

# U.S. COAST GUARD'S FISHERY ENFORCEMENT POWER IS STRENGTHENED

A law signed August 11 by President Nixon gives Coast Guard Cutters on patrol in the Northwest Atlantic stronger authority to enforce international fishing agreements.

The law amends the Northwest Atlantic Fisheries Act of 1950 to keep step with recent changes in the International Convention for the Northwest Atlantic Fisheries (ICNAF). The participating nations enforce regulations designed to protect fish stocks in the Northwest Atlantic between Greenland, Canada, and the U.S.

ICNAF nations include: Canada, Denmark, West Germany, France, Iceland, Italy, Japan, Norway, Poland, Portugal, Romania, Spain, USSR, United Kingdom, and the U.S. Of these, the United Kingdom, USSR, Norway, Portugal, Japan, and the U.S. have joined the inspection program.

## The New Law

Under the new law, ICNAF inspectors can stop vessels of participating nations, including the U.S., board and inspect their gear and documents to check the vessel's compliance with ICNAF regulations.

Officers of the U.S. Coast Guard and NMFS will handle the inspection duties for the U.S. Before, U.S. officials had no authority to stop and board foreign vessels outside the U.S. contiguous fisheries zone.

The ICNAF agreement aims to protect several species of fish by limiting annual catches and requiring the use of nets whose mesh is large enough to permit young fish to escape. Many U.S. fishermen complain that foreign fleets use small mesh nets that capture all fish and threaten to deplete the stocks.

## ICNAF Inspection

Vessels of member nations are required to stop when given the proper international signal by a ship showing an ICNAF inspection pennant. The pennant is quartered blue and yellow with "NW" in the upper yellow block.

An ICNAF inspector, after properly identifying himself, can board the vessel. He can inspect and prepare a report to be signed in the captain's presence. The captain may add comments to the report.

Reports of violations of ICNAF regulations are filed through diplomatic channels. Nets that violate the standards will be sealed, marked, and photographed.

For first offense, persons under U.S. jurisdiction who are convicted of violation of the regulations may be fined up to \$1000, or be imprisoned for not more than six months, or both. For other offenses within five years, the penalty is a fine of not over \$10,000, or one-year imprisonment, or both.

## ICNAF Area

The ICNAF area is divided into subareas, where annual catches for each species are recorded. The agreements have three basic means for protecting fish species: limiting catches in specific subareas; closing areas completely, especially during spawning season; and prohibiting nets with mesh size below ICNAF standards.

Fish protected by ICNAF agreements include: cod, haddock, and several species of flounder.



# INTERNATIONAL FISHERY STUDIES ARE UNDERWAY

The Soviet research vessel 'Blesk' and the French research vessel 'Cryos' arrived in Woods Hole, Massachusetts, in early September to begin a series of international cooperative cruises with NMFS. The Blesk will continue joint U.S.-USSR research on groundfish stocks begun in 1967; the Cryos will begin a study on distribution of sea-herring larvae.

The Blesk participated in the 1968 joint survey. This year it will conduct two operations with the U.S. research vessel 'Albatross IV': 1) Testing trawls and trawl equipment. This will include measuring gear performance on the ocean bottom and catch comparison experiments. 2) A quantitative inventory of groundfish stocks between Cape Hatteras, N.C., and Georges Bank.

## Prime Objective of Research

A prime objective of the U.S.-USSR research has been to evaluate the accuracy of groundfish-abundance estimates derived from research-vessel surveys. To establish conservation regulations in international waters, it is necessary to know the impact of fishing on the stocks. Commercial fisheries statistics alone are not adequate to monitor changes in the structure and abundance of fish populations. The surveys are proving an invaluable supplement by providing abundance data of sufficient accuracy to help assess the effects of fishing on stocks.

