



Fishing is one of Canada's major industries. The west coast is an important center. Large canneries handle great herring catches.

The "brailer," or huge scoop net, is being guided by man at end of pole. It lifts 2 tons of herring at a time from great net still in water. A winch supplies the power.

(National Film Board Photo)

FOREIGN

CANADA

WIDE SEARCH FOR QUEEN CRAB IN N. ATLANTIC STARTS

Broad areas of the Gulf of St. Lawrence will be explored this year to determine distribution and abundance of queen crabs. It will be done by the Industrial Development Service of the Canadian Federal Department of Fisheries.

Atlantic queen crab (*Chionoecetes opilio*) has become an increasingly important resource in the Atlantic commercial fishery. It was stimulated by experimental catching and processing under federal-provincial cost-sharing arrangements during the past 3 years.

Last year's catch of queen crab by Atlantic coast fishermen was 1.5 million pounds.

Exploration Is Urgent

Because intense fishing pressure on known stocks is expected, exploration becomes extremely urgent. This is because a crab trap fishery could revitalize depressed areas--and ensure that sufficient stocks exist for increasing demand.

About 40,000 square miles of the Gulf of St. Lawrence may produce queen crabs in commercial quantities. Because of area size, a systematic search pattern must be used.

Lines drawn horizontally and vertically at $2\frac{1}{2}$ -mile intervals will provide basic pattern. Decca positions at each point will permit accurate and easily recorded search. While traps set this way could miss small concentrations of crabs, any area of significant population would certainly be bisected, and a more intensive search could be carried out.

The prime areas plotted represent over 5,000 positions to be fished. It will take at least 2 seasons to complete the survey.

Vessels and Gear

Two vessels are being chartered by the Industrial Development Service to carry out the exploration. One is the 65-ft. combination vessel "St. Cecilia II" built last year for the Cheticamp Fish Co-op Ltd., Cheticamp, N. S. She has begun operating in the Gulf off Cape Breton. A second vessel will join later.

Crab traps in the sampling will be of standard size. Frozen herring bait will be used. All crabs caught will be returned to the water immediately after being weighed and measured.

Information Valuable

Information acquired will help considerably an investigation by the Fisheries Research Board of Canada into the life history of the queen crab. Added to commercial fishermen's information, it will help enlarge knowledge about quantities of commercial-size crabs and the effects of environment and season on abundance and biology.

A general report at the end of the 1968 program and interim reports will be published.

Provincial fisheries departments also are undertaking local explorations adjacent to their coasts under federal-provincial cost-sharing arrangements. ("Fisheries of Canada," June 1968.)

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TUNA SEINER 'GOLDEN SCARAB' AUCTIONED

The Canadian tuna seiner Golden Scarab was auctioned recently, but the controversy over the fate of the nation's subsidized tuna fleet and the replacement of local fishermen by foreigners boils on.

The Golden Scarab is one of five 170-foot seiners built since 1965 for C\$2.2 million

Canada (Contd.):

each. The Canadian government paid a 50-percent subsidy. A tuna-processing complex was constructed at St. Andrews, New Brunswick, to stimulate the fishing industry and to increase employment. Many fishermen contend that the tuna firm used public money to their disadvantage.

Foreigners the Main Issue

The central issue is the use of foreign fishermen. Three years ago, on her first voyage, the Golden Scarab released her Canadian crew in Central America, hired a U. S. captain and a Costa Rican-Mexican crew. In the 3 years that followed, the vessel made no landings in Canadian ports. On Jan. 29, 1968, when she reentered Canada for the first time, her creditors seized her.

The Canadian fishermen claim that 4 other vessels do the same thing. After negotiating a contract in Canada with local fishermen, the vessel owners give them a "take-it-or-leave-it" pay cut when they reach Central American ports. Most crewmen choose to return home, and the vessel owners hire U. S. skippers and foreign crews.

The Canadian fishermen are urging that the foreign crews be replaced by Canadians.

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NEWFOUNDLAND FISHING INDUSTRY IN TROUBLE DESPITE RECORD YEAR

In 1967, Newfoundland's fisheries set records in landed weight and value. Early statistics showed a catch of 746 million lbs., 11 percent above 1966, according to Aiden J. Maloney, Minister of Fisheries. But markets weakened, particularly for fresh-frozen fish in the U. S. The catch brought only C\$26.8 million--a record, too, but only 1% over the 1966 value. Few persons are predicting better prices or greater sales in 1968.

Catholic Church Makes Change

The market started to crumble in 1966 when the Roman Catholic Church lifted its ban against eating meat on Friday. One fisheries department official said the decline was significant first among institutional buyers, such as hospitals and schools, then spread gradually throughout the consumer

market. Falling demand resulted in falling prices. To some extent, this has affected all North American producers.

The lower export prices were reflected in lower prices paid by Newfoundland fish-plant operators to the fishermen.

Another factor was the establishment, with provincial government encouragement, of new fish plants in the past 3 years.

Subsidized Foreign Competition

Adding to the province's difficulties was the success of heavily subsidized and more efficient European producers in closing their home markets to Newfoundlanders and making inroads into the U. S. market.

While prices fell, overhead costs in the fish plants rose.

Prices Fall

In 1965, a pound of fresh frozen fish sold for 29¢ in the U. S. It returned 5½¢ a lb. to the Newfoundland fisherman. But in 1967, this price dropped to 21¢, or 3½¢ to the fisherman. P. J. Antle, general secretary of the Newfoundland Federation of Fishermen, fears the fisherman's price could drop to 2½¢ this year.

Antle noted the decision of the Ross Group, London, to cease operation of the Ross-Steers frozen-fish plant on the south side of St. John's harbor. Also, the Job Bros. & Co. plant gave up.

When fresh-frozen prices declined in 1967, many inshore fishermen followed Antle's advice to salt their catches rather than accept what the fish-plant operators were offering. Unfortunately, the salt-fish market declined too. Fishermen in 10 communities on Trinity and Conception Bays protested the low prices by staying ashore.

The devaluation of the British pound in late 1967 also affected several West Indian currencies. This resulted in a loss of export sales there, notably to Jamaica. The result was a high carryover of salt-fish stocks.

By April 1968, Newfoundland fish wholesalers had 9-10 million lbs. of salt fish on their hands. To facilitate marketing this year's catch, the federal government announced in

Canada (Contd.):

May it would buy all unsold salt cod stocks in eastern Canada at the end of the present market period--around the end of July.

Government to Buy Unsold Fish

Federal Fisheries Minister H.J. Robichaud said the purchased fish would be sent as aid to underdeveloped countries. None of these countries would be normal importers of salt fish from Canada. The cost to the Fisheries Price Support Board, which is buying it for the federal government, will be about C\$2.2 million. The World Food Program of the United Nations will receive about \$500,000 worth immediately; another \$50,000 worth will aid South Vietnamese refugees.

Carryover was not limited to salt fish. The declining U.S. market left Newfoundland fish processors with 30-40 million lbs. of fresh-frozen fish on their hands--fish already bought from the fishermen.

Two more difficulties threaten:

U. S. fish processors are asking U. S. Customs to determine if Canadian producers are dumping fish products on the U.S. market.

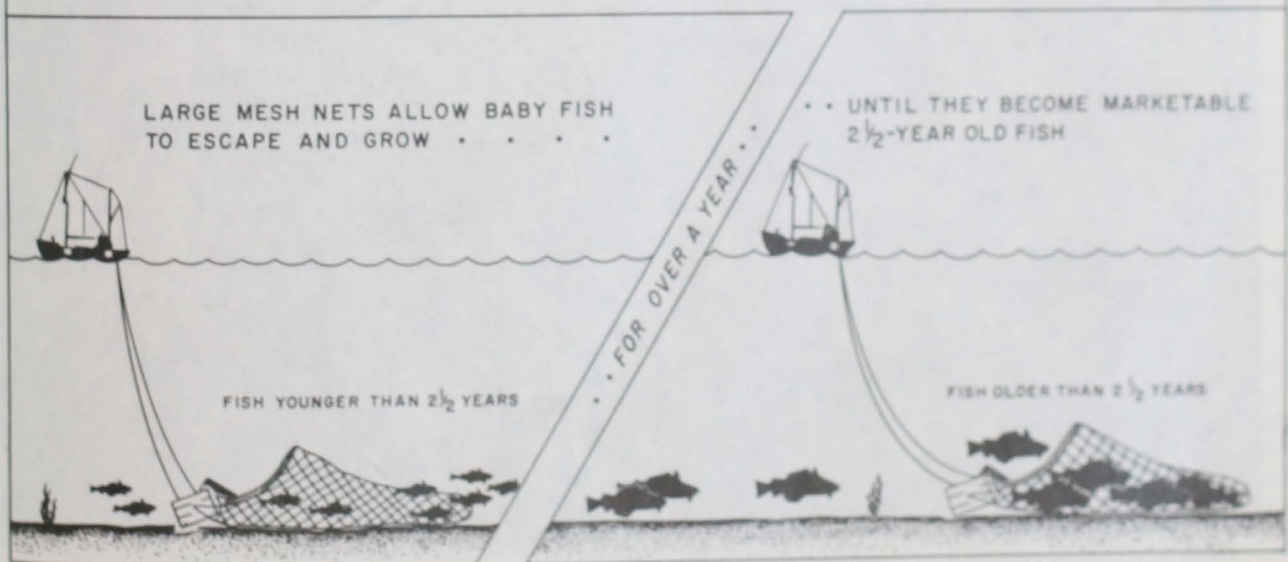
Sales of Greenland halibut or turbot have been increasing in recent years. Americans say the name is misleading because the fish is neither halibut nor comes from Greenland.

The Outlook

Some observers say things have to improve because they cannot get much worse. The disappearance of the fishing industry seems too unreal. One fisheries department official sees hope in an expanded and more efficient deep-sea fleet. Modern, more efficient methods of harvest are fine but the problem of marketing the catch remains. The official suggests that the long-range answer may lie in sales of fish meal to underdeveloped countries. ("Financial Post," June 15.)



HOW THE LARGE MESH WORKS





British fishermen hauling in herring catch. Shoals swim near surface and fine nets are trailed for them.
(Photo: British Information Service)

EUROPE

Norway

EUROPE'S NO. 1 FISHING NATION

Norway, Europe's leading fishing nation and fifth in the world, set a record in 1967. For the first time, she landed over 3 million metric tons, despite numerous bans on fishing for reduction purposes. The substantial increase over 1966, a record year too, was accounted for by North Sea mackerel. Reduced demand and low prices for fish meal and oil lowered the income of fishermen who supply the reduction industry. This development, and a minor reduction in landings of cod and other species, produced a smaller total first-hand value than in 1966. It happened despite the peak in total landings.

Prices abroad fell for principal fish products like meal and oil, stockfish, and frozen-fish fillets. But these were more than offset by record exports of meal and oil. The result was a 13% increase in the export value of fish products in 1967.

The expansion of the purse-seine fleet reached 500 power-blocked vessels in 1967.

Norway's exports of fish products to the U. S. hit a high of \$32 million in 1967, due mainly to large shipments of fish meal.

Government Support Steady

Government support continued at about the level of the preceding years. There were no significant changes in government fisheries policy during 1967. There are indications of a more liberal approach emerging--for example, the recent extension of export rights to the Nordic Group for frozen-fish-fillet shipments to the U. S.

Short-Term Outlook Good

The short-term outlook for the fisheries is fairly good, though marketing conditions are far from satisfactory for some principal fish products. The total yield of cod and related fish species for Jan.-Apr. 1968 probably was higher than last year's, but total catches of herring, mackerel, and capelin were one-third smaller than the record first third of 1967.

The most significant development in fish research in 1967 was the government decision to build a US\$3 million ocean research vessel planned for 1969/70 operation.

Fishing Fleet

The expansion of the purse-seine fleet peaked in 1967, then interest declined rapidly. This reflected sharply falling first-hand prices, and numerous bans on fishing for reduction purposes. It is commonly believed that the purse-seine fleet of about 500 vessels equipped with power-blocks is more than adequate to land the shoal fish that can be processed by the existing fish-reduction industry.

In the cod fisheries, fleet modernization continued during 1967. The renewal is concentrated on small craft (less than 25 feet) for coastal operation, and large long-liners and trawlers (over 60 feet) for ocean fishing. There is less interest in replacing medium-sized vessels.

Several purse seiners were equipped to transport large quantities of herring and other shoal fish in cooled salt water in 1967. This keeps fish fresh for several days. It may bring about a substantial increase in earnings of purse seiners, provided new foreign markets for fresh fish can be found abroad.

Catch and Value

In 1967, the fishing fleet operated mainly in the waters of 1966. Icelandic herring was fished farther north than before (near Bear Island). Mackerel were abundant in the North Sea and off Shetland and stimulated fishing there.

The 1967 fish catch, including crustaceans, reached a high of 3,003,700 metric tons, 13.5% above 1966. The exvessel value, state price support and transfers from the Herring Price Stabilization Fund included, decreased 13.7% to \$161 million. This sharp fall in exvessel value was caused primarily by price cuts in fish for reduction purposes--herring, mackerel, capelin. And this reflected reduced prices for fish meal and oil (see table 1).

Norway (Contd.):

| Species | Landings | | Utilization 1967 | | | | | | |
|---------------------------------|----------|---------|------------------|--------|-------|--------|--------|-----------|------|
| | 1967 | 1966 | Fresh | Frozen | Dried | Salted | Canned | Reduction | Bait |
| (1,000 Metric Tons) | | | | | | | | | |
| Capelin | 402.8 | 379.6 | - | - | - | - | - | 402.8 | - |
| Herring: | | | | | | | | | |
| Winter | 371.6 | 460.9 | 17.1 | 32.2 | - | 20.2 | 8.1 | 292.4 | 1.5 |
| Fat | 346.0 | 148.1 | 1.2 | - | - | 2.2 | 0.2 | 337.6 | 4.7 |
| Small | 106.4 | 78.5 | 0.4 | - | - | 0.1 | 10.9 | 94.8 | 0.2 |
| Fjord | 1.2 | 1.3 | 1.0 | - | - | 0.2 | - | - | - |
| North Sea | 335.8 | 454.9 | 5.0 | 2.0 | - | 0.9 | 0.3 | 327.5 | - |
| Icelandic | 52.1 | 42.2 | - | 0.3 | - | 7.7 | - | 44.1 | - |
| Total | 1,213.1 | 1,185.9 | 24.7 | 34.5 | - | 31.3 | 19.5 | 1,096.4 | 6.4 |
| Mackerel | 866.6 | 484.0 | 5.2 | 12.0 | - | 3.0 | 1.8 | 841.3 | 3.2 |
| Cod | 196.9 | 197.0 | 18.5 | 49.2 | 71.8 | 54.0 | 2.4 | 0.8 | - |
| Saithe | 119.8 | 142.6 | 7.6 | 44.7 | 31.4 | 33.7 | 0.8 | 1.5 | - |
| Haddock | 40.0 | 62.5 | 7.8 | 27.1 | 2.9 | - | 1.0 | 1.1 | - |
| Other | 172.5 | 204.1 | 27.5 | 35.8 | 9.2 | 24.4 | 16.0 | 58.7 | 1.7 |
| Total | 3,011.7 | 2,655.7 | 91.3 | 203.3 | 115.3 | 146.4 | 41.5 | 2,402.6 | 11.3 |

Note: Totals may not add due to rounding.

Source: "Fiskets Gang," published by the Norwegian Fishery Directorate, March 7, 1968, No. 10.

Record catches of mackerel in the North Sea made up the entire increase in the 1967 fish yield. The yield of other main species of fish remained at 1966 levels (cod and capelin or decreased (saithe and haddock). Due to oversupply of fish raw material, the fishermen's marketing organizations banned fishing for reduction purposes 12 times in the North Sea, and 18 times in North Norway, during 1967. A quota system was introduced during second-half 1967.

Herring and Sprat

Until 1965, the herring and sprat catches were the largest. In 1967, these increased about 2 percent: to 1,226,700 tons. Larger

catches of fat herring and small herring more than compensated for reduced yields from the North Sea and winter herring fisheries. The 1967 yield of sprat, raw material for the brisling "sardine," was 13,600 tons, slightly above 1966. Including price support and transfers from the Herring Price Equalization Fund, fishermen received \$41 million for deliveries of herring and sprat--only 70% of comparable 1966 income.

