without any discernible trend (Fig. 1). The economic crisis of the past 2 years, however, has severely hampered fishing operations, particularly for the distant-water fleet, while the Mediterranean offers little prospect for large and sustained catch increases. (Sources: *Alieia Fishing: OECD Review of Fisheries*, 1974.)

The distant-water fishery consists of about 50 larger vessels fishing in the Atlantic, mainly under bilateral agreements with coastal states. Bilateral agreements have been signed with Gambia, Guineau-Bissau, and Mauritania. Yet, as fishing zones are extended by African states and fishery stocks in adjacent water become depleted by larger, more modern fleets of other

countries, the Greek distant-water fleet finds itself at a competitive disadvantage. To remedy the situation, distant-water trawler owners have recently petitioned the Greek government for increased assistance and subsidies to modernize the fleet. Greek fishing off the U.S. Atlantic coast began only in 1968 and remains negligible (Table 2).

Foreign Fisheries Translations Printed

Following are abstracts of recent articles and papers translated by the NMFS Language Services Division. Copies of the full translations are available from the Language Services Division, F43, Office of International Fisheries, NMFS, NOAA, U.S. Department of Commerce, Washington, DC 20235:

"Nichiro Joins in Krill Harvesting." According to an article in *Suisan Shuho*, No. 771, 25 May 1976, the giant Nichiro Gyogyo Company is planning to start Antarctic krill harvesting in the fall. Nichiro harvested about 10,000 metric tons (t) of shrimp (*Penacopsis akaebi*) in the northern seas annually through 1972. The company canned this krill-like tiny shrimp for marketing. This experience makes the company confident in the successful processing of krill. Last fall the four largest Japanese fishing companies (Taiyo, Nippon Suisan, Nichiro, Kyokuyo) all harvested krill in the Antarctic Ocean.

"Japanese Fishing Industry Use of Fuel Oil." An article in *Suisan Shim-*

bun, No. 3710, 31 March 1976, reports that the Japanese fishing industry used 5,500,000 kl of fuel oil in 1975. The eleven major companies account for 1,186,000 kl or 22 percent of the total. The small and medium-sized companies together with coastal fishermen used the remaining 4,314,000 kl. The following table shows the account of fuel used by the major companies:

Taiyo	442,000 kl
Nippon Suisan	270,000
Nichiro	130,000
Kyokuyo	130,000
Hoko Suisan	50,000
Hokuyo Suisan	46,000
Hokkaido Gyogyo Kosha	41,000
Hakodate Kokai	26,000
Hokoku Suisan	25,000
Shinsei Suisan	14,000
Nippon Hoge	7,000
Total	1,186,000 kl

"Questions of Ogenesis of Atlantic Longfin Squid (*Loligo pealei* Les.) of Georges Bank." This article by P. N. Burukovskii and A. N. Vovk, found in the *Archive of Anatomy, Histology, and Embryology (Arkhiv anatomii gistologii, i embriologii)*, Vol. 66, Issue 5, 1974, pp. 44-50, has been translated by the Multilingual Services Division of the Department of the Secretary of State of Canada. It describes the

development of the gonads in female *Loligo pealei* squid. The development phases and disposition of oocytes and the gonad structure are also discussed. A supposition is made on the monocyclic nature of the squid and a scale for determining gonad maturity in females is also presented.

"Whaling Season Begins." An article in *Suisan Shuho*, No. 711, 25 May 1976, reports that the newly formed Japanese whaling company, Kyodo Hoge, had begun whaling. The 23,086 t mothership No. 3 *Kyokuyo Maru* reportedly sailed from Yokohama on 24 May for the whaling grounds near the Hawaiian Islands. *Shonan Maru* and eight other catcher boats were to rendezvous with the mothership at the grounds to form a 10-vessel fleet. They planned to catch 578 North Pacific Bryde's whales and 1,497 sperm whales during the season. Their processing plan was as listed below.