## International Agreements Important

At the present time, international agreements are the only legal means of protecting fish stocks off U.S. coast from overfishing. The NMFS Woods Hole Biological Laboratory has participated each autumn in research cruises with the USSR under a treaty negotiated when foreign fishing threatened traditional U.S. fisheries between Cape Hatteras and Long Island. This area is too far south to be regulated by the International Commission for the Northwest Atlantic Fisheries (ICNAF).

The Cryos will be one of 4 vessels in an ICNAF-organized cooperative study. The study will focus on the dispersion of herring larvae from spawning centers on Georges Bank, in the Gulf of Maine, and off Western Nova Scotia. The other vessels are the U.S. stern trawler 'Delaware II', the West German vessel 'Walther Herwig', and another Soviet vessel similar to the Blesk.

NMFS scientists from Woods Hole and Boothbay Biological Laboratory in Maine will participate.

## Offshore Research Centers

The Woods Hole Lab was recently named headquarters for the new North Atlantic Fisheries Research Center, one of NOAA's four major offshore research centers. Also part of the Center are the Boothbay Laboratory and the Narragansett Sport Fisheries Marine Laboratory in Rhode Island.



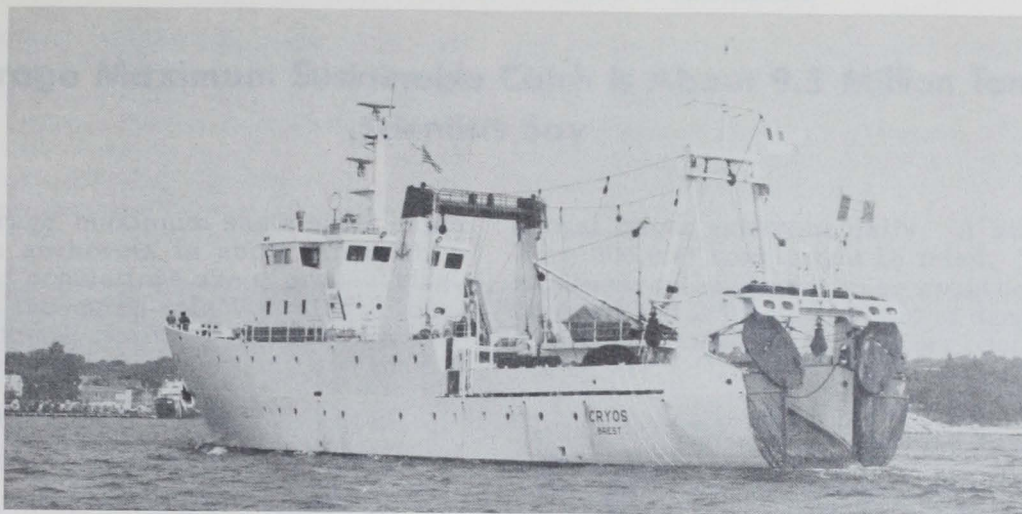


Fig. 1 - The French research vessel 'Cryos' enters Little Harbor, Woods Hole, Mass., Sept. 5.

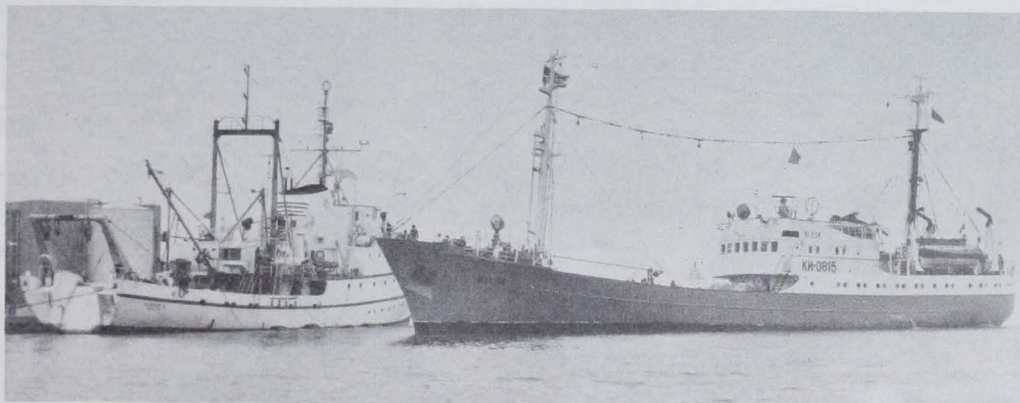


Fig. 2 - The Soviet research vessel 'Blesk' ties up alongside NMFS 'Albatross IV' in Woods Hole, Sept. 6.