Cod

The 1967 cod yield was 196,900 metric tons, the same as 1966. Catches of spawning cod fell by 3.8% to 57,900 tons, whereas



Fig. 1 - On herring grounds off Norway's West Coast, large purse seine has been set around submerged shoal. Seine has been pursed and net is being pulled toward mechanized dories to confine fish more closely in net's bag. (Photo: FAO/H. Kristjansson)

Norway (Contd.):

small improvements were recorded for Finnmark young cod and of other cod from Norwegian and distant waters. The first-hand value of the cod catch, support payments included, was \$36.6 million, down 0.3% from 1966.

Other Species

In 1967, the aggregate yield of fishes other than herring, sprat, and cod rose 26%--to 1,580,100 metric tons. Purse seining for mackerel in the North Sea and off Shetland produced a record 866,600 tons. Catches of capelin off Finnmark increased 6.1% to 402,800 tons.

Capelin have been very abundant off Finnmark in winter and spring of the last 3 years, 1968 included. This, combined with limited local reduction plant capacity, has created serious marketing problems for capelin. The problems have been met partly by shipping capelin to plants in other districts, and partly by temporary fishing stoppages. Exvessel income from the capelin catch, reflecting poor prices for fish meal and oil, was only about 60% of income from smaller 1966 catch.

In 1967, the catch of saithe dropped 16% to 119,800 tons, haddock dropped 36% to 119,800 tons. These species, plus cod, are the most important raw material for frozen-fish fillets, stockfish, and klipfish.

No significant changes were recorded in landings of high-priced fish and crustaceans: eel, salmon, halibut, crab, lobster, and shrimp.

Disposition of Catch

Deliveries of fresh and iced fish fell 13% to 91,300 tons in 1967. Unchanged, or lower, deliveries were recorded for all major species sold for fresh consumption: haddock, cod, saithe, salmon, winter herring, North Sea herring, and mackerel. (Shrimp and crab are excepted.)

Extremely difficult marketing conditions for frozen-fish fillets abroad reduced over 20% (to 203,300 tons) the fish raw material purchases of the freezing industry. The stockfish industry apparently hoped for an end of the Nigerian civil war and resumption of normal deliveries to this market. It increased fish purchases in 1967 (cod and related species) by 5.1% to 115,300 tons.

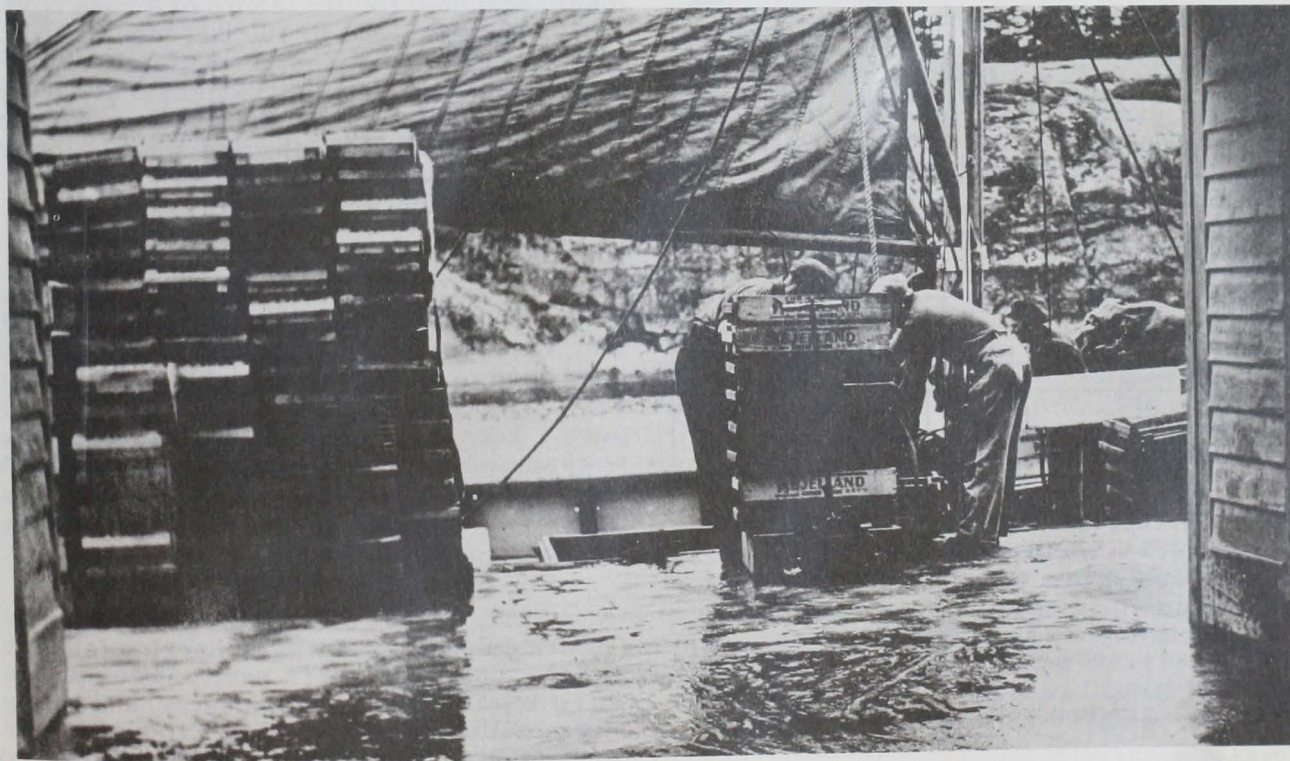


Fig. 2 - Unloading brisling (sardines) at canning plant. (Norwegian Official Photo)

Norway (Contd.):

The fish-salting industry received 114,500 tons of fish, except herring and sprat, or 7.8% above 1966. Herring salting claimed 13,600 tons of fish raw material, or 58% of the 1966 quantity.

Fish deliveries to the canning industry shrank over 15%, to 41,500 tons, in 1967; this resulted from smaller purchases of small herring and sprat. The downward trend in sales of fish for bait was reversed in 1967. It probably reflected a temporary increase in use of long lines.

As in 1966, the most notable production gain in 1967 was in fish meal and oil industry. Deliveries of herring, mackerel, capelin, and other species to reduction plants increased 21%--to a new high of 2.4 million tons.

Foreign Trade

In 1967, income from exports of fish products rose 13% to \$244 million. This was 14% of Norway's exports, slightly higher than 1966 (see table 2).

| | 1967 | 1966 |
|---------------------------------|---------------------------|---------|
| | . . . (Metric Tons) . . . | |
| Frozen Fillets: | | |
| Haddock | 10,966 | 14,602 |
| Cod | 25,583 | 26,056 |
| Coalfish | 19,565 | 17,828 |
| Herring | 6,689 | 8,435 |
| Other | 6,298 | 5,875 |
| Total frozen fillets | 69,101 | 72,796 |
| Frozen herring | 13,167 | 16,691 |
| Canned Fishery Products: | | |
| Brisling | 5,963 | 7,539 |
| Small sild sardines | 13,463 | 12,637 |
| Kippers | 3,348 | 3,386 |
| Shellfish | 523 | 787 |
| Other | 4,133 | 4,539 |
| Total canned fish | 27,430 | 28,888 |
| Fish meal | 494,785 | 257,289 |
| Herring oil, crude | 165,721 | 80,841 |

Source: "Fiskets Gang," Jan. 20, 1968, and Jan. 26, 1967.

As in 1966, fish meal was the No. 1 fish export in 1967 in volume and value. Such exports nearly doubled to a record 495,900 tons. Export income for fish meal was \$75 million, up 55%. This implies an average price reduction from \$184 in 1966 to \$150 per ton in 1967. Exports of fish oil rose 105% in volume and 45% in value--165,700 tons and \$20 million.

The frozen-fish fillet industry, the other growth industry in recent years, suffered an export setback. Exports dropped 5.1% to 69,100 tons in 1967, and a nearly 12% drop to \$32.5 million. Marketing conditions abroad were very difficult during most of 1967, due to oversupply; prices obtained were low. Due to Civil War in Nigeria, the principal market for "African-quality" stockfish not easily marketable elsewhere, 1967 exports of stockfish fell 55% from 1966 level. The Nigerian market, plus greater 1967 production, almost doubled inventories to 20,000 tons at the end of 1967.

Unlike most other major fish products, markets for klipfish were generally satisfactory. Increased sales, particularly in Brazil and Portugal, boosted klipfish exports to 40,900 tons, 13% above 1966. Average export prices obtained were 4.5% higher in 1967 than in the year before.

In 1967, canned-fish exports increased 5.4% in volume to 38,000 tons.

Exports to U. S.

Exports of fish products to the U. S. rose over 50% to record \$32 million in 1967. Fish meal accounted for it: exports rose from 22,700 tons in 1966 to 100,800 tons in 1967. Shipments of canned-fish products, the principal fish product in value, remained at 1966's \$10 million. In frozen-fish fillet exports to U. S., fierce competition, and sharply lower prices, reduced volume 21%, to 7,700 tons and value 25% to \$3.9 million.

Norwegian Imports

In 1967, imports of fish and fish products into Norway were 23,200 tons and \$9 million, compared to 41,200 tons and \$11.6 million in 1966. The most important fish products imported were salted cod for klipfish industry, and salted herring and canned fish delicacies for domestic consumption. As in 1965-1966, imports of U. S. fish products were negligible.

Aid to Fishermen

In 1967, the average price received by fishermen per ton of winter herring fell 20% to \$37. This reflects partly lower prices paid by fish reduction industry, and partly the smaller portion of 1967 catch of winter herring marketed fresh and frozen and so eligible for price support.

Norway (Contd.):

Table 3 - Average Prices to Fishermen in \$ Per Metric Ton

| | 1966 | 1967 |
|----------------------------|------|------|
| tribut | 715 | 791 |
| awning cod | 186 | 205 |
| nnmark young cod | 171 | 159 |
| the | 95 | 93 |
| ackerel | 50 | 29 |
| na | 443 | 280 |
| ogfish | 125 | 126 |

Source: Economic Survey 1967, Central Bureau of Statistics, Oslo.

In 1967, \$27 million, or 16.8% of exvessel value of fish catch, was appropriated by the government for price support, reduction of costs for tackle and bait, and for modernization measures. No price support was given for fish delivered to the fish-reduction industry. An undisclosed export income reduction in the Nov. 1967 round of devaluations was partially offset by a \$1 million government appropriation.

Government Policy

No significant changes took place in government fisheries policy during 1967. The fisheries still are characterized by fishermen's marketing organizations wielding exclusive rights in exvessel price stipulation and marketing of about 98% of total landings, centralized exports of many principal fish products, state-supported lending facilities (Norwegian Fishermen's Bank), and government subsidization of fish prices and certain cost items.

There are indications of a changing climate in official fisheries policy. Recently, the Ministry of Fisheries extended export rights to the "Nordic Group" for frozen-fish fillets to the U. S. Nordic Group A/L, an organization of 14 independent producers, now joins Frionor as a Norwegian sales organization in the U. S. Also, in a recent speech, Minister of Commerce and Shipping, Kaare Willoch, advocated liberalization of fish exports.

Outlook

The short-term outlook seems fairly good--despite dire warnings that Norway is heading into the worst fisheries crisis since the mid-1930s. In early 1968, the seasonal fisheries' yield, and marketing prospects for several important products, notably frozen-fish fillets, portend at least a normal year. However, marketing conditions abroad for other main products, like fish meal and oil and stockfish, are less satisfactory. They may cause further hardship for those in these fisheries and processing.

Early 1968 Yield

The yield of principal seasonal cod fisheries, spawning cod and Finnmark young cod, was 91,800 tons in the third week of April. This was 25% above the 1967 period. The fish filleting industry has processed 23,000 tons of the total, an increase of 77% over 1967; deliveries of cod for hanging (stockfish) fell 12% to 31,600 tons in Jan.-Apr. 1968. Complete failures of the fat herring and winter herring fisheries reduced deliveries of fish raw materials to the reduction industry by one-third (to 0.5 million tons) in Jan.-Apr. 1968, despite record landings of capelin.

The 1968 output of the fish-reduction industry will drop substantially from the 1967 record of 470,000 tons of meal and 310,000 tons of oil--unless yields of North Sea herring, mackerel, and other shoalfish (small herring, fat herring, sandeel, Norway pout) set record.

Note: All tons are metric.

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HOW INDUSTRIAL FISH LANDINGS WERE USED (JAN.-MAY 1967-68)

"Fiskets Gang," published by the Norwegian Fishery Directorate, reported June 6 these uses of industrial fish from January-May 1967-68:

Norway (Contd.):

| Species | Total | Iced Fresh | | Frozen | | Salted | Canned | Animal Food | Meal & Oil |
|--------------------------------|-------|------------|----------------------|--------|------|--------|--------|-------------|------------|
| | | Export | Domestic Consumption | Edible | Bait | | | | |
| (1,000 Metric Tons) | | | | | | | | | |
| Herring: | | | | | | | | | |
| North Sea . . . | 33.6 | 4.0 | - | 2.0 | 0.1 | 0.3 | 1.5 | - | 25.7 |
| Fat | 100.7 | - | 0.1 | 1.2 | 2.7 | - | 0.1 | - | 96.5 |
| Small | 4.2 | 0.1 | 0.2 | - | 0.1 | - | 2.1 | - | 1.6 |
| Winter | 25.6 | 4.4 | 7.2 | 5.1 | 0.7 | 3.5 | 2.0 | - | 2.8 |
| Fjord | 0.3 | - | 0.2 | 0.1 | - | - | - | - | - |
| Total 1968 | 164.4 | 8.5 | 7.7 | 8.4 | 3.7 | 3.8 | 5.7 | - | 126.7 |
| Total 1967 | 511.2 | 18.1 | 2.2 | 33.2 | 3.2 | 20.4 | 10.0 | - | 424.2 |
| Capelin . . . | 497.1 | - | - | - | - | - | - | - | 497.1 |
| Norway pout . | 13.6 | - | - | - | - | - | - | 0.5 | 13.1 |
| Total 1968 | 510.7 | - | - | - | - | - | - | 0.5 | 510.2 |
| Total 1967 | 421.9 | - | - | - | - | - | - | - | 421.9 |
| Mackerel: ^{1/} | | | | | | | | | |
| 1968 | 240.6 | 0.3 | 1.1 | 3.0 | 1.9 | 0.8 | 0.2 | 0.3 | 233.0 |
| 1967 | 331.1 | 0.2 | 0.9 | 2.2 | 1.4 | 1.0 | 0.2 | - | 325.3 |

^{1/}Through Mar. 25, 1968; Mar. 27, 1967.

Notes: (1) Original data converted from hectoliters (hl.) using 93 kilos=1 hl. for all species except capelin (100 kilos=1 hl.)
(2) Totals may not add due to rounding.



France

THE FISHERIES OF FRANCE

France's ranks 16th among the world's fishing nations and 6th among the 36 European fishing nations. She has 1,870 miles of coastline on the English Channel, the Atlantic Ocean, and on the Mediterranean Sea. Yet she remains a net importer of fishery products. The industry is in trouble "because its structure retards development, investment capital is inadequate, the market disorganized, and international competition increasing."

CATCH AND PRINCIPAL SPECIES

Since 1948, the total catch of fish and shellfish has been rising. It increased 57 percent from 512,800 metric tons to a record 804,800 tons in 1966, on a live-weight basis. Most of the increase in recent years may be attributed to new and more powerful vessels. These permit fishermen to exploit offshore resources. Catch value was over US\$200 million in 1966.

The industry does not depend on a few species. Large quantities of cod, haddock, hake (European), pollock, whiting, herring, pilchard (European), albacore, yellowfin, mackerel, mussels, and oysters are landed. Cod is valued at about US\$14 million. It is the most important fish in quantity and value.

Since 1961, landings of yellowfin, tuna, mussels, haddock, saithe (pollock), whiting, and cod have increased; landings of oysters, hake, mackerel, and herring declined.

Salt-Cod

The salt-cod fishery is on the Grand Banks off Newfoundland. Large trawlers of 1,000 to 1,800 tons are used. These make 2 or 3 fishing trips each year, beginning in February and continuing until mid-December. In 1966, production of salt-cod was about 46,000 tons. The newest vessels are equipped to quick-freeze catches. This may become more common than salting cod in the near future. Frozen cod production began in the early 1960s.

Tuna

The tuna industry has been developing steadily. In 1966, 44,000 metric tons were caught--up 6 percent over 1965. The 1966 catch was worth 100 million francs (US\$20 million). Four species dominate the catch--albacore, yellowfin, bluefin, and skipjack.