	Bryde's whales	Sperm whales
Oil	1,156 t	5,000 t
Frozen meat	4,046 t	2,290 t
Meal	87	200
Other	nil	3
Total	5,289 t	7,493 t

"Japanese Fish Catches Within 200 Miles of Foreign Shores." An article in *Suisan Shimbum*, No. 3515, 14 April 1976, discusses the 1974 Japanese fish catches within 200 miles of foreign shores. According to the latest available Japanese Government catch statistics, in 1974 Japan caught, 4,477,000 t of fish in such waters. This figure represents a 79,000 t decrease from the

1973 catch of 4,566,000 t. Reduced catches from the waters near the United States and the Soviet Union account for this decline. Due to price increases, the 1974 catch was worth 511.7 billion yen (US\$1.54 billion), while the larger 1973 catch was worth 420.2 billion yen (US\$1.26 billion). The following table shows the catches and values by ocean areas:

Area	1973		1974	
	Catch	Value ¹	Catch	Value ¹
Pacific (northern)				
Bering Sea and North Pacific	2,191.8	1,125.6	1,909	1,178
Sea of Okhotsk (northern)	428.1	254.7	622	353
Sea of Okhotsk (southern)	700.9	352.5	632	547
Sea of Japan (northern)	227.0	221.8	269	314
Sea of Japan (southern)	18.4	30.9	18	54
Yellow Sea & East China Sea	363.2	545.8	373	728
Subtotal	3,929.4	2,531.3	3,823	3,174
Pacific (middle)	199.3	517.6	264	862
Pacific (southern)	92.4	327.7	86	271
Atlantic (northern)	46.3	74.1	40	121
Atlantic (middle)	127.7	274.2	130	352
Atlantic (southern)	134.5	341.9	105	203
Indian Ocean	26.7	135.1	29	134
Grand total	4,556.3	4,201.9	4,477	5,117

¹ Values are listed in 100 million yen (US\$333,000).

Cuban Fishermen Fined by Bahamian Court

Bahamian authorities arrested 17 Cuban fishermen south of Andros Island on 30 August. After changing their plea to guilty on 7 September, they were fined a total of \$10,250 for fishing in the Bahamian exclusive fishing zone. Their Spanish-speaking lawyer, who regularly handles such cases for the Cuban Government, asked the Bahamian court for mercy on the grounds that the fishermen were unaware of the Bahamian exclusive fishing zone and that they were, at the time of the arrest, searching for another vessel reported missing by the Cuban Coast Guard. He added that charges of Cuban patrol units attempting to interfere with Bahamian Marine Division agents were untrue and that Cuban patrol activity was part of the alert for the missing fishing vessel "Bonita".

The Bahamian Minister of External Affairs indicated on 4 September that there was no evidence that Bahamian vessels were being harassed by the Cuban Coast Guard. He did say, however, that the Bahamian police boat involved in the arrest of the Cuban fishermen had reported being over-

flown by an unidentified airplane (DC-3) and sighting unidentified high-speed boats.

According to the NMFS Office of International Fisheries, 20 Cuban fishermen were arrested in December 1975 for fishing off Cay Verde and fined \$30,000. Part of their catch (Nassau groupers and other finfish) was distributed to local charities and the proceeds of the sale of the remaining catch went to the Bahamian Government. Another group of six Cuban fishermen, arrested on 6 December 1975 were released when they explained that they had only entered Bahamian waters to avoid bad weather.

Cuban officials had requested discussions with the Bahamas on fishery matters earlier in the year. Bahamian Prime Minister Lynden Pindling, on 13 April 1976, virtually ruled out the possibility of any fishing agreement which would grant Cuba even limited access to Bahamian fishery resources. According to Pindling, "... in all fairness and honesty to them (Cuba), we had to inform them that the likelihood of success of any such talks was extremely slim."

Mauritius to Build New Fish Hatchery

Fifteen acres of land have been acquired at Albion¹ for the construction of a new fish hatchery, a laboratory, and an aquarium. The complex itself will cover approximately 15,000 ft² and will be the largest and most modern complex of its kind in the world, according to a statement by the Senior Fisheries Officer, David Ardill. It will have both fresh and salt water breeding and holding pools. The new hatchery complex will be complementary to the Trou d'Eau Douce prawn hatchery, but may also include experiments with fish other than carp and mullet which have already been successfully acclimatized to fresh water. The Albion project combines the concept of creating a hatchery for research purposes with the idea of preserving the natural environment, according to the statement.

The location of the hatchery was dictated by the need for large quantities of unpolluted fresh and salt water. The project is still in the planning stage, but the Ministry of Fisheries wants the facility flexible enough for all types of fish culture. The project is being funded solely by the Mauritian Government which is making an effort to increase the utilization of marine and freshwater resources to make the country self-sufficient in fish. Even though Mauritius is an island surrounded by significant marine resources, freshwater fish culture makes sense because fresh water is available on the islands and also as part of a program by sugar plantations to diversify. (Source: U.S. Embassy, Port Louis.)

¹ Located 10 miles north of Port Louis on the island of Mauritius.