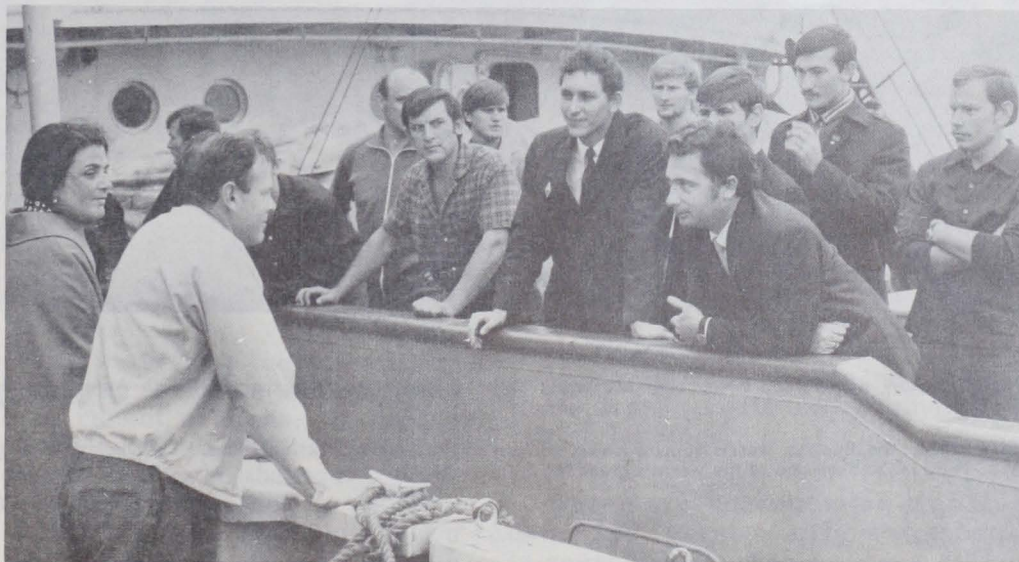


Fig. 3 - Dr. Marvin D. Grosslein, NMFS, and State Dept. interpreter greet Soviet scientists.  
(Photos: Robert K. Brigham)



Outside a fishmeal factory near Pisco, Peru, bags are ready to be carted away for export to North America and western Europe. (FAO: S. Lorrain)

Off the Peruvian coast, the Pacific waters support a vast amount of fish, especially anchovies. The anchovies support a large fishmeal industry. They make Peru one of the world's great fishing nations.