The tuna fishery is divided into the European season and the African season:

European: Main species are bluefin and yellowfin. These are caught in the Atlantic from nearly every important French port between Camaret and Saint Jean de Luz. Concarneau and St. Jean de Luz are the leading ports. About 572 vessels are equipped for tuna fishing, 54 over 1965. The 1966 yellowfin

France (Contd.):

Catch was 12,520 metric tons, lower than in 1965; bluefin catches increased to 2,613 tons. Improved prices for both species showed market far from saturation.

There are problems, particularly on the Basque coast. There canneries are working below capacity because catch increases were only modest and competition from the fresh fish market is keener.

African: Two separate fleets are involved. One, based at Dakar, West Africa, has tuna boats and boats with refrigerated holds, and works in winter and spring. The second fleet, tuna freezer boats, operates year round in the Gulf of Guinea.

The catch of the refrigerated tuna boats was 7,985 tons in 1966; this included 5,878 tons of albacore and 2,107 tons of skipjack. The 34-vessel freezer fleet (7,230 GRT) caught 20,866 tons--about 14,000 tons of albacore and the rest skipjack. Total African catch was 28,900 tons.

Shellfish

Since 1957, there have been large increases in production of oysters, scallops, and mussels. Catches have doubled or tripled in some cases. A large market for shellfish is developing.

Outlook

Cod and herring catches have been dropping over the years. Most nations fishing these species in the North Atlantic report declining catches. Overfishing may have reduced available stocks and this is disturbing for the future. Other industry problems include: extension of fishing limits by other nations, declining prices, and increasing competition from other nations for the resource and the markets.

Landings have been increasing steadily. Likely, they will continue in the near future. This optimistic outlook is based on a modernization of the industry, which would offset the difficulties.

Fishing Areas

Small- and large-scale operations are conducted off Greenland and Newfoundland, the

North Atlantic, North Sea, Mediterranean Sea, Atlantic Coast of Africa, and France's coastal grounds. Coastal and offshore waters are most productive. These produce around 500,000 tons annually. Cod and tuna are very important distant-water fisheries, especially the salt-cod fishery on the Grand Banks.

In 1966, deep-sea fishing yielded 53,000 tons; landed value was 81.3 million francs (US\$16 million). Salted cod were 46,000 tons of the total, a little more than in 1965. Tuna are caught in European and W. African waters. The fresh sardine fishery is conducted off France's Mediterranean and Atlantic coasts; the frozen sardine fishery is off Morocco.

Ports

In 1966, the leading ports in order of importance were:

| Port | Tonnage |
|-------------------------------|-------------|
| | Metric Tons |
| Boulogne | 146,000 |
| Concarneau | 68,000 |
| Lorient | 61,000 |
| Fecamp | 31,000 |
| La Rochelle | 24,000 |
| Douarnenez | 21,000 |
| Bordeaux | 17,000 |
| Dieppe | 13,000 |
| Le Guilvinec | 12,000 |
| St. Jean de Luz | 11,000 |
| St. Malo | 10,000 |
| Port-en-Bessin | 9,000 |
| Les Sables d'Olonne | 8,000 |
| Cherbourg | 8,000 |

Often, the fisheries are centralized in certain ports. The fresh fish trawlers that operate off Iceland, Norway, and in the North Sea are based in Boulogne and Dieppe. Trawlers that work the Atlantic as far south as Mauritania and north to Ireland dock in Lorient and La Rochelle. Trips of fresh-fish trawlers normally run 10-15 days. Deep-water trawlers (salt-cod) operating in the northwest Atlantic are based mainly in Fecamp, Bordeaux, and St. Malo. Though Concarneau and St. Jean de Luz are important tuna ports, tuna vessels operate out of nearly every important port. St. Jean de Luz also is an important frozen-sardine port. Les Sables d'Olonne is another principal sardine port. Lobster vessels are important in Camaret. Many ports, including Port-en-Bessin and Douarnenez, are home for line-fishing vessels.

France (Contd.):

FISHING VESSELS

There are about 14,000 vessels totaling 287,992 gross tons in France's relatively modern fishing fleet. Nonrefrigerated trawlers, generally under 250 gross tons each, are most numerous type. About 10,000 vessels are under 10 gross tons, and only 64 are over 500 tons. The number of medium-sized vessels, especially those 25-50 tons, has declined sharply; so has number of under-10 GRT vessels.

The fleet has declined by over 400 vessels since 1961; however, total gross tonnage increased because of significant changes in size and type of power. The fleet has been upgraded, as stern trawlers, moderate-sized trawlers, combination boats, and freezer trawlers have replaced the sailing fleet, coal-burning steam trawlers, and drifters.

Number and gross tonnage of vessels:

| | Number of Vessels | Tonnage |
|---------------|-------------------|---------|
| Dec. 31, 1960 | 14,315 | 255,181 |
| Dec. 31, 1965 | 13,566 | 287,776 |
| Dec. 31, 1966 | 13,906 | 287,992 |

In 1962, the deep-sea fleet had 32 vessels: 22 trawlers used exclusively for salting catches, 6 trawlers for both salting and freezing, one all-freezing vessel, and 3 other specialized trawlers.

The construction of freezer vessels is a very significant development of recent years. Vessels no longer are being built exclusively for salting fish. The question now facing the industry is whether a combination vessel (salting and freezing) or a purely freezing vessel is best for its future.

An interesting aspect of fleet modernization is that many large vessels were and are being built in West Germany, Poland, Belgium, and the Netherlands. There, costs were less. Stern trawlers were gradually accepted, but only the largest have complete quick-freezing plants.

FISHERMEN

The number of fishermen has declined over the years to about 40,000: 35,000 are self-employed, about half in South Brittany. Also, an estimated 50,000 workers work in shell-

fish culture, 13,000 in canneries, 2,000 in curing plants, and perhaps 8,000 in industrial fish plants and other segments of the industry, including marketing.

Fishermen are paid under 2 basic wage plans. In the "industrial" fishery (vessels over 100 GRT), crews receive a guaranteed minimum wage, or a share of the catch proceeds, whichever is greater. In other types of fishing, only the share system is used.

MARKETING

Consumption

Per-capita consumption of fish and shellfish is about 13 kilos, the largest in the Common Market but low compared to other European nations. About two-thirds of seafood consumption is fresh, the rest frozen, canned, and salted. Consumption of canned and frozen fishery products is increasing; that of dried, salted, and smoked products is declining. Country-wide promotion campaigns are conducted. There remain wide variations in fish consumption between different regions. Retail prices for fishery products are high; fish are not inexpensive compared with meat.

Processing

The frozen-fish trade is relatively small compared with the European trade. This is because storage, distribution facilities, and advertising are inadequate. Parts of the industry are now paying more attention to this trade.

Consumption is expected to reach 50,000 tons per year by 1970, triple the present amounts. The interest in increasing production of frozen fishery products is shown by the program of converting deep-sea salting vessels to freezer trawlers.

France produces the largest amount of canned fish in Europe, between 80,000-100,000 tons annually. Rigid controls produce high-quality. The industry consists of about 150 factories, mainly in northern France. There is a concentration in number of plants and significant increases in productivity.

Cod, herring, sardines, mackerel, and anchovies are all cured. Cod is salted aboard ship; additional processing is done ashore. Salted cod is the largest item of cured fish;

France (Contd.):

about 46,000 tons were produced in 1966, far below 1962's 67,000 tons.

Very small amounts of fish meal and oil are produced; about 12,000 tons of fish meal per year.

Distribution

About one-fourth of all landings are shipped to Paris for local consumption, or redistributed to other areas. In the larger ports, fish are (1) auctioned to wholesalers, who sell directly to retailers, (2) sold at agreed price to secondary wholesalers, or (3) sold on consignment to secondary wholesalers who act only as consignees.

Fresh fish is efficiently transported from ports to large cities in refrigerated railroad cars. Redistribution is poorly organized. Refrigerated trucks are being used more extensively for both short and long-distance hauls. Marketing has also been hampered by the tendency of retailers to resist receiving lower profits on volume sales. They prefer low volume and high mark-up.

FOREIGN TRADE

France is a net importer of fishery products. In 1966, she imported 199,000 metric tons of edible fishery products worth over US\$180 million. This continues the upward trend of recent years. The imports are 38 percent in fresh and frozen form, 35 percent shellfish, 19 percent canned fish, and 8 percent cured. All have increased since 1961, especially fresh and frozen fish and shellfish.

The Netherlands is the largest seller; Ireland, Morocco, and Norway also sell much. The U. S. is not a large supplier.

Imports of fish oil and meal increased from 96,000 tons in 1961 to 125,000 tons in 1966. Most fish meal and oil originates in Norway; Peru also is an important supplier. French production of fish meal and oil is limited, so imports are necessary.

Exports

Exports have been rising since 1963, when only 35,000 tons were shipped. In 1966, over 60,000 tons of fishery products were sold abroad. Dried, salted, or smoked fish are

the primary exports, mostly salt-cod. The amount of cured fish exported in recent years has been declining. Exports of fresh and frozen fishery products have quadrupled since 1963, and now are almost as important as cured fish. Together, these two categories account for over two-thirds of exports. Italy, Belgium, Luxembourg, West Germany, the Netherlands, and the U. S. are primary markets.

GOVERNMENT ACTIVITIES

The principal fishery agency in France is the Division of Marine Fisheries in the General Secretariat for the Merchant Navy, Ministry of Public Works and Transport. The Division has 2 main subdivisions: management and administration of shellfish culture, and economics of marine fisheries. Other bodies are the Scientific and Technical Institute of Sea Fishing, the Credit Maritime Mutuel, and an advisory body, the Central Committee for Sea Fishing. Their services relate to scientific and technical research, inspection, educational and training facilities, fish promotion, collection of statistics, and economic studies.

In 1965, the Government created a new organization: "FROM" (Fonds Regional d'Organization du Marche) in northern France, principally covering the ports of Etaples, Boulogne, Fecamp, and Dieppe. FROM was to stabilize catch, avoid market saturation, and improve quality control. FROM's success won it supervision, in 1966, over western and southern ports.

Government activities touch all segments of the industry. The main emphasis is on development and modernization of the fleet. Programs include loans, interest rebates, and subsidies for vessel construction and updating equipment. Many programs are administered by the Credit Maritime Mutuel. Special "incentive" subsidies are provided to encourage use of modern features, such as stern trawls and onboard freezing equipment.

In the Fifth Plan (1966-1970), the government has pledged to: (1) increase landings, (2) improve quality of fish landed, and (3) increase exploitation of previously unutilized or underutilized species. Also, in 1966, a comprehensive expansion program was announced. Its aims were to modernize vessels and equipment, improve shore facilities, increase training facilities, intensify

France (Contd.):

research activities, and increase fish consumption. Financial programs, such as special credit arrangements and subsidies, are included. The main effort will be to increase consumption.

SUMMARY AND OUTLOOK

In 1966, landings of fish and shellfish reached record level of 804,800 metric tons. Landings are expected to continue upward. However, some change in overall catch composition is likely. Several important resources, cod and herring particularly, seem less abundant. Certain fishing areas are being closed to the French as other nations expand fishing limit claims. (France has a 12-mile fisheries limit).

Counteracting these difficulties, however, is the concerted effort by government and industry to construct a more modern fleet. The fleet will be capable of fishing stocks and areas not utilized much--and freezing or processing catches onboard. There is also an effort to modernize the entire industry.

The low per capita consumption rate of about 13 kilos is receiving much attention. The development of a market for frozen fishery products is the key to increased consumption. However, new products and species also will be introduced. The shellfish market has been developing rapidly.

Little major change is likely in the industry's foreign trade position. France is overwhelmingly a net importer.

Government programs have aided industry development. Primary emphasis has been on upgrading the fleet and its equipment. This will continue. Secondary emphasis is on expanding the domestic market.

* * *

FISHING FLEET DECLINES

As of Jan. 1, 1968, the census of the French fishing fleet carried out by the Secretariat of the Merchant Marine showed: 13,770 vessels, a tonnage of 284,110, and 928,780 hp. The fleet is decreasing. The count was 236 units and 2,893 tons less than a year earlier. No doubt there will be another drop by the end of 1968.

Makeup of Fleet - FRENCH

Fleet distribution is: (1) 23 deep-sea trawlers (2 less); (2) 1,411 "fresh fish" trawlers, probably means without freezer (86 fewer); (3) 54 tuna vessels (3 fewer); (4) 4 sardine freezers; (5) 35 tuna freezers (2 less); (6) 100 "fresh fish" or live-bait tuna boats; (7) 34 lobster freezers (3 fewer); (8) 88 lobster boats (3 less); (9) 1,956 multi-purpose vessels (116 more). ("La Peche Maritime," Apr. 1968.)

* * *

DEVELOPMENTS IN TUNA VESSELS

Barely 20 years ago, the major part of the French tuna fleet was sailing boats. Since then, vessels have been developed for live-bait and purse-seine fishing. They have become larger. Orders for twelve 155- and 165-foot vessels were placed within the last 2 years. A dozen will be provided for Saint-Jean-de-Luz and Concarneau (7 for the latter).

Important Development

The Concarneau vessels represent an investment of US\$6.6 million. Incontestably, they mark a new and important stage in the evolution of tuna fishing. They will increase especially the possibility of catching 10,000 to 15,000 metric tons of fish a year. The best profit-earning capacity of a 155-foot tuna vessel is in the 1,500-2,000-ton annual catch. ("La Peche Maritime," Apr. 1968.)



Greece

THE FISHERIES OF GREECE

In 1967, total production from the sea, lakes, and lagoons was 102,317 metric tons. In 1966, it had been 108,082; in 1965, 106,573. This information comes from industry sources and was reported and discussed in the Greek magazine "Alieia," in Feb. 1968.

The reduction was due to the general decline in territorial waters (in Greek seas and lakes because of natural reasons). There was an increase in Mediterranean and over-seas catch.

Greece (Contd.):

| | Metric Tons | | % Difference |
|---|-------------|---------|--------------|
| | 1967 | 1966 | |
| Atlantic fishing | 31,817 | 29,582 | + 7.55 |
| Mediterranean fishing and other-than-Greek waters | 4,000 | 3,500 | +14.35 |
| Midwater fishing | 42,000 | 47,000 | -10.64 |
| Coastal fishing | 14,000 | 16,000 | -12.50 |
| Inland water fishing . . . | 10,500 | 12,000 | -12.50 |
| Totals | 102,317 | 108,082 | - 5.35 |

Atlantic Fishing

The overseas catch increased by 2,235 tons, 7.55%, between 1966 and 1967. Between 1965 and 1966, it was 2,509 tons, 9.2%.

Mediterranean Fishing

Despite the 14.35% increase in Mediterranean catch--due to more trawlers in Libyan waters--the catch per trawler unit dropped.

Midwater Fishing

In 1967, there was a remarkable decrease from the 1966 catch of purse seiners and trawlers in Greek waters. The 5,000-ton drop, 10.64%, was due to natural causes. The purse seiners did not fish satisfactorily. Only good catches and prices for mackerel prevented greater losses.

Frozen Fish Consumption

In March and April 1968, Alieia reported figures released by the Union of Greek Atlantic fishing shipowners showing 1967 consumption of frozen fish as 31,826 tons. This was a 10.46% reduction from 1966.

The reduction was due partly to the dissolution, for financial reasons, of distribution companies founded by fishing firms to sell their catches. As a direct result, the trading of frozen fish has been taken over by inde-



Fig. 1 - Fleet near Piraeus, Athens' port. (Photo: FAO/H. Menjaud)

Greece (Contd.):

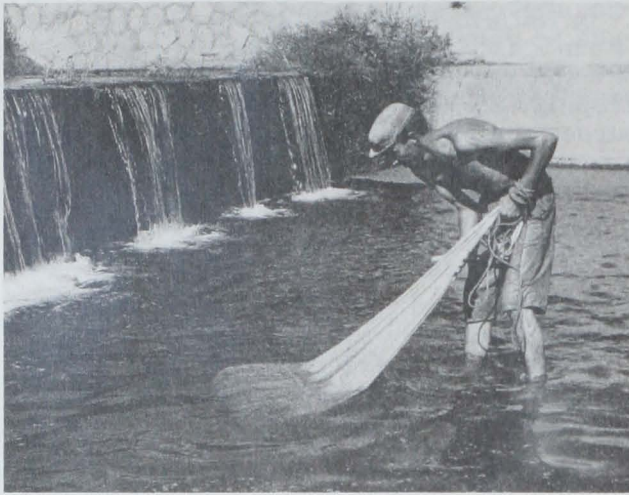


Fig. 2 - Fishing in main canal of modern irrigation system in Serres Valley in Northern Greece. (Photo: FAO/A. Defever)

pendent provincial transporters. The quality and good appearance of the frozen fish have not been maintained.

A second reason was the indifference of independent traders who made small profit on frozen fish. This has made transporters of frozen products turn towards frozen meat and chicken, which offer a high commission.

Processed Fishery Products

The U. S. Embassy reports that Greek processed fishery products include canned fish, salted fish, sea sponges, and fishmeals.

The fish-canning industry consists of only one small factory, the Pelican Co. in Thessaloniki. It also cans vegetables. Pelican's canned-fish output was:

| | 1967 | 1966 |
|---------------------------------------|-----------------------|------|
| | . . (Metric Tons) . . | |
| Mackerel (salmon-type) | 35 | 31 |
| Sardines (in sauce, in oil) | - | 16 |
| Octopus | 1 | 25 |
| Total | 36 | 72 |

The decrease in canned-fish production probably results from foreign competition in the Greek market.

Fish Salting

This is done in many small, unmechanized, establishments in coastal localities--chiefly Cavala, Thessaloniki, Volos, and on islands of

Euboea and Mitylene. The Directorate of Fishing, Ministry of Industry, has estimated 1967 salted-fish production at 4,000 tons, the same as in 1966.

Sea Sponges

These are Greece's principal processed fishery export product. Sponge production in 1967 was 62 tons, compared with 54 tons in 1966. Sponge fishing occurred in Greek and Libyan waters.

Fishmeals

Production of fishmeals began in late 1965. In 1967, it amounted to 387 tons, compared with 714 tons in 1966. Some owners have decided it is presently uneconomical to produce fishmeals on board their fish factory vessels.

Construction of Fish Markets

The fish markets in Piraeus, Thessaloniki, Patras, Chalkis, and Cavala have been built. Work on the one at Volos is still delayed. The equipment for Patras was obtained from France.

Governmental Activities

A corporation, "ELYPAL," has been established by the Hellenic Industrial Development Bank (ETVA) to organize production and marketing of deep-sea catch. Eventually, it will set up facilities to process fish and fish byproducts. Reportedly, the Ministry of Industry considers assigning management of the fish markets to this corporation, rather than to the Agricultural Bank of Greece, as originally planned. The capital of the corporation is 20,000,000 drachmas (\$667,000; 30 Drs. = US\$1) and 49% of share capital is open to subscription by owners of deep-sea fishing vessels. The deep-sea catch increased from 1,360 tons in 1956 to 32,000 tons in 1967.

1967 Foreign Trade

Greek exports of fishery products, except sponges, totaled 2,476 tons (\$1,454,733) in 1967, compared with 1,954 tons (\$1,326,200) in 1966. The difference was due chiefly to increased exports of frozen and salted fish. Exports to the U. S. included: salted sardines 32 tons (\$13,166), and canned fish 7 tons (\$11,200). Sponge exports were 80 tons worth \$2,262,500 (78 tons were bleached or otherwise processed), compared with 102 tons (\$2,591,000) in 1966. In 1967, the U. S. was

Greece (Contd.):

The principal buyer of sea sponges (27 tons, \$350,700).

1967 Imports

Greece imported 47,304 tons of fishery products worth \$15.2 million, compared with 40,620 tons valued at \$13.2 million in 1966. Imports included: fresh, frozen and salted fish, 17,010 tons (\$6.7 million); canned fish, 2,395 tons (\$5.3 million); sea sponges, 27 tons (\$476,900); and fish and meat meals, 27,872 tons (\$2.7 million).

Imports from the U. S. included: canned fish 3,810 tons (\$1,095,000) of which, 3,790 tons (\$1,054,800) were squids; 9 tons (\$16,100) shrimps; and 3 tons (\$8,000) crabs.



USSR

SOVIETS PROTEST JAPANESE FISHING OFF KAMCHATKA

The Soviet Government organ "Izvestia" has published a special correspondent's article stating that the fishing industry in Kamchatka is being threatened with extinction by "piratical fishing techniques" used by Japanese fishermen. The correspondent had spent a day in the radio station of the Main Administration of the Far Eastern Fisheries listening to reports from Soviet resource-management agents aboard surveillance planes. The agents had given numbers and positions of Japanese vessels.

Following these reports, telegrams from fishery kolkhozes (collective enterprises) were received protesting Japanese fishing of spawning herring off Kamchatka's coast. These telegrams cited woes of local fishermen "for whom fishing is the main source of income." The fishermen did not fulfill the 1967 catch quotas because "no herring came to the spawning grounds."

Japanese Vessels Detained

Several Japanese vessels were caught in Soviet territorial waters (12 miles) and detained. When fishery inspectors boarded them, they found "herring which was just spawning or had just spawned."

Party and fishermen's organizations vigorously protested Japanese methods. They demanded that the Government stop them. ("Izvestia," May 24.)

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'VITIAZ' COMPLETES CENTRAL PACIFIC RESEARCH

The Soviet 2,975-gross-ton research vessel Vitiaz completed a 4-month cruise in mid-May (her 43rd exploration) and returned to Vladivostok. The expedition to the Central Pacific was headed by P. Bezrukov.

Research involved hydrogeology, geophysics, hydrochemistry, and biology. The results will be useful to science, navigation, and fisheries.

Made Port Calls

The Vitiaz made port calls at the Fiji, Samoa, Tonga, and Society Islands (Tahiti), and in Hawaii and Japan. In Tokyo, the Soviet scientists met with Japanese oceanographers and exchanged information. ("Vodnii Transport," May 9 and 14.)

* * *

FAR EASTERN FISHERIES GROUP PUSHES TO FULFIL 5-YEAR PLAN

When the current 5-year plan ends in 1970, the Soviet Union's Far-Eastern Fisheries Administration is scheduled to achieve an annual catch of over 3 million metric tons of fish and other marine products. This would be 800,000 tons above 1967. To reach this goal, it is necessary to discover and exploit new fishing grounds, expand deep-sea fishing, and develop and introduce new equipment and technology.

New Fisheries

The Far-Eastern industry has expanded into fishing for herring, saury, Pacific hake, and mackerel. Mackerel is the latest species to be caught in the Pacific by the Soviets on a commercial scale. Aerial spotting is widely used in this operation. Herring and saury are caught in drift nets, purse seines, and by pair trawling; in the Pacific hake fishery, midwater and pair trawling is used.

The Soviet Pacific tuna fleet is experimenting with a special synthetic bait. It has yielded catches exceeding 3 metric tons.

USSR (Contd.):

Pelagic Midwater Trawling

The expansion program of Soviet Pacific fisheries is based primarily on pelagic mid-water trawling. A successful development of this technique requires equipping trawlers with reliable echo-sounders and fish-finders. Important mid water trawling experiments were performed in 1967 by the freezer stern trawler "Kalisto" ("Tropik" class, 2,600 gross tons). The results were recommended for adoption by the entire Soviet Far Eastern fishing fleet.

Purse Seining Developments

To increase purse seining's potential, power blocks have been installed on seiners. Specialists are now working to automate such cumbersome operations as stacking and drying seines as another step toward complete automation of purse seining. They also are studying and designing improved models of fish pumps.

Most Soviet seiners in the Far East belong to the RS-300 class (158 gross tons). They are inadequate for deep-sea fishing. Designing and building special high-seas trawler-seiners is lagging. The obvious solution is to re-equip the available trawlers for deep-sea purse seining. Drift-net fishing also is being automated gradually: vessels are fitted with machines for drift-net handling and shaking, and for fish salting.

Other New Techniques

Other techniques include fishing with lights for herring by Sakhalin fishermen. Catches range between 1 and 5 metric tons per haul. The exploratory refrigerated medium trawler "Yu. Gagarin" ("Okean"-class, 700 gross tons) caught nearly 1.4 metric tons of saury in about 40 minutes by combining light fishing with pump fishing. The fish pump was switched on 26 times, each suction lasting 1.5 minutes. Automatic winches and mechanical devices developed by TINRO specialists for automated squid fishing have been successfully tested. They are now recommended for wide-spread application.

Other Problems to Solve

Among the problems the Far Eastern Fisheries Administration plans to solve in 1968 are automation of long-lining for bottom fish;

transshipment of catches in detachable containers to floating bases and processing refrigerator vessels; crab fishing with special traps; and others. ("Vodnyi Transport," May 30.)

* * *

EXPANDS POLAR FISHERIES

The Kola Peninsula lies far beyond the Polar Circle. Half a century ago, it was one of the Soviet Union's most backward regions. Today it is becoming an important economic, industrial, and cultural center of the Northern Regions of European USSR. Under the Soviet regime, the economic potential of the Kola Peninsula reportedly has increased up to 370 times.

Fisheries are the oldest economic activity there. Since a trawler base was established at Murmansk 40 years ago, Soviet fishermen have caught a total of about 13 million metric tons of cod, herring, ocean perch, and other species in the North Atlantic, the White and Barents Seas. More than half that catch (7 million tons) was landed during the past decade. The 1967 catch was the highest in the history of Murmansk fisheries. Preliminary estimates place it close to 900,000 metric tons.

Plans for Murmansk

Scientists of the Kola Branch of the USSR Academy of Sciences have worked out economic plans for the region for 1971-1980. These envisage an increase of about 50 percent for the Murmansk fishing industry. The catch is to rise to 1.1 million metric tons by 1970, and to 1.5-1.6 million metric tons by 1980.

The planned expansion of the Murmansk fishing industry faces many problems requiring prompt solution. One is adjusting wholesale prices for fishery products on the basis of actual labor and production expenditures. This is essential for applying successfully the new planning and economic system for fisheries. Another problem is manpower resources. A third is that scientists of the many research institutes must design machinery and equipment specifically for Arctic use. ("Ekonomicheskaja Gazeta," No. 16, April.)

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USSR (Contd.):

FLOATING FISH MARKET WILL COME TO ROSTOV-ON-THE-DON

The Soviet Ministry of Merchant Marine will build a floating fish market on the waterfront of Rostov-on-the-Don. The project is being handled by the Ministry's Central Design and Building Office at Rostov and will promote fish sales and increase consumption.

The market will be supplied by ten ponds capable of holding 15 metric tons of live fish. The public will be able to select their fish from the ponds.

It will be possible to move the floating market to the ponds to load freshly caught fish. ("Vodnyi Transport," June 7.)

* * *

PLANS 1968-70 AZOV-BLACK SEA FISHERIES EXPANSION

The Soviet Azov-Black Sea Fisheries Administration plans to expand deep-sea fishing in 1968-70. However, fishing in the Azov and Black Seas will not be curtailed. In 1967-68, about 63 percent of the Administration's catch was marine fish; by 1970, this share will rise to about 80 percent. The demand for hake, marlin, and other species is constantly growing in Soviet markets. Explorations and surveys are planned to discover new fishing grounds in the Southwest Atlantic and the Indian and Antarctic oceans.

New Vessels & New Techniques

During the first months of 1968, the Administration's high-seas fishing fleet increased by 20 units. It consists of the "Atlantik"-class stern trawlers, "Rembrandt"-class processing refrigerators, and medium trawlers of other classes. Techniques that are being introduced and developed include trawling at 1,640 to 3,280 feet, purse seining, fishing with artificial light sources, and others. Over 30 vessels of the Odessa, Kerch, Sevastopol, and Novorossiisk oceanic fisheries are operating in the Atlantic.

Problem of Ship Repair

A serious problem facing the Administration is ship repair. In 1967, its vessels were laid up for a total of 1,638 vessel-days. The

minimum catch loss to industry is estimated at 33,350 metric tons. This situation is being remedied by more careful handling of vessel equipment, and by crews repairing their own vessels. ("Vodnyi Transport," May 16.)

* * *

WHALING FLEET VISITS AUSTRALIA

A Soviet whaling fleet of 1 factoryship and 20 catcher boats arrived in Sydney, Australia, on May 20, 1968, for a 6-day visit. This was the first shore leave for the crew since the fleet left Vladivostok in September 1967 for the Antarctic whaling grounds. Captain G. V. Vayner, fleet commander, informed the harbor master at Sydney that his vessels required neither oil nor water. Apparently, they had bunkered at sea. Under the Commonwealth Whaling Act, the whaling vessels of all nations enjoy the privilege of bunkering at Australian ports.

4 Months to Capture Quota

Newspaper accounts said it took the fleet more than 4 months to capture its quota of 3,321 whales this year. This was attributed by some Soviet fishermen to a scarcity of whales. Captain Vayner, however, blamed bad weather and rough seas.

Nine fleets hunted whales in the Antarctic during the year--3 Soviet, 4 Japanese, and 2 Norwegian.

The Soviet Fleet

The Soviet fleet's factoryship, the 32,000-gross-ton "Sovietskaya Rossia," is one of 2 whaling factoryships designed and built in the Soviet Union at the Nosenko State Shipyard at Nikolaev. The ship is 715 feet long, nearly 100 feet wide, has 3 decks, and a crew of 521, including 50 women. The ship is carrying a full load of 10,822 metric tons of oil for industrial use, and 7,201 tons of oil for human consumption. Each of the 20 catcher boats is in the 850-gross-ton range and is powered by four 1,000-horsepower diesel engines making 17 knots under full power. It has a crew of 31. One catcher boat killed 246 whales, mostly fin and sei whales.

1,200 Crew Members Shop

The Sydney press said A\$250,000 was paid to the 1,200 members of the fleet before they

USSR (Contd.):

came ashore. Inevitably, several stores blossomed with "Russian spoken here" signs. Shopping was brisk. The visit coincided with a "Britain 68" promotion at the David Jones stores. It was an incongruous sight--Soviet fishermen carrying filled David Jones shopping bags lettered "I'm backing Britain" back to their ships. (U. S. Consulate, Sydney, May 24.)



United Kingdom

SHRIMP FARMING MAY BE TRIED

Experiments are now underway in England to determine an economical way of raising shrimp off Yorkshire. This may lead to establishment of a shrimp farm within a few years. Keir Campbell, leader of the experiments, will soon tour Japan, Australia, Philippines, India, Malaysia, Canada, and the U. S. to obtain information on shrimp farming. Plans call for a first year's production of 10 to 40 metric tons. ("Fish Trades Gazette," May 11.)

* * *

LOBSTER FARM PLANNED

A revolutionary idea of increasing lobster stocks on the north and west coasts of Sutherland, in north Scotland, by improving their natural habitat will be tried this summer by ex-naval divers. This unique experiment was thought up by Lieut-Commander A. J. Futcher.

According to the Marine Laboratory of the Department of Agriculture and Fisheries for Scotland, the population of adult lobsters is limited by the availability of underwater cover when they are extremely vulnerable to predators--for example, when they shed their shells.

To Provide Artificial Cover

Futcher and a team including 3 former naval divers intend to provide artificial cover in selected areas. This will create lobster farms that can be cropped systematically.

Scientists say the stretch of coast from Dounreay to Ullapool is the largest area of

underfished lobster ground in Scotland. This project also could help other lobster fishermen.

The Pulford Estates, partners in the venture, will help with administration, management, and marketing outlets.

The team of divers will concentrate on shellfish, not only catching and marketing but farming and preservation of stocks. The effect should be to increase the lobster population on the Sutherland coast.



Iceland

FISH IRRADIATION PROJECT BEGINS

Iceland and the International Atomic Energy Agency (IAEA) announced on June 5 a fish-irradiation project the former is undertaking with the U.S., FAO, and IAEA. Iceland will study the application of irradiation to fish preservation.

Experimentation is being undertaken by the Icelandic Fisheries Research Institute, which has been loaned a portable reactor and equipment by the U.S. Atomic Energy Commission. Reactor and equipment arrived in Iceland early in June. The U.S. also is providing expert personnel to help install and operate the equipment.

Only for Research Now

Although Iceland has no present plans to apply irradiation for fish preservation, she is taking part in the experiment for research purposes. She hopes the technique may later prove of economic advantage to her fish industry. (U.S. Embassy, Reykjavik, June 6.)

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INCREASES COD CATCH

The winter cod fishing season, which ended in May, resulted in a 12% larger catch than last year's winter catch. This was achieved despite the very bad weather that hindered fishing in the first months of 1968.