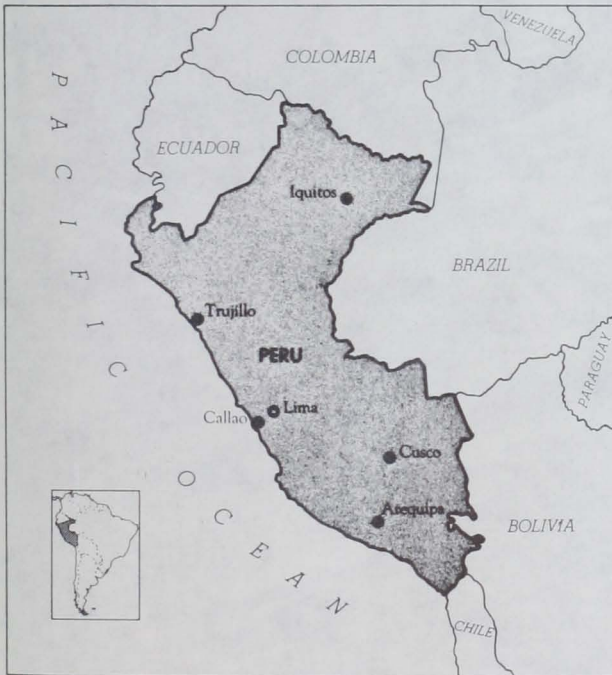


# PERU'S ANCHOVETA FISHERY

## Average Maximum Sustainable Catch Is About 9.5 Million Tons, Scientists Say

The average maximum sustainable catch of Peruvian anchoveta is about 9.5 million tons--if bird populations are of present size. In 1968-69, the catch was 9.8 million tons. The approximate limits of accuracy of this estimate are plus or minus 1 million tons.

This is the key point in a report on anchoveta prepared by a panel of scientists set up as part of the FAO/UNDP project on fisheries research and development in Peru. The panel was headed by Dr. W. E. Ricker, Biological Station, Nanaimo, B.C., Canada.



### Effects of More Fishing

The scientists state that the 9.5 million tons would be taken by about the same amount of fishing as in recent seasons. If fishing effort were increased above this limit, it might increase or decrease the equilibrium yield. A way to find out whether an equilibrium yield a little larger than 9.5 million tons would be possible is to increase the

annual quota experimentally. A step of not over 500,000 tons might be tried. To avoid serious trouble, the increase would be stopped or reversed at the first signs of danger--too small a catch per unit effort, scarcity of young, etc.

### Closed Seasons

The scientists believe that a closed season of at least one month during December-March is very desirable. It may even be essential to maintain catch level of 9.5 million tons. The reason is that many small fish are present and are growing very fast at this time. By letting them grow during the closed season before they are caught, a greater harvest might be achieved from each generation of recruits; at the same time, a good spawning stock would be produced. Also, the percentage meal yield from large fish is greater than from small fish.

### Research Needs

The panel states that "continued study and intensive monitoring of the anchoveta stock is essential to maintain control and to settle" existing problems. One important problem is the degree of mixing between stocks on different parts of the coast. The scientists recommend a pilot-scale tagging experiment to begin "as soon as possible."

### CATCH AND EFFORT

The landings reported are below actual catches for these reasons: 1) losses at sea, including dumping of excess catch; 2) losses during unloading; 3) underreporting of actual quantities landed (especially during peladilla season when meal yield is low). Occasionally, these losses could reach up to 40% of reported landings.

There are uncertainties also about effort data. In all purse seining, an important factor is searching for fish.



There have been important changes in the anchoveta fleet during the development of the fishery. Vessel size has increased. Improvements in gear, equipment, and fishing have been introduced. Annual information on the effect of gear improvement for ships of the same size produced an estimate of correction for efficiency of 20% during 1960-69. The correction was introduced into the effort and catch-per-unit effort data.

#### IDENTITY OF STOCKS

The anchoveta and the fishery are distributed along nearly the whole Peruvian coast-- and in waters off northern Chile. There are

no "very clear discontinuities which would suggest isolated and separate stocks." Studies of gill rakers have revealed some differences between anchoveta stocks.

Some evidence indicates that southern anchoveta (II) tend to have shorter digestive tracts than those farther north. But the overlap is great, at least in small fish. However, the scientists say, "experience elsewhere shows that differences of this sort are not inconsistent with a fairly large degree of mixing between stocks. The only way to get some idea of the degree of such mixing is to do a tagging experiment on at least a moderately large scale." The panel's study treats anchoveta as a single stock.



Fishing boats in port of Callao are drawn up and waiting for a run of anchoveta.

The ancient port, practically a Lima suburb, is bustling again. Waterfront traffic is clogged with tank trucks transferring anchovies to factories. (S. Larrain)



## ASSESSMENT OF STOCK

Although guano birds have been eating fewer anchoveta, they averaged about 1.5 million tons during the study. The maximum catch by men and birds was a little over 10 million tons. A little less than 30 million gross-registered-ton (GRT) trips were involved.