The 1968 catch was about 156,100 metric tons; in 1967, 139,500 tons. Greater attention is being paid this year to the more

Iceland (Contd.):

valuable cod catch (compared with herring). It had declined 18.7% in 1966 and 22.8% in 1967. It is hoped cod catches will recover to the 1966 level--about 339,000 tons. (U.S. Embassy, Reykjavik, May 27.)

* * *

FISH SLUMP HITS

Declining fish catches and falling world prices for her fish exports have brought crisis to Iceland's economy.

The value of fishery-product exports fell 30% in 1967. Fishery products account for over 90% of total exports and comprise about 20% of the national product. Therefore, the decrease in the value of fishery exports has had significant effects on national income and the balance of payments.

Iceland's Market Problems

The government was concerned over 2 factors in fall 1967: 1) Iceland's exclusion from trading arrangements, pending applications by members of the European Free Trade Association (EFTA) for membership in the European Economic Community (EEC, the Common Market). 2) The effects of EFTA and EEC duties on Icelandic exports. These prompted a government decision to explore the feasibility of joining EFTA.

EFTA countries normally account for 40% of Icelandic fishery exports, and EEC countries for 20%. The U.S. usually is the largest single market. Another important market is the USSR.

Iceland's prospective membership in the EFTA might have long-run effects on the competitive position of U.S. exports. The U.S. is now Iceland's leading supplier.

Counteracting Economic Problems

Measures have been taken to counteract the economic problems. These include the 24.6% devaluation of the kronur in November 1967. The measures have been directed towards restoring balance in external payments--while preventing fishery export price drops from causing further contraction in the export industries--and maintaining a

satisfactory level of employment. Industry, particularly fish processing, is being encouraged to reorganize. Capital investment is being maintained at proper levels. Although investment is reduced because of the economic contraction, it will maintain employment and permit completion of major projects expected to help economic development.

Fish Catch Key to GNP

The direction of the Gross National Product (GNP) in 1968 depends on recovery of the fishing catch, particularly white fish, and the direction of export prices, so far disappointing.

The government is paying more attention to prospects for developing new industry as part of the industrial diversification program to lessen Iceland's dependence on the precarious fishing industry.

* * *

GRANTS HERRING PROCESSING AID

Early in May, Iceland authorized the State Herring Board to borrow up to US\$260,000 for leasing vessels to transport herring from distant fishing grounds to shore for salting--or for processing either for meal and oil. This provisional act stemmed from a study made by a committee representing fishermen, fishing vessel owners, and herring salters.

The committee recommended that freighters be leased to carry herring, salted on shipboard, to coastal points for further salting; also, that tankers be leased to transport fresh herring to oil and meal plants for reduction.

Industry Problems

The herring catch has declined in inshore fishing grounds. In summer 1967, it was necessary to fish for herring several hundred miles off the Northeast coast. So it has been impossible to bring herring to shore for salting in fresh-enough condition.

Much herring was salted in October and November--when it was not in the best condition for salting. Some herring went into oil and meal, less valuable than salted products.

Iceland (Contd.):

Price declines in herring oil and meal have made it more important for the herring industry to use more herring for salting than for reduction.

The new provisional act has been welcomed particularly by the herring industry. It had objected to an increase in export levies authorized by the Althing in April on salted herring and other species. Further measures concerning transportation of herring to shore for reduction likely are forthcoming. (U.S. Embassy, Reykjavik, May 27.)



Italy

1967 CATCH LIKE 1966's

In 1967, Italy's total fishery catch, including tuna and oceanic species, from pelagic and coastal fishing was 250,188 metric tons-- up 0.5% over 1966.



Sunday is big market day at Fiumicino, small fishing port at mouth of Tiber. Most customers come from Rome, about 10 miles away. Catches per boat are small, selection limited, prices high. (Photo: FAO/P. Johnson)

Total catch by seining ("tonnare" and "tonnarelle") was 2,051.9 tons: 1,948.7 tons of tuna; 11 tons of mackerel; 7.4 tons of swordfish; 11.5 tons of bonito; and 73.3 tons of other species. This was an increase of 103.9% over 1966. ("La Pesca Italiana," May 2.)



New Fishing Charts Available

The British Whitefish Authority sponsored a fact-finding survey to accumulate all available data on the exact positions of wrecks and other obstructions to fishing that litter the principal European fishing grounds. The data are contained in "Kingfisher Charts," available from the Whitefish Authority, Lincoln's Inn Chambers, 2/3 Cursitor St., London E.C. 4, England, or from Kingfisher Charts Ltd., 247 Cleethorpe Rd., Grimsby, Lincs, England. Price: £2 or US\$4.80.



LATIN AMERICA

Costa Rica

PUNTARENAS ON THE PACIFIC

Puntarenas is the only fishing port of any importance on Costa Rica's Pacific Coast. Its splendid harbor has several shrimp packing plants and a fish cannery. The shrimp plants and their trawlers are by far the most important part of the fishing industry. Their exports are principal earners of foreign exchange.



Fig. 1 - One of the newer shrimp trawlers (about 50 feet) in Puntarenas.

The shrimp industries have been the slowest in Central America to modernize. The fleet consists mostly of small unseaworthy craft, and the plants have been backward by any standards. But competition within the local industry and from neighboring countries is bringing rapid change.

Largest Plant U. S. Controlled

The largest shrimp freezing and packing plant is Productos Altamar, Ltds., which is U. S. controlled. In the past 3 years, this plant has been renovated and modernized considerably. It not only packs shrimp for export but produces much shrimp and finfish for the local market.

The newest freezing plant is Frigorificos de Puntarenas, a division of the Borden Company. It is a modern, well-laid-out plant with the latest sorting and freezing equipment. It was slated to be air conditioned completely. The plant is served by 2 company boats and 6 contract trawlers. Two large boats are being built at local boatyards, and more are planned.



Fig. 2 - Shrimp trawler unloading headed seabobs in baskets on dock of Altamar, S. A. Company has largest shrimp-freezing plant in Costa Rica. Cleaned finfish on deck are for domestic market.



Fig. 3 - Frigorificos de Puntarenas, division of Borden Company, newest shrimp plant in Costa Rica. Puntarenas plants are small. Shrimp are sorted by hand, packed in cartons, and taken to a freezing plant.

Compañía Industrial de Mariscos, Ltda., is the largest locally owned shrimp operation. It is expanding considerably. A second freezing and cold storage unit is under construction and mechanical sorters have been ordered. This plant is served by 7 boats; 3 more are being built locally.

Compañía Empacadora del Pacifico, Ltda., is a combination meat and shrimp packing and freezing operation; the emphasis is on meat. Both products are packed for export. All shrimp sorting is done by hand.

Costa Rica (Contd.):

Two or 3 small companies also pack shrimp. One has very limited freezing facilities; the others simply pack the shrimp and have them frozen in the larger plants.

The Shrimp Fleet

The shrimp fleet has about 55 trawlers, including new ones. Several of these modern craft are large enough to operate outside the protected waters of the Gulf of Nicoya; at least 5 more are under construction. So the fleet is becoming more efficient. The government's limit on fleet size is 50 trawlers; presumably, old, inefficient boats will be withdrawn as new vessels are built.

Despite new and better boats and plant facilities, shrimp production has not increased greatly in recent years.

| Pacific Coast Shrimp Catch (Heads-Off Weight) | | | | |
|---|---------------------------|-------|--------|-------|
| Production | 1964 | 1965 | 1966 | 1967 |
| | . (Thousands of Pounds) . | | | |
| White and Brown Shrimp | 1,232 | 582 | 744 | 737 |
| Pink Shrimp | 172 | 320 | 331 | 548 |
| Sea Bobs; etc. | 1,327 | 1,551 | 1,406 | 1,241 |
| Total All Shrimp | 2,731 | 2,453 | 2,481 | 2,526 |
| Fish | 708 | 1,355 | 1,313 | 1,429 |
| Fishing Effort | | | | |
| Avg. Number Boats Fishing . . . | 42 | 45 | 48 | 48 |
| Total Number Boat-Days of Fishing | 8,874 | 9,094 | 11,162 | n.a. |

During 1961-1963, the catches for all species were about the same as for 1964. The exception was white shrimp, which were less than half 1964 production. (The category "white and brown" consists almost entirely of 2 species of very large whites.) Since then, the catch of whites has leveled off at slightly above the pre-1964 level. The fishery's growth depends on expanding catches of pink shrimp, which has been done (see table). The newer and better boats are able to take this species, which is found in deeper water than whites and sea bobs. Landings of finfish by shrimp trawlers have doubled in recent years. Consumers in the capital city of San Jose now have a dependable supply.

Fish Canning

The fish-canning operation at Puntarenas is Compañía Enlatadora Nacional, S.A., owned partly by local interests and partly by resident Americans. Until recently, the plant was used solely for tuna canning; fish meal was produced from the offal. Operations were expanded with the construction of a sardine line.

The cannery owns and operates one live-bait tuna clipper, the "Southern Seas," with a capacity of about 150 tons. Once a U. S. vessel, it now carries Costa Rican registry. Although it engages in fishing at times, it is used principally for transporting tuna bought from freezing plants in Ecuador. Most tuna packed in Puntarenas is supplied by U. S. tuna vessels. These sell all or part of their catches under arrangements between vessel owners and the cannery. Early in 1968, a working agreement was made to pack tuna landed by Del Monte vessels, using the Del Monte label, for sale in Central America. The company's own label, Tesoro del Mar, is sold principally in Costa Rica.

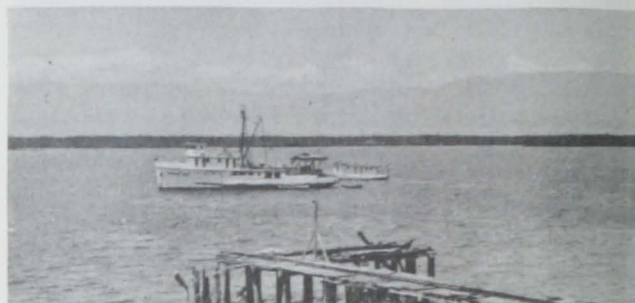


Fig. 4 - Tuna clipper "Southern Seas" is the entire Costa Rican tuna fleet. She fishes live bait sometimes. Used mostly to transport tuna bought in Ecuador. (Photographs and information: R. S. Croker, Regional Fisheries Attaché, U. S. Embassy, Mexico City.)

The cannery installed a sardine packing line for 1-pound oval cans in 1967. The fish used are the 2 species of thread herring found in the Gulf of Nicoya. Production has been very small. The development of sardine canning has been slow because of the inexperience of local fishermen, unsuitability of the one available boat and its gear, the unavailability of domestic tomato sauce, and the alleged poor quality of available cans. When production gets underway, it is planned to take advantage of the large demand for canned sardines in the Central American Common Market.

A tuna freezing plant in Puntarenas goes back to the postwar years. Formerly, it was used for transshipments to U. S. canneries. The machinery and equipment have been sold for nonfishery use and the plant is being dismantled.

A group of Puntarenas businessmen, headed by Roberto and Eduardo Beeche, is interested in obtaining U. S. capital to build a tuna cannery. The group believes that the potential Central American market far exceeds the limited production of the existing cannery, which operates well below capacity.

Guatemala

EXPLOITATION OF MARINE RESOURCES

Guatemala has 402 km. of coastline, 255 km. on the Pacific Ocean, the remainder on the Atlantic. There is a small, growing commercial fisheries industry on the Pacific coast. There is almost no commercial exploitation of fishing resources on the Atlantic coast and none is foreseen. This report deals almost exclusively with commercial activity on the Pacific Coast. Subsistence fishing is carried out on both coasts, but it is difficult to assess its importance.

Fish Caught Off Guatemala

The major effort goes to catching shrimp. Other fish and crustaceans and mollusks also are caught for commercial use. The types of shrimp are: *Peneus stylirostris*; *P. vannamei*; *P. californiensis*; *P. brevis*; *Trachipeneus byrdi*; *T. faoea*; *T. similis pacificus*; and *Ciphoneus ribeti*. The following types of fish are frequently caught in the same nets that capture shrimp (local Spanish names are in parentheses): *Lutjanus griseus colorado* (Pargo); *Epinephalus striatus* (Bosh Moro); *Platisa vulgaris* (Lenguado); *Centrolophus undecimalis* (Robalo); *Huro nigricans* (Bonito); *Mugil lisa* (Lisa); *Albula vulpes* (Raton); *Alectis crotinus* (Palometo); *Cynoscion* spp. (Colbina). Because processing plants are lacking, most fish are returned to the ocean. Among crustaceans frequently caught are: *Loligo vulgaris*, and *Panilurus terrypus e inflatus*.

The Local Industry

Tables 1-3 detail recent and projected fish catches, exports, and local consumption. Since 1963, exports of shrimp, fish, crustaceans, and mollusks have averaged about \$2 million annually. Thirty small shrimping boats belong to 3 private companies. Guatemalan law limits each company's ownership to 10 ships.

| Product | 1963 | 1964 | 1965 | 1969 | 1974 | 1984 |
|--------------------------|---------------|-------|-------|-------|-------|-------|
| | (Metric Tons) | | | | | |
| Fish | 130 | 210 | 242 | 600 | 2,000 | 4,176 |
| Shrimp | 905 | 1,318 | 897 | 1,600 | 1,600 | 1,600 |
| Crustaceans and Mollusks | 19 | 21 | 13 | 50 | 65 | 100 |
| Total | 1,054 | 1,550 | 1,152 | 2,250 | 3,665 | 5,876 |

| Product | 1963 | 1964 | 1965 | 1969 | 1974 | 1984 |
|--------------------------|---------------|-------|------|-------|-------|-------|
| | (Metric Tons) | | | | | |
| Fish | - | - | - | - | 800 | 2,176 |
| Shrimp | 643 | 1,010 | 825 | 1,400 | 1,300 | 1,200 |
| Crustaceans and Mollusks | - | - | - | - | - | - |
| Total | 643 | 1,010 | 825 | 1,400 | 2,100 | 3,376 |

| Product | 1963 | 1964 | 1965 | 1969 | 1974 | 1984 |
|--------------------------|---------------|------|------|------|-------|-------|
| | (Metric Tons) | | | | | |
| Fish | 130 | 210 | 242 | 600 | 1,200 | 2,000 |
| Shrimp | 262 | 308 | 72 | 200 | 300 | 400 |
| Crustaceans and Mollusks | 19 | 21 | 13 | 50 | 65 | 100 |
| Total | 411 | 540 | 327 | 850 | 1,565 | 2,500 |

Note: Columns may not add due to rounding.
Source: Director General of Statistics and Ministry of Agriculture.

Of the 30, 20 operate out of Champerico in Retalhuleu Department, southwestern Guatemala; the remainder operate out of Iztapa, adjacent to San Jose in Escuintla Department, south of Guatemala City.

Each shrimp boat averages 2 trips per month to fishing grounds off Guatemala; these trips average about 13 days per month at sea. Ten of these boats are wood, the remainder steel. Each boat is worth about \$65,000. Government officials estimate that each boat can catch roughly 100,000 pounds of shrimp a year.

There are 2 shrimp processing plants. The larger is in Champerico. It has freezing and storage facilities, a processing plant, workshops, etc. A substantially smaller plant began to operate in Iztapa in May 1966.

Guatemala (Contd.):

Fishing Industry Potential

The government estimates that shrimpers are forced to throw back into the ocean roughly 5-10 pounds of fish for each pound of shrimp caught. This is because there are no facilities for processing fish. The government is interested in increasing exploitation of its fishing resources. It plans to construct a Pacific Coast port, which would handle cargo and receive fish. This project will cost about \$15 million. The government is seeking international help to begin construction.

Diet Would Improve

Additional fish-processing facilities must be constructed and the fleet expanded. Presumably, these investments will be made by private enterprise. Fish caught as a result of these new facilities could augment the national diet, extremely deficient in protein. Current consumption is estimated at 600 grams of fish per person per year. Fish is virtually unavailable through commercial channels in most rural areas of Guatemala. With new construction, the fish now caught but thrown back could be frozen or otherwise processed for human consumption, or turned into fish flour. Exports of fish and fish products could be a useful new source of foreign exchange.

Tuna Resources

The government feels that tuna resources off the coast are most promising for large-scale exploitation. The government estimates roughly that about 4,000 to 5,000 metric tons of tuna per year are caught off Guatemala in the area extending 5 degrees of latitude and 5 degrees of longitude off the Pacific Coast.

The projections for increased catches shown in the tables assume construction of a new port, related processing facilities, and more boats.



Haiti

THE SPINY LOBSTER FISHERY

The Haitian annual catch of spiny lobsters during 1963-67 was only slightly larger than total exports, report trade sources. This is because there is little domestic consumption. All exports are frozen and go to the U. S. The 1967 data show imports of 214,000 pounds; however, trade sources report shipments of over 300,000 pounds.

Preparation For Export

Six companies export lobster tails to the U. S. In preparing tails for shipment, the heads are removed. The tails are deveined, cleaned, wrapped in plastic or cellophane, quick-frozen, sized, boxed, and stored at 0° to 5° F. until shipped. Tails are sized according to weight in ounces. The categories are: 2-4, 4-6, 6-8, 8-10, 10-12, 12-14, 16 and over. The U. S. restaurant and hotel industry pays prime prices for the 4-6 and 6-8 oz. sizes.

A 10-lb. pack is standard. The most common practice is to assemble 4 packs in a master carton. Less common is the 60-lb. master carton.

The lobsters are shipped to the U. S. via Grace Lines. Good schedules, reliability, and refrigerated cargo holds have played a large role in the growth of Haiti's spiny lobster tail industry.

Industry's Future

Industry opinion regarding its future is divided. The growing competition for the spiny lobster concerns everyone. Some exporters are pessimistic and defensive. They see their role as holding on to their share of production, while carefully watching production costs.

Others, including the progressive firms, are confident. They foresee opportunities for greatly increasing yields by purchasing modern equipment and adopting advanced fishing practices. Also, they claim, diversified production is possible. They cite the feasibility of large shrimp catches, filleted fish sales, and commercial fish and frog farming.

Haiti (Contd.):

Over 80 percent of the catch is made with conch meat-baited bamboo or wooden traps. The remainder is taken with spear gun. The best fishing is in the waters of the southern peninsula. Boats ply from Port-au-Prince to Jacmel. The Cayes area is consistently the biggest producer.

A slight seasonal variation is evident. The north shore of the southern peninsula produces better in spring and summer, while the southern shore yields more in fall and winter.

The Agents

Most exporters have established relationships with agents, known locally as "speculateurs," throughout the southern peninsula's coastal settlements. The speculateurs pay fishermen \$0.60 to \$0.80/lb. for the tails. The fishermen's weekly catches average 40 to 60 lbs. Against this catch, the speculateur often makes a small cash advance. He also provides fishermen with styrofoam ice chests and ice to store their catches.

Most exporting firms own 2 or 3 boats that sail the coastal waters. Routinely, they call on speculateurs and take on their shipments. The speculateurs add \$0.10 to \$0.15/lb. when selling to the exporter. If the speculateur delivers his tails to the exporter in Port-au-Prince, he gets \$1.15 to \$1.30/lb. All tails eventually reach Port-au-Prince. There the exporters maintain their own freezing and storage equipment. The meat is highly perishable, so all must be done quickly.

Speculateurs are paying ever-higher prices to hold on to their client fishermen, while trying to attract their rivals' fishermen. The result is that exporters must pay more per pound for the tails--and have to sell them in a market where fairly stabilized prices have existed for nearly 3 years.

Exporters Also Deal With Fishermen

Some exporters also deal directly with fishermen, supplanting the speculateur. Exporters have even provided outboard motors to client fishermen to increase production. The experiment has been successful because fishermen prefer to make the most of their leisure time rather than their catch. Lacking mechanical sophistication, they tend to abuse the machines.

Two exporting firms fish to supplement their purchases, and a third is preparing to do it. To maintain a coterie of client fishermen, the exporter buys all or some of their catch of fish, conch, and shrimp. The fish are sold either locally or find their way to the Port-au-Prince market. Insignificant amounts of conch meat and shrimp have been exported to the U. S. Little demand apparently exists for the former, while too few shrimp are caught to support an export industry. An attempt is about to be made by 2 firms to increase shrimp production by using modern equipment. (U. S. Embassy, Port-au-Prince, May 24.)



Guyana

SHRIMP INDUSTRY HALTED BY LABOR DISPUTE

Shrimp fishing in Guyana has been halted by a dispute between vessel captains and owners of shrimp companies and vessels. The captains, U. S. citizens, demand that the National Maritime Union be recognized as their bargaining agent in dealings with owners. The companies, U. S.-owned, have rejected the demands and threatened to close their Guyana plants. The stalemate continues.

* Shrimp Industry

Guyana, the former British colony of British Guiana, is on the northeast coast of South America, east of Venezuela. The population is 650,000. Major industries are agriculture and mining.

The shrimp industry, a major earner of foreign exchange, employs about 800 Guyanese. In 1967, Guyana exported to the U. S. about 9,500,000 pounds of shrimp worth US\$7,400,000 (nearly one-third of all shrimp exports to U. S. from South America). The Government obtains about US\$500,000 annually in taxes and export revenues, and reportedly millions more in wages, local purchases, and similar expenditures.

The Fleet

The fleet numbers about 130-150 vessels. Basically, it is foreign-owned, the bulk con-

Guyana (Contd.):

trolled by U. S. interests. Vessels usually are skippered by U. S. captains; the crews (usually 3 men) are Guyanese. (St. Petersburg "Evening Independent," June 12; Dept. of State.)

* * *

SHRIMP INSPECTION

Two packing plants prepare shrimp for export to the U. S. One is owned by Georgetown Seafoods Co., the other by Guyana Industrial Holdings. Shrimp are caught mostly by U. S.-registered trawlers. Trawlers and packing plants, alert to improvements, appear to be operating under adequate sanitary and quality controls.

Sanitary Regulations At Sea

The following sanitary regulations are generally observed in shrimp processing. After discharging shrimp, trawlers are scrubbed with detergent and nontoxic disinfectant. Concrete holds, built in most trawlers, are easily cleaned. Georgetown Seafoods cleans its trawlers a second time before sending them to sea.

At sea, shrimp are stored on fresh ice under mechanical refrigeration; they are usually stored 7 to 10 days.

Plant Sanitation

When shrimp are unloaded, they are moved by conveyors from dock to adjacent packing plants. Plants use chlorinated water. All machinery, scales, work tables, and floors are washed with water and sprayed with disinfectant at least once a day. Blast-freezing rooms have a capacity to chill from -60° F. (Georgetown Seafoods) to -35° F. (Guyana Industrial Holdings). Storage rooms in both plants can reach a minimum temperature of -20° F.

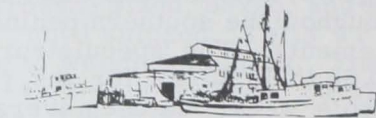
Workers wear uniforms, rubber gloves, boots, and headgear. Workers are required to rinse their hands with a disinfectant after using toilet facilities.

Plants are inspected periodically by a government team for sanitation and proper refrigeration.

Quality Control

The following quality-control standards are generally observed: Workers on inspection belt (6 at Georgetown Seafoods, 8 at Guyana Industrial Holdings) separate out broken and blemished shrimp. Every 10th package is spot-checked at Georgetown Seafoods.

The following steps are being taken to increase sanitation and quality control: Guyana Industrial Holdings plans to: (a) buy a high-power water pump to scrub trawler holds more effectively, (b) buy booster for blast freezer to lower temperatures to -40° F. Georgetown Seafoods operates an improve-as-you-go plan to raise performance of workers and to increase product quality. (U. S. Embassy, Georgetown, Mar. 13.)



Peru

FISH MEAL PRODUCTION
SET RECORD IN EARLY 1968

The 1967/68 Peruvian anchovy fishing season closed May 31 after producing 9.5 million metric tons. Production of anchovy meal continued at record levels during early 1968. The larger-than-expected rise reflected the Government's increase of the 1967/68 anchovy catch limit from 8 to 9.5 million metric tons. Fishing conditions continued favorable through May.

Despite the Feb. 17-Mar. 16 "veda," or closed season, the Jan.-May production was 34,556 tons above the 1967 period. However, exports of 888,706 tons during the same 5-month period sharply exceeded the 610,350 tons exported during the year-earlier period. Stocks remained high. On June 1, 1968, 727,916 tons were on hand compared to 751,636 tons at the same time in 1967. Production during the 1968/69 season will depend heavily on the level of the anchovy catch limit imposed. A slightly higher extraction rate, however, would tend to increase production if more plants use evaporator equipment. This equipment improves the recovery of soluble solids. The Government passed a law on June 20 exempting imports of stickwater plants from certain customs duties for 3 years.

Peru (Contd.):

Bulk shipments of fish meal were initiated in 1963. They dropped, then resumed this year and could exceed 100,000 tons by year end. The move toward pelletized bulk meal reportedly could reduce costs by US\$7 a ton. ("World Agriculture and Trade," U. S. Dept. of Agriculture, June 1968; U. S. Embassy, Lima, July 2.)

Fish Meal Stocks

Stocks of fish meal on May 31, 1968, were at a record seasonal level of 727,916 tons, compared with 712,506 on April 30 and 714,578 on April 15.

On May 31, 138 fish meal plants were operating, 53 others had closed, 8 had been dismantled, and 1 had moved.

Fish Meal Exports

Total fish meal exports for Jan.-May 1968 were the highest in several years: 1967--610,350 tons; 1966--626,744 tons; 1965--785,817 tons.

| Fish Oil Exports, by Country of Destination, Jan.-May 1968 | |
|--|---------------|
| Country of Destination | Metric Tons |
| Crude: | |
| West Germany | 24,346 |
| Denmark | 4,719 |
| Ecuador | 800 |
| Netherlands | 52,530 |
| Norway | 3,017 |
| Total | 85,412 |
| Semi-Refined: | |
| West Germany | 12,293 |
| Colombia | 7,776 |
| Denmark | 5,627 |
| Ecuador | 779 |
| Netherlands | 61,277 |
| U. K. | 1,184 |
| Total | 89,936 |



AMMONIA FOR SPEEDY PRESERVATION OF FISH

Liquid or gaseous ammonia may solve an ancient problem of keeping fish from spoiling in the tropics.

A quick and easy treatment of immersing sardines in ammonia has preserved fish for more than two months without deterioration of their nutritive value. Using the ammonia treatment soon after fish are caught allows bulk storage at ordinary temperatures.

In many parts of the world, large catches of good edible fish become available during short seasons.

When facilities for cold storage are inadequate, spoilage is extensive and valuable food is wasted. In the tropics, fish spoilage starts within a few hours after the catch.

The safe, speedy method of immersing the fish, in particular sardines, in ammonia solution for about one to two hours and then transferring to an air-tight vessel preserved fish for months in excellent condition, the scientists found. Temperatures were kept at about 77 to 86 degrees Fahrenheit.

Ammonia is a colorless gaseous compound of nitrogen and hydrogen with an extremely pungent smell and taste. As the fish is dried and processed into fish flour, the ammonia is removed and the preserved fish is free from pathogens and has a low bacterial count.

There is no measurable residue of ammonia in the final product, report V. Subrahmanyam, N. L. Lahiry, M. N. Moorjani, R. Balakrishnan Nair and M. A. Krishnaswamy from the Central Food Technological Research Institute in Mysore, India. (Reprinted, with permission from "Science News," weekly summary of current science, copyright 1966, by Science Service, Inc.).

ASIA

Philippines

THE FISHING INDUSTRY

The Philippine Fisheries Commission reported that fish production in 1966 was only 5.7 percent above 1965. This increase does not meet the needs of a growing population and the increased consumption of fish. Imports of canned fish and fishery products dropped slightly in 1966. The Philippines imported 50.1 million kilograms of fish and fishery products worth ₱59.5 million (3.9 pesos equal US\$1).

The major import was canned mackerel. The share of the Philippine market for U. S. fishery products in 1966 was about the same as in 1965: ₱2.3 million. In 1966, the Philippines exported ₱4.9 million in fishery products, a substantial increase from 1965's ₱2.8.

Problem-Plagued Industry

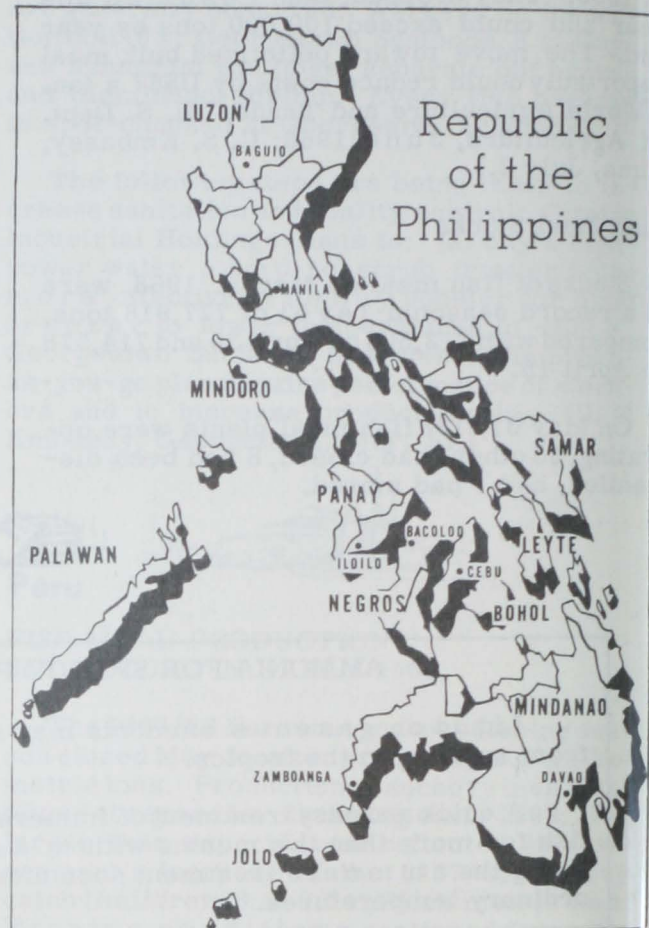
As a result of high operating costs and lack of fish for canning, the White Rose Fish Cannery was not able to begin operation. Negotiations were underway to sell the cannery to a firm in Kuwait for installation there.

The industry continues to be plagued by government neglect, lack of capital and refrigeration facilities, and a poor distribution system. In 1968, President Ferdinand Marcos requested the Fisheries Commission to prepare a detailed plan to increase fish production. The President stated he intended to give the same emphasis to increasing fish production as he had to his successful program to increase rice production. Some observers wonder whether the government will devote enough of its scarce resources to achieve a major increase in fish production.

Production and Consumption

"Fisheries Statistics of the Philippines - 1966" disclosed that in 1966 the Philippines produced 705,278,000 kilograms of fishery products worth ₱825,988,000. In 1965, the Philippines produced 667,202,000 kilograms of fishery products worth ₱806,509,000.

Fish consumption in 1966, exclusive of fish meal, was 746,260,000 kilograms worth ₱878,442,000. Fish consumption in 1965 had



been 709,471,000 kilograms worth ₱862,393,000. per-capita consumption was 22.29 kilograms. Based on the per-capita normal requirement of 26.95 kilograms established by the National Research Food Council of the Philippines in 1959, the fish requirement in 1966 was 1,026,414,000 kilograms. Fish production was 321,136,000 kilograms (31.3 percent) short of this requirement; fish consumption was 280,154,000 kilograms short.

Imports and Exports

In 1966, the Philippines exported 2,573,250 kilograms of fishery products, including shell-craft, worth ₱4,908,357. In 1965, the value had been ₱2,775,564. This major increase resulted from export of fresh fish, mostly to the U. S. In 1966, the Philippines exported 1,063,826 kilograms of fresh fish worth ₱1,849,953, compared with 317,962 kilograms worth ₱335,099 in 1965. In 1966, the Philippines found a new export--seaweeds; ₱461,748

Philippines (Contd.):

worth were exported, mostly to the U. S. There is no prior record of seaweed export.

The export of finished shell buttons worth ₱1,129,423 was slightly below 1965's figure. The export of fresh shrimp increased slightly to ₱197,099; about 40 percent went to the U. S. In 1966, exports to the U. S., including Guam, were ₱3,531,583, about 71 percent of total exports.

Imports

Imports of fish and fishery products decreased slightly in 1966 from 1965. During 1966, the Philippines imported 50,120,327 kilograms of fish and fishery products worth ₱59,508,592. In 1965, 51,730,589 kilograms of fishery products valued at ₱61,692,012 were imported.