In recent years, the bird populations have become smaller: eating under 1 million tons, equal to about 2 million GRT trips. A sustained catch of 9-10 million tons can be taken by fishermen with about 25 million GRT trips. More fishing might produce a larger catch, though the catch, at best, might increase only slowly. Possibly, a fishing effort greater than 25 million GRT trips could result in smaller catch.

## Effect of Fishing on Stocks

Age data are available only from 1962-1963 (and later). Since then, fishing effort has not varied much. No clear relation between mortality and fishing effort can be determined now. The age composition does show an increase in apparent mortality with age. If real, this could make a big difference in the analysis of the effects of different closed reasons.

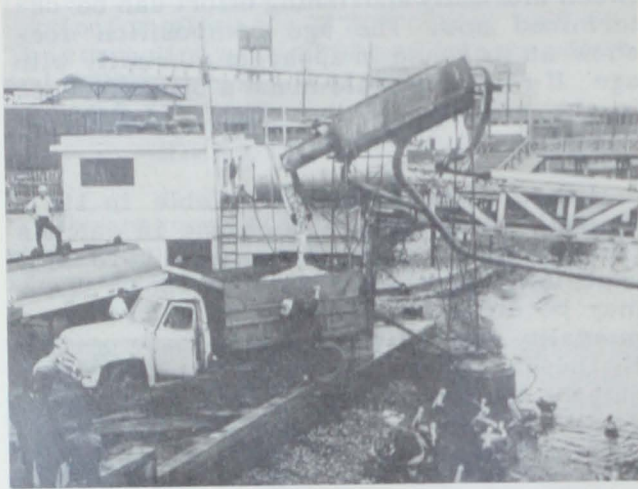
Length data became available in 1961. Overall, these show a decrease in catches per-unit-effort of the larger fish ( $>13$  cm), especially between 1961 and 1964. This may be attributed directly to increased mortality due to fishing during that period. By 1964 (and later), fishing accounted for about half the total mortality.



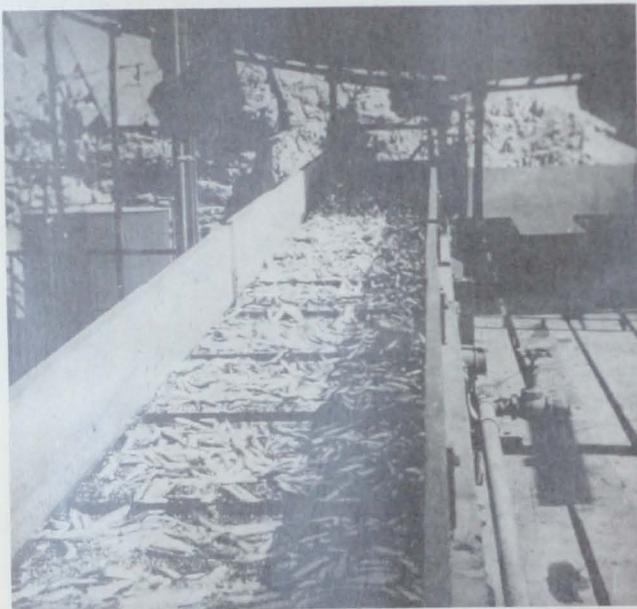
Fishermen in port of Callao. (S. Larrain)



The number of very small fish (under 10 cm) has increased. The effective size at recruitment to the landings has decreased sharply. This change is due partly to fisherman behavior. In the early years, when



Pumping anchoveta from boat to truck in Callao.



Conveyor belt transports anchoveta into fishmeal plant at Chimbote.  
(Photos: M. Lindner)

large fish were abundant, fishermen avoided shoals of small fish; now, fishermen believe catching small fish is better than catching nothing.