Canned mackerel remains the major import. During 1966, 32,019,430 kilograms worth ₱39,808,380 were imported. There was a major decrease in sardine imports in 1966: only ₱4,773,138 worth, compared with ₱15,586,768 in 1965. The National Marketing Corporation (NAMARCO) had been the major importer of sardines. In recent years, its imports exceeded the demand. This created a considerable backlog. It was one of the factors leading to President Ferdinand Marcos' decision in 1967 to end all NAMARCO imports.

Imports of sardines from the Union of South Africa dropped to ₱1,995,876 in 1966. This probably resulted from President Marcos' order of May 31, 1966, banning imports of canned fish from South Africa. The share of the Philippine market for U. S. fishery products in 1966 was about the same as in 1965--₱2.3 million. Of this amount, ₱1.9 million went for cuttlefish (squid).

Inland Fisheries

In 1966, the fishpond industry produced 63,654,340 kilograms of fish worth ₱129,854,860.

| | 1965 | 1966 |
|---|-------------|-------------|
| Area (in hectares) | 137,251 | 138,968 |
| Investment (in pesos) ^{1/} | 274,501,360 | 277,935,260 |
| Men employed ^{2/} | 137,250 | 138,967 |
| Production (in kilograms) | 63,197,690 | 63,654,340 |
| Value of production (in pesos) | 106,172,120 | 129,854,860 |

^{1/}Based on average developmental cost of ₱2,000 per hectare.

^{2/}Based on average of one man employed to every hectare.

In 1966, the Fisheries Commission estimated there were still 547,340 hectares of swamplands available for fishpond use. These swamplands consisted of 186,688 hectares of fresh-water swamps and 360,650 hectares of mangrove swamps. In 1966, the production per hectare decreased slightly to 458 kilograms. This reflected again the fact that the government has made no progress in its announced plans to increase fishpond production to 2,000 kilograms per hectare. The failure to increase production may be attributed largely to lack of financing, antiquated methods of fishpond culture, lack of experienced personnel and poor management.

President Marcos also had announced plans to add 700,000 hectares to the fishpond industry. At the end of December 1967, Vice President Fernando Lopez, who was in charge of this program, complained that of the 700,000 hectares, only 3,398 hectares had been released for fishponds by the Bureau of Forestry.

Commercial Fishing

The 1966 annual production from commercial fishing operations increased only 14,825,000 kilograms over 1965. Value of the catch actually decreased by ₱5,849,000. There were 2,544 commercial fishing vessels in operation in 1966, an increase of 161 over 1965. Gross tonnage was 70,834 metric tons. In 1966, an estimated 31,026 persons were engaged in commercial fishing; 21,991 of them were licensed.

There has been no noticeable improvement in the commercial fishing industry in the past year. The industry still suffers from government neglect, lack of capital and financing, and lack of refrigeration and berthing facilities.

Fish Processing

Virtually no progress was made in the fish-processing industry during 1967. The White Rose Packing Corp. installed its fish cannery, but it was never put into operation. It was negotiating with Gulf Fisheries of Kuwait to sell the cannery for installation there.

The inability of White Rose to operate the cannery may be attributed to several factors. Firstly, it is more profitable to sell the catch as fresh fish. The demand for fresh fish exceeds supply and White Rose found it was more

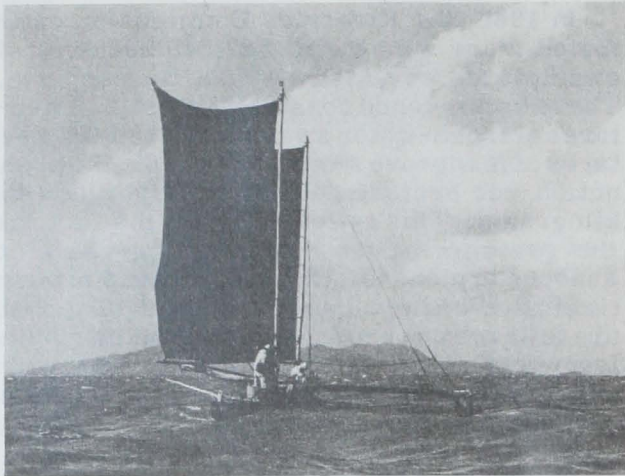


Fig. 1 - An "armadahan," 2-mast fishing boat, on Laguna de Bay.



Fig. 2 - Fisherman wears mask against sun as he uses "surambaw," a drive-in-net, in Laguna de Bay.



Fig. 3 - Researchers of Freshwater Fisheries Investigation Unit at Los Banos netting gobies. They seek to preserve fish and snail life of Laguna de Bay, 50 miles from Manila; also, to study aquatic insects, map lake, and check pollution.

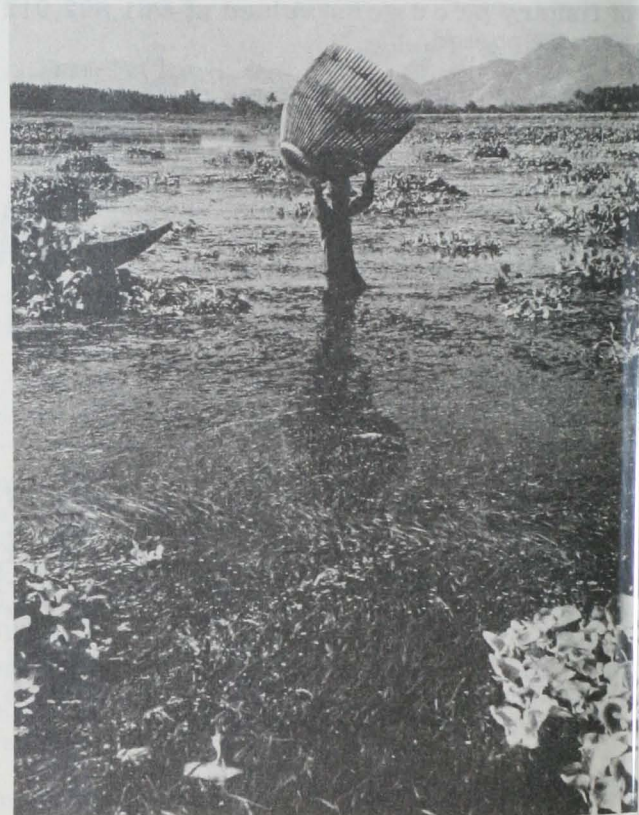


Fig. 4 - A Philippine fisherman using "Salakab." It is a bamboo cover pot designed to catch "dalag" (small fish) in inland bodies of fresh water.
FAO has helped island increase production in inland waters by determining suitable stocking species. (Photos: UN)

Philippines (Contd.):

profitable to sell its catches as fresh fish. Also, the Philippine tariff laws increased the cannery's operating cost to the point where it could not compete with imported canned fish products. The government raised the tariff on imported tinplate to 40 percent (the local product is considered unsatisfactory for canning fish) and tomato paste to 100 percent (the preferred canning sauce).

Government Activity

A proposed congressional bill to create a Fisheries Development Bank did not prosper during the 1967 congressional session. There is little likelihood that the bill will be re-introduced. The bank was to consolidate into one lending agency the power to grant loans to individuals and firms in the fishing industry. There was too much opposition from other lending agencies, such as the Development Bank of the Philippines, which were against losing these clients.

Manila Fishing Port

Construction of a much-needed fishing port at the Manila North Harbor was initiated by the Bureau of Public Works. This project is scheduled to be completed within $3\frac{1}{2}$ years at a cost of P22 million. It will provide 18 berths for unloading of fish catch and another 18 for servicing and bunkering. Thus far, only P2.9 million has been released for the project. The Government will apply for a P10 million loan from the Asian Development Bank; Congress will appropriate the remainder. Currently, the fishing vessels must anchor offshore and have their catch transported by amphibian truck into the major fish-landing center at Navotas, Rizal.

Outlook

A United Nations deepsea fishing expert, assigned to the nation in a joint project with the Philippine Fisheries Commission, said the Philippines could be self sufficient in fish production in 10 years. He assumed there would be improved fishing methods, better equipment, more trained personnel, and better fisheries data.

In 1968, President Marcos instructed the Fisheries Commission to prepare a detailed program to increase fish production. He said he wanted this program to be similar in scope

to the successful rice production program, which resulted in a major increase in production. However, such a program would require much money, either directly by the government or through government lending agencies, for research programs and equipment, piers, refrigeration facilities, fishing boats and related equipment, and fish canneries. It is doubtful whether the nation will be able to devote enough of its scarce resource to conduct the necessary fish-production program.



Indonesia

FISHING OFFERS PROMISE AS FOOD SOURCE

Fishing is one of the most promising parts of Indonesia's food-production situation. The Directorate General of Sea Resources estimates that in the 5.5 million square miles of adjoining seas, there is a potential annual fish harvest of 4.5 million metric tons. This figure does not include such abundant marine products as mollusks, seaweed, pearls and mother-of-pearl.

Like other sectors of production, fisheries development is hampered by shortages of capital and technical competence. Both can be supplied partly by foreign investment. However, observers say, the Indonesians themselves must provide the incentive to fisherman to produce more. Also, they must instigate the social changes required in a transition from subsistence fishing to large-scale fishing.

Marine Fisheries

In 1967, about two-thirds of Indonesia's catch of 1.25 million metric tons of fish came from sea fisheries. These fisheries are generally confined to shallow, protected waters near the coast. The fishermen cannot go farther because they do not have large, motorized seagoing vessels. The catch is reduced because these traditional grounds are slowly being depleted.

There are about 920,000 fishermen in sea fisheries. They operate an estimated 230,000 small fishing craft (hold capacity of two to ten cubic meters). Fewer than 3,500 of these are motorized. The equipment used is primitive: lines and nets are made of native natu-

Indonesia (Contd.):

ral fiber. These small fishermen account for 98 percent of the total sea catch.

Inland Fisheries

The inland fisheries include 3 different types of fishing: (1) freshwater, (2) swamp, and (3) brackish water.

East and Central Java are the centers of freshwater fish raising. Carp is the prime species. It is bred with the care that many Western cattle breeders lavish on their finest stock. Several varieties of the minnow species also are raised in inland ponds. Fish fry are available in local markets and are raised in home fishponds or flooded rice paddies. Inland fishponds produce about 80,000 tons a year.

| Fisheries Production | | | |
|----------------------------|---------------------------|-------|-------|
| | 1967 | 1966 | 1965 |
| | (In Thousand Metric Tons) | | |
| Marine Fisheries | 790 | 721 | 661 |
| Inland Fisheries | 465 | 400 | 370 |
| Total | 1,255 | 1,121 | 1,031 |

Source: Directorate General for Marine Resources.

Many varieties are caught by primitive methods in the swamp areas of Sumatra and Kalimantan. The total catch is estimated at 330,000 tons annually. The yields fluctuate greatly depending on amount and timing of rainfall.

The raising of fish and prawns in brackish-water ponds is centered in East Java. Milkfish is the principal species. An estimated 56,000 tons were produced in 1967. The ponds usually are areas reclaimed from mangrove swamps. There is heavy demand for milkfish. It is the shortage of development capital primarily that prevents reclaiming more of the over 6,000,000 hectares covered by mangrove swamps in Indonesia. Presently, the brackishwater pond area is only 140,000 hectares.

Fish Processing

Fish processing is primitive. Only about 10,000 tons of the total fish product is processed by modern canning techniques; the remainder is sun-dried, salted, or ground into meal. The latter methods are used in thousands of small operations and statistics on the total processed product are not available.

If modern equipment and techniques were introduced, there would be a real possibility of a fish surplus. So it is important that steps be taken to rehabilitate and expand the fish-processing industry. Much can be accomplished through agreements with foreign investors--concession grants stipulating that freezing plants, storage facilities, and other on-shore installations be constructed by the investor. Some effort will be needed to cultivate a domestic market for processed fish products once they become available. It is possible that modern techniques could be applied to processing popular, traditional, fish-based food, particularly meal and wafers, which would have the advantage of a ready-made market.

Fishery Problems

The shortage of capital for development purposes is the all-embracing problem. It hampers entry into deep-water fishing, prevents rehabilitation of more swamp area for brackishwater fisheries, and slows development of a fish-marketing operation.

Besides the requisites to catch fish, the industry needs better transportation, preservation, and processing sectors. Getting fish from the sea, swamp, or pond is only half the problem. The most difficult--and most neglected part--is getting the product to a local or world market in saleable condition.

Efforts to develop fishing's full potential are stymied by the fisherman's lack of training and education. The fisherman also must be provided equipment on terms he can afford (hire-purchase schemes). The fishermen reacts like the peasant farmer against attempts to introduce new techniques.

Foreign Investment

The few surveys made indicated that high-seas fisheries contain enough wealth to justify exploiting them. Most products are of great export value, considering Indonesia's perpetual foreign-exchange shortage. Particularly notable are abundant tunas (yellowfin, skipjack, and bonito) and shrimp. Shrimp also has a high value domestically.

Companies of at least 7 countries are interested in entering Indonesian high-seas fisheries. Several agreements have been signed; most are still negotiating. Two have received final government approval and are surveying.

Indonesia (Contd.):

One approved is the Shin Hung Refrigeration Co. of South Korea. It is involved in a joint shrimping venture with Nusantara Djaja Trading Co. off South Java. From the outset, Shin Hung's survey operations have met opposition from local fishing and certain military circles. Fishermen around Tjilitjap, the Shin Hung base, strongly protested alleged "theft of catch" and fouling of nets by the South Koreans. The local navy garrison insinuated that the Koreans were there only to spy on coastal defenses. These allegations have been made less frequently in recent months. This is due probably to the Maritime Ministry's demand that the Korean fleet stay at least 6 miles from the coast.

The Tjilitjap fishermen may have had some justification for the "we wuz robbed" attitude. Though cast in terms of a survey, the Korean nets were capturing over 300 tons of shrimp per month; all would have been marketable at handsome prices within Indonesia and abroad. Furthermore, a refrigerator vessel from Shin Hung is scheduled to be dispatched to Indonesian waters. In view of Indonesian emphasis on on-shore installations, the welcome for the refrigerator craft may not be cordial.

The other fleet already active is from Gulf Fisheries of Kuwait. It is operating in a joint venture with the Indonesian firm P. T. Minipaya. It is taking shrimp and lobster in the Straits of Malacca. A contract was signed Feb. 10, 1968, calling for a 10-year concession, which includes one year for survey.

A third joint venture has received government approval but has not yet been implemented. It is between A. S. Nor Kar of Norway and C. V. Bonito of Indonesia, to operate as partners off the North Central Sulawesi (Celebes) coast. It covers a 15-year period, with one year marked for surveys.

Many potential foreign investors, including Americans, have indicated interest in beginning Indonesian operations as import agents before proceeding with full-scale investment. They are interested particularly in shrimp; its price is sufficiently high to provide good profits. If profit prospects (and the political picture) indicate that investment is worth the risk, there may be a major influx of these individuals as investors in the next few years.

Japanese Investments

Many factors, including the size of Japan's 1968 aid package to Indonesia, enter into the discussion of Japanese fishing activities, or absence, in Indonesian waters. Indonesia prefers separate agreements with each Japanese company. But Japan has been pushing for a fishing treaty covering all problem areas of contention on a government-to-government basis.

Negotiations toward a fishing agreement have been proceeding since December 1967. All major points have been agreed on, though no announcement of the end of talks has been made. The inclusion or exclusion of Okinawan fishing interests in any Japan-Indonesian agreement is also a factor being discussed.

The Prospects

Production can be raised in all sectors of the industry. Technical assistance is the most important ingredient in increasing output of freshwater ponds. The Land Fisheries Institute in Bogor has expanded its extension programs to achieve this, but it is too early to assess the results.

Brackishwater fish production can be refined to an art, as on Taiwan. The money needed to reclaim more mangrove swamps will have to come from local sources because foreign investors are more interested in high-seas fishing. The prospects of the brackishwater sector are not as encouraging as other areas. Many existing ponds near Surabaya have been neglected. In some cases, sluice gates that control flooding have fallen into disrepair; the ponds themselves have become filled with silt.

Prospects for the swamp fisheries sector, to a great extent, are unknown. Presumably, the swamp areas would be harvested more intensively if the fisherman could sell a larger catch. At the same time, there would probably be a greater demand for swamp fish--if there were adequate means to transport the catch from remote swamp areas to urban markets and to store it.

Because it is attractive to the foreign investor, the marine (high seas) sector holds the greatest promise.