### INDUSTRY STABLE

The record of the Peruvian anchovy fishery "is relatively free of the rather serious fluctuations in reproductive success that characterizes many pelagic fisheries; the corollary is that catastrophic collapse is not to be expected save through a very rapid increase in fishing effort, which seems unlikely."

In the cases of the California sardine and the Georges Bank haddock, "catastrophic declines appear to have occurred as a result of fishery induced recruitment failures." The immediate cause was intense fishing and a series of poor year-classes from environmental (stock-independent) reasons. The combination of factors reduced stock to such a low point that the possibility of good year-class, even under favorable environmental conditions, was small.

### BIRDS

The scientists say that fisheries of 1 to 2 million tons have no "appreciable effect" on the birds. Fisheries of 4 to 7 million tons reduce the anchovy population to a level that restricts birds to about 16 million. The present fishing level holds bird population to 5-6 million.

### ECONOMICS

The panel doubts the desirability, for economic reasons, of fishing hard enough to achieve maximum catch. It would be desirable to fish appreciably less than that and catch only slightly fewer fish.





## JAPAN

### NEW U.S. POLICY HURTS JAPANESE FISHERY EXPORTS

The economic policy announced by President Nixon on August 15, 1971, has hurt Japanese fishery exports. The 10% surcharge on U.S. imports was expected to affect immediately Japanese trading firms with unsold supplies and also processors. The problem of international currency revaluation, too, faces the industry.

In 1970, fishery exports totaled US\$390 million, based on Japanese customs-clearance records. Of that, \$116 million (30%) were sales to the U.S.: principally canned tuna, canned crab, canned oysters, frozen tuna, and pearls. Canned mackerel and whale oil were about 10% of sales.

The 10% surcharge is not expected to apply to frozen tuna exports, which are exempt from U.S. import duty. However, other fishery products will be affected. Therefore, no new sales are likely for a while. Even those already contracted, but not yet cleared through U.S. customs, face problem of additional charge.

#### Canned-Tuna Exports

Canned-tuna exports to the U.S. will be assessed the 10% surcharge above the present 7% ad valorem import duty. In 1970, the U.S. took about \$43 million, 54%, of the \$80 million worth of Japan's canned-tuna exports. In second half of August 1971, there were about 800,000 cases of canned tuna in brine sold to U.S. buyers but not yet cleared through U.S. customs. These were subject to surcharge. Normally, the importers pay additional charge if sales contract already has been concluded. In all probability, the importers will not be able to bear this burden, so contract cancellations are likely.

#### Canned-Tuna Industry's Problems

The Japanese canned-tuna industry feels it has received a triple blow: 1) by U.S. Food and Drug Administration's seizures of shipments because of excess mercury; 2) by that agency's detentions of shipments because of decomposed tuna; and 3) the surcharge.

Ed. Note: On Sept. 1, the U.S. Treasury exempted from surcharge: imports at sea on Aug. 15; items in bonded warehouses; foreign-trade zones and tied up by West Coast dock strike.

From January to late July 1971, FDA's detentions were 110,000 cases (about 75,000 cases for decomposition, 35,000 cases for mercury). Losses are estimated to reach 770 million yen (\$2.14 million), based on 7,000 yen (\$19.44) per case (including two-way ocean freight costs). Some packers face grave financial difficulties.

#### Canned Pink Salmon

Canned pink salmon exports to the U.S. also have been reduced. Negotiations for sales of 300-500,000 cases, which had been in progress prior to President Nixon's announcement, stopped. It produced a tremendous inventory buildup in Japan. Also, an upward revaluation of the yen will produce a financial loss to trading firms that have purchased canned salmon from the Sales Company for export to Europe and Australia. At least half the one million cases have not yet been exported to those countries. ('Suisan Tsushin', Aug. 5 & 19.)

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#### EXPORTS RECORDED SHARP GAINS IN 1970

The Fisheries Agency reports that Japanese fishery exports during Jan.-Dec. 1970 totaled US\$390.8 million on a customs-clearance basis. This is over 12% above 1969's \$346.8 million. The ratio of fishery exports to total value of export trade, however, fell to post-World War II low of 2% in 1970 from high of 7.7% in 1958. Exports to the U.S. in 1970 were 32% of total shipments, the same as in 1969.

Fishery Exports 1968-70			
	Value		
	1970	1969	1968
	(US\$1,000)		
Frozen and fresh	98,766	86,001	90,703
Canned and bottled	203,204	175,870	181,798
Salted and dried	11,799	12,094	8,922
Oils and fats	10,845	5,069	3,807
Agar-agar	3,324	4,408	4,817
Pearl	40,902	48,640	46,802
Other fishery products	21,900	14,810	13,753
Total	390,820	346,892	350,602



## JAPAN (Contd.):

Country of Destination	Principal Importers		
	Value		
	1970	1969	1968
	(US\$1,000)		
U.S.	116,532	103,862	103,239
Great Britain	46,765	37,009	59,368
West Germany	25,227	22,819	21,043
Italy	16,254	12,367	14,957
Philippines	16,111	15,978	19,745
Netherlands	13,840	8,736	7,230
Hong Kong	11,452	11,244	7,923
Ryukyu Islands (Okinawa)	11,186	10,363	7,893
Canada	10,921	7,558	5,977
Switzerland	10,377	12,000	10,823
Australia	9,783	11,137	9,281
Puerto Rico	8,655	6,462	8,858
Ghana	7,099	2,531	1,915
Belgium	5,750	7,088	4,990
France	5,593	9,500	8,323

Principal exports in 1970 were: canned tuna--\$80,170,000 (U.S. 53.6%); canned mackerel--\$44,350,000; pearls--\$40,900,000; canned salmon--\$44,950,000; frozen tuna--\$31,760,000 (U.S. 71.5%). ('Suisan Tsushin', July 17; 'Minato Shimbun', July 18.)

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## FISHERY IMPORTS INCREASE

In 1970, Japanese imports of frozen fishery products reached 374,569 metric tons worth US\$318,412,000. This is an increase of 34% in quantity and 200% in value compared with 1965 imports of 278,940 tons worth \$103,950,000.

Shrimp, the leading import, was 43% of imports in value, followed by tuna (8%). Other important products included squid, fishmeal, salmon roe, and octopus. Together with shrimp and tuna, these were about 69% of total value of fishery imports.

	Fishery Imports, 1965-70	
	Quantity	Value
	Metric Ton	(at customs clearance) US\$1,000
1965	278,940	103,950
1966	333,799	167,550
1967	330,950	191,573
1968	370,143	200,374
1969	362,628	260,676
1970	374,569	318,412

## Frozen Shrimp Imports, 1965-70

	Quantity	Value
	Metric Ton	(at customs clearance) US\$1,000
	1965	21,011
1966	36,156	60,085
1967	44,466	79,732
1968	35,204	78,079
1969	48,886	121,747
1970	57,146	137,026

Leading suppliers (in value) were: South Korea, 12.4%; Communist China, 9.9%; U.S., 7.6%; Taiwan, 7.5%; and Mexico, 6.4%. ('Suisan Keizai Shimbun', July 22.)

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BRISTOL BAY CRAB FACTORYSHIPS  
DOING POORLY

The 'Koyo Maru' and 'Keiko Maru' crab factoryship fleets fishing in the Bristol Bay were doing poorly because of unseasonably cold waters. During the first months after late March, they were troubled by heavy ice floes.

The production quotas assigned to the two fleets for the 1971 Bristol Bay crab fishery are: 'Koyo Maru' fleet--king crab 18,300 cases and 7.14 million tanner crabs; 'Keiko Maru' fleet--king crab 19,200 cases and 7.46 million tanner crabs.

As of Aug. 10, production by the two fleets was: 'Koyo Maru' fleet--frozen king crab meat 181.534 metric tons, frozen tanner crab 3,513.3 tons; 'Keiko Maru' fleet--canned king crab 5,314 cases; frozen king crab equivalent to 6,824.5 cases, and frozen tanner crab 3,478 tons. ('Suisan Keizai Shimbun', Aug. 17.)

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LONGLINER RETURNS FROM U.S.  
EAST COAST WITH GOOD BIGEYE CATCH

The tuna longliner 'Juju Maru' (299 gross tons) recently returned to Japan with 248 metric tons of bigeye, mixed with some yellowfin, taken in northwestern Atlantic off New York. The value was 157 million yen (US\$436,100).



## JAPAN (Contd.)

The vessel left Japan early this year. It spent 184 days at sea, fished 73 times, and caught an average of 3.5 tons of fish per set. Fishing was very good compared with vessel's experience in fishing for southern bluefin in the South Pacific. There it took 130 sets, or almost twice as many sets, to fill the holds.

The outlook for bigeye fishing off the U.S. east coast is promising. So more Japanese longliners are likely to begin fishing if planned voluntary regulation of southern bluefin fishery is put into effect. The regulation involves specified areas of South Pacific and Indian oceans. ('Katsuo-maguro Tsushin', Aug. 6.)

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RESEARCH VESSEL TO SURVEY  
TUNA GROUNDS IN NORTH ATLANTIC

The 'Azuma Maru No. 28' (313 gross tons), chartered by Marine Fishery Resources Development Center, left Japan July 29 on a survey cruise to North Atlantic. The vessel is scheduled to survey the region between 30° N.-60° N. latitudes. Previous private explorations, with government subsidy, showed promise for bigeye, bluefin, and albacore fishing.

## Tuna's Northern Limits

Main effort of the cruise will be to test prospects for commercial exploitation in northern limits of Atlantic's traditional tuna fishing grounds. The survey, September 9 until February 1972, covers a northward course along Gulf Stream. This will take vessel near the British Isles. ('Suisan Keizai Shimbun', July 29.)

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TEST SKIPJACK FISHING OFF  
PONAPE, U.S. TRUST TERRITORY

The Overseas Fishery Company is conducting a study to determine the feasibility of starting a skipjack tuna fishery off Ponape, U.S. Trust Territory of the Pacific Islands. The firm is fishing experimentally for skipjack off New Guinea with 8 vessels out of Rabaul. It hopes to establish another base at Ponape because of good fishing in New Guinean waters.

However, the proposed venture faces difficulties because the government of Ponape has strict licensing rules. Basically, these do not permit foreign investment unless it helps local inhabitants.

## 1 Japanese Firm There

In Ponape, there already is one Japanese trading firm, Mitsui Bussan, and the Okinawan fishery firm Sanyo Gyogyo. In partnership with Ponape interests, these are getting ready to fish for skipjack with one mothership and three vessels. ('Katsuo-maguro Tsushin', July 28.)

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PLAN TO FISH SKIPJACK  
IN INDONESIAN WATERS

Hoko Suisan, in partnership with Toyomenka, is proceeding with plans to establish a skipjack tuna fishing base at Butung Island, Indonesia, in the Banda Sea. In mid-August 1971, the firm's mothership plus three skipjack vessels were scheduled to depart Japan. They will fish in about the same area now being worked by Nichiro and Mitsubishi Shoji. In May 1971, Nichiro obtained a fishing license from Indonesia. ('Katsuo-maguro Tsushin', Aug. 12.)

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INDIAN FISHERY TRADE MISSION  
VISITS JAPAN

An 8-man Indian fishery trade mission recently visited Japan to study the market and to confer with trading firms about importing fishery products from India. The group hopes the Japanese will buy more small-size shrimp from India. Only Mexico supplies Japan with more shrimp. In 1970, India's shrimp exports to Japan were 6,400 metric tons (mostly large size).

The visitors also sought Japanese participation in joint ventures to promote India's fishing industry. ('Suisan Keizai Shimbun', Aug. 18.)