Malaysia

FISHING INDUSTRY PRODUCES 70-80% OF ANIMAL PROTEIN

The marine fishing industry is not one of the most significant sectors of the nation's economy, but it provides 70-80% of the animal protein consumed. The fishing industry has grown at a 7.5% rate during 1960-1965 and will continue to grow during the coming decade. Of total fish production, the marine fishing industry accounts for about 90%. For the First Malaysia Plan (FMP), the government has allocated during 1966-70 US\$7.4 million for training, research, installations and equipment to develop both fresh-water and marine fisheries.

In 1965, the first Malaysian fishing boats entered deep-sea fishing in the Indian Ocean. Industry leaders, traditionally oriented to areas within 50 miles of the Malaysian coast, are exploring the possibilities of expansion into deeper waters. Most crew members of the few deep-sea boats are Japanese because no Malaysians have been trained. The FMP calls for establishment of a Fisheries College to meet this need.

The Department of Fisheries in the Ministry of Agriculture and Cooperatives directs all marine science activities.

The Industry

The retail value of marine fish landings in 1965 was 2.2% of the gross national product (GNP); exports of fish and fish preparations were 1.1% of total 1965 exports.

68,000 Fishermen

Department of Fisheries statistics for 1965 show that the marine fishing industry in the states of Malaysia employs 68,000 fishermen. The industry operate about 22,520 boats and 18,000 licensed gear of about 70 types. The gear range from highly capitalized purse seines 250-300 fathoms long to primitive handlines, from giant fishing stakes (capitalized at US\$5,000-6,667 each) to small conical nets set in tidal runs and held in place by 2 poles fixed to the sea bed.

Of the 22,520 boats, about 12,300 are mechanized: 8,400 with diesel engines from 4 h.p. to over 200 h.p., and 3,900 with outboards. They fish not more than 50 miles from the



Fig. 1 - In Penang, many privately owned, well-equipped boats fish on large scale. Fishermen aboard are paid on daily or share-of-catch basis.
(Photos: FAO/S. Bunnag)



Fig. 2 - Penang fishermen put to sea in late afternoon. They use lighted oil lamp to attract fish at night.

coast. In 1965, they landed 198,400 tons of fish worth US\$58 million. Fishermen landed about 235,000 tons of fish in 1966, up 18 percent over 1965. This unexpected change is attributed almost entirely to the end of area tensions and the increasing importance of trawling.

In Sabah and Sarawak, the 1960 population census reported 6,000 and 5,500 fishermen, respectively. Sabah's landings in 1965 were estimated at 25,400 tons worth US\$6 million. No figures are available for Sarawak, but a conservative estimate is 6,000 tons annually.

Malaysia (Contd.):

Fish Used At Home

The bulk of the fish is marketed without dressing and consumed locally. Ice may be used, but its high price in many places and some consumer resistance adversely affect its use. Salting and sun-drying the salted fish is the most common form of processing. During 1961-1965, fish processing advanced, largely for export. Frozen tuna and fish meal were produced in Penang, frozen fish in Perak, and frozen prawns in Sabah.



Fig. 3 - Shrimps drying under Penang sun, one way to preserve them. They bring good price because, when mixed with food, they add as much flavor as fresh shrimps.

During the past few years, the fishing industry has been one of the faster-growing industries. Its annual growth rate during 1960-1965 was 7.5%, while the aggregate production index of other commodities was 4.8%.

The expansion resulted from the mechanization of fishing boats, widespread use of nets made of synthetic fiber, and improved fishing techniques.

The value of fish and fish preparations exported climbed from US\$6.3 million in 1960 to US\$12.3 million in 1965. About 70% of these exports were fresh, chilled, and frozen marine fish. While Singapore has remained the major destination, growing markets have been created in the U. S., Japan, and Thailand.

During the same period, Malaysian imports of fish and fish preparations remained at about US\$10 million per year. Fresh, chilled, and frozen marine fish; canned fish preparations; and salted, dry, or boiled molluscs account for nearly three-fourths of total imports. The major sources of fish imports have been Japan, Thailand, Singapore, and Indonesia.

During the First Malaysia Plan (FMP), 1966 to 1970, the annual fish catch is predicted to grow at a 6% rate. FMP's fisheries program is aimed at expanding research; training fishermen to be more competent; encouraging them to use improved equipment, gear, and other facilities; helping producers to improve processing and marketing methods; and establishing the facilities for large-scale and efficient marine fishing. The program amounts to US\$5.7 million in Malaya, US\$4 million in Sabah, and US\$1.3 million in Sarawak.

Marine Sciences

The Director of Fisheries, M. K. Soong, sees the underdeveloped state of fishing science as a major impediment to industry growth. A limited amount of quality research is being conducted by 7 research officers in the Department of Fisheries and at the Fisheries Research Institute under the Department. Both marine and fresh-water topics are studied. These researchers must confine themselves to compact problems--such as the biology of the cockle and early stages of the mangrove crab, rather than larger investigations requiring team work.

Fisheries science at the university and college level has not received the attention that agricultural science has. Graduates of the University of Malaya and the technical colleges--none offers diploma courses in marine sciences--do not have the desired background for fisheries administrative and research work. In May 1964, a postgraduate diploma course in fisheries was instituted by the Fisheries Biology Unit, Department of Zoology, University of Singapore. Two Malaysians have completed this course and are now working with the Department of Fisheries. About 12 other Malaysians are taking advanced courses required for fisheries development outside of Malaysia, mostly in Japan and Canada.

Malaysia (Contd.):

2 Marine Fisheries Schools

Under the first and second 5-year development plans, 2 marine fisheries schools were completed, one in Penang on the West Coast and the other in Kuala Trengganu on the East Coast. These schools train inshore fishermen in simple navigation, engine maintenance and repairs, and in fishing methods. The Penang school has been offering two 5-month courses per year and training about 60 fishermen annually. It was scheduled to offer a full year's course to about 30 fishermen. The Trengganu school runs three 3-month courses and takes in 90 trainees a year. The trainees receive an allowance from the Government to support their families while they study.

The Department of Fisheries initiated the planning of a Fisheries College for Penang modelled after Japanese and Canadian institutions. The development of modern, deep-sea, and oceanic fishing requires men trained in the technology and management of fishing enterprises. They are not available today because the 2 existing schools cater exclusively to inshore fishermen. The proposed college will provide 3-year training in navigation, fishing technology, marine engineering and electronics, fisheries economics and management, and fisheries products and refrigeration. A diploma in fisheries will be awarded at the end of the course. Local staff for the college are being trained overseas. The State Government of Penang has donated 87 acres. The college will have a hostel for 200 students. The total student enrollment will be 300.

In addition to the Fisheries College in Penang, the FMP calls for a fisheries training center in Sabah, and possibly a second fisheries center in Sarawak. To supplement the activities of these schools, fisheries mobile units will be set up. These units will visit fishing villages throughout the country to demonstrate the use of proper gear and equipment--and disseminate information on maintenance and repair of engines.

International Cooperation

Malaysia has not participated in many international cooperative ventures in marine science. In May 1967, the Malaysian Minister of Agriculture and Cooperatives, Mohammad Ghazali bin Jawl, returned from Thailand.

He announced that the two governments had agreed to survey the fishing resources off their coasts. The project began in February 1968 and lasted 6 weeks. The two governments are examining the density of ground fish and the variations in density with water depth. A similar joint study also is scheduled to be conducted in 1968 off the northern coast of Eastern Malaysia.

Japanese Investments

The Japanese have undertaken the major joint business ventures with the Malaysians in marine exploitation. The Malaysian-Japanese fishing company in Penang, Malayan Marine Industries, Ltd., produces about 800 short tons of frozen tuna and 500 cartons of canned tuna in brine each month. The tuna is produced for export. The U. S. is the principal market. Although the company was established in 1959, it relied entirely until 1965 on Japanese tuna catches. In 1965, Malayan Marine Industries sent the first Malaysian-flag boats into the western section of the Indian Ocean. The company has decided to add an eighth boat to its fleet. All but one, however, carry only Japanese crew members because there are no qualified Malaysians. The one training ship with Malaysians ventures only to intermediate distances in the Indian Ocean.

The Japanese have invested \$100,000 in the North Borneo Fishing Co., Ltd., a joint venture in which Malaysians hold 52% of the stock. This company fishes for prawns in the coastal waters off Sabah, exporting most to Japan. Most workers are citizens of Japan or Hong Kong. The Japanese wholly own a second prawn fishing company, Tropical Seafoods Ltd., in Sarawak. Their investment was \$78,000.

Both Taiwan and Korea have shown interest in basing larger parts of their deep-sea fishing operations in Penang. One Taiwanese company has formed a subsidiary, and the Koreans are considering a joint venture.

Foreign Help

Canada, France, Germany, and Japan have shown interest in helping to develop the fishing industry. The Canadians completed a feasibility study of the Kuala Kedah fishing port and are considering methods of financing it. A French team visited Penang to study development of the fishing harbor.

Malaysia (Contd.):

The Germans have also been approached for a feasibility study of a fishing port at Amut.

The Malaysians have asked Japan for assistance. On Nov. 22, 1966, the Japanese and Malaysians signed a loan agreement of \$50 million to finance development projects.

At the Southeast Asia Agricultural Development Meeting in Tokyo, in December 1966, Japan agreed to organize a group of experts to study the problems of establishing a research center for marine fisheries.

Fishing Conflicts

Since few Malaysian fishermen travel farther than 50 miles from the coast, there are few fishing conflicts with other countries. Hostilities between Indonesia and Malaysia from 1963 until 1965 restrained Malaysian fishing, especially in the rich coastal waters off eastern Sumatra. With confrontation over, Malaysian fishermen are venturing into the Straits of Malacca. Malaysian fish merchants are renewing contracts with Sumatran fishermen and fish dealers. Indonesian piracy poses a continuing problem in the Straits. Reports of incidents appear almost weekly in Malaysian newspapers.

Occasional trouble has arisen with Thai trawlers in recent months. The Thais have more experience with trawling than the Malaysians. The Thais have begun to outgrow their nation's limited inshore fishing grounds and are gradually moving into waters off Malaysia's northwest coast. Although questions of fishing rights hold potential problems, both countries would prevent serious incidents.

Indian Ocean Fishing A Possibility

The focus of expansion for the Malaysian fishing industry is the Indian Ocean, dominated almost exclusively by Japanese deep-sea fishermen. Only one Malaysian fishing company, Malayan Marine, partially owned and almost totally operated by the Japanese, is engaged in deep-sea fishing there. A second company in Prai, owned by a Malaysian, is studying opportunities in Indian Ocean fishing.

Pakistan

HOW SHRIMP ARE INSPECTED

Pakistan's shrimp industry consists of about 250 privately owned fishing vessels. In most cases, these are owned by their operators, although a few owners may have up to 6 vessels.

Fishing is traditional. The catch is stored aboard vessels in wicker baskets with chipped ice to avoid spoilage. These boats may remain out as much as 5 or 6 days, depending on how long it takes to catch a load. Once loaded, the boat returns to the Fish Harbor. There, one of 20 processing companies buys the catch at auction. The processing plants reject an average 20 percent of each boatload due to crushing and spoilage.

Handling Shrimp

Shrimp are received in the baskets used on boats. They are poured out in heaps on a cement floor. Workmen discard the spoiled or damaged ones, dehead the remainder, and place them in fresh water for washing and cleaning. Then the shrimp are ready for the next step. They are sorted according to size and divided up further, part frozen in the shell, but the greater part removed from the shell.



Shrimp and prawn business at 9-year-old Karachi market is good. Boys and men handle catch. When sold, it is hurried to one of processing factories built nearby. Most of these crustaceans are packed, frozen, and exported to N. America and Europe. (FAO/J. Olsen)

Once removed from the shell, the shrimp tails are again graded by size and quality; some are put into boxes and frozen in blocks. The best quality pieces are placed on trays, so that the pieces do not touch, and are individually quick frozen. These are packaged in cellophane or plastic bags.

Japan

3 MORE TRAWLERS TO FISH IN ICNAF AREA

The Japanese Fisheries agency will license 3 stern trawlers to fish north of 40° N., where a government-chartered stern trawler has been "exploring off Newfoundland." The vessels will be required to observe ICNAF mesh regulations. Six firms have asked to be licensed.

It is not known now whether the Fisheries Agency will grant 3 more licenses. Of the 8 to 9 trawlers licensed to fish south of 40° N., only 2 were reported there. All of the trawlers had been operating off Africa's north coast in the eastern Atlantic.

LONG LINERS REPORT GEAR DESTRUCTION BY PURSE SEINERS OFF MEXICO

Japanese tuna long-liners operating on the high seas off the Mexican coast report frequent gear damage and losses caused by purse seiners of other countries. Long lines have been cut, and glass floats and radio buoys destroyed. This seriously hinders operations.

The Federation of Japan Tuna Fishermen's Cooperative Associations claims such interferences will make it difficult to attain its tuna catch quota established under the Japan-Mexico Fisheries Agreement. The agreement became effective on June 10, 1968. The Federation plans to urge the Japanese Government to protest to the countries involved--and to send a guidance vessel to the area to protect the Japanese vessels. ("Katsuo-maguro Tsushin," June 14.)

SALES OF CANNED TUNA IN BRINE SLOW

The Japan Export Canned Tuna Packers Assoc. at a late May meeting agreed that measures must be developed to overcome slow sales of canned tuna in brine to the U. S. The canned tuna in brine inventory was around 1 million cases at the packers' level. At the rate of sales then, exports would fail to attain the 1968 export target--and could even fall far below 1967 shipments to the U. S.

Trading Firms & Packers Differ

The trading firms explained that export prices were around 80 cents per case too high. Unless the packers reduced their prices, it would be difficult to sell the product to the U. S. The packers, on the other hand, hoped to raise prices. They claimed they were paying US\$454-504 a short ton for the raw material and losing money selling their packs at the prevailing price.

As a possible solution to the high cost of raw material, the idea of buying tuna from South Korean and Taiwanese fishermen was discussed. The trading firms, however, indicated that negotiations for lower prices would be difficult so long as high prices prevailed in Japan. ("Katsuo-maguro Tsushin," May 28.)

FILM ALBACORE FEEDING BEHAVIOR

Tokai University's new oceanographic vessel, "Tokai Daigaku Maru Nisei," has succeeded in producing the world's first underwater video-tape recording of albacore tuna feeding behavior. The 702-gross-ton craft, built in Jan. 1968, used a specially designed television camera.

The recording was made on May 16, 1968, during the vessel's research cruise to the albacore grounds 25 miles north of Minami Torishima Island (south of Tokyo Bay).

How It Was Done

On that day, when a dense school of albacore was located, the TV was lowered from the side several meters. Pictures were taken for about 20 minutes during pole fishing. The camera obtained an unobstructed view of feeding behavior and hooking condition within a radius of 23-26 feet.

Film Will Be Studied

The University will closely examine each picture frame to study the speed of fish when they strike the bait, density of school, effects of water spray on biting condition, and other characteristics. This should provide more knowledge about albacore feeding behavior. ("Suisan Keizai Shimbun," May 28.)

日本

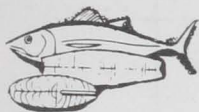
Mauritius

MOST JUNE TUNA PRICES STEADY

The Japanese Overseas Fisheries Co., Penang, Malaysia, which operates the tuna base at Port Louis, Mauritius, in the western Indian Ocean, announced it would pay these prices for tuna delivered to Port Louis in June.

| Species | Exvessel Price 1968 | | |
|--|------------------------|-----|-------|
| | June | May | April |
| (US\$/Short Ton) | | | |
| Albacore, round: | | | |
| Large--over 24 pounds | 371 | 353 | 365 |
| Small, under " " | 252 | 257 | 257 |
| Yellowfin, gilled & gutted: | | | |
| Extra large, large, medium | 315 | - | - |
| Small | 176 | - | - |
| All sizes | - | 302 | 302 |
| Fillets--over 26 pounds | 290 | 290 | 290 |
| Big-eyed, gilled & gutted: | | | |
| Over 66 pounds | 202 | 202 | 202 |
| Fillets--over 26 pounds | 315 | 315 | 315 |
| Bluefin, gilled & gutted: | | | |
| Over 66 pounds | 202 | 202 | 202 |
| Fillets--over 26 pounds | - | 264 | 264 |

Source: "Katsuo-maguro Tsushin," May 31.



Thailand

DELEGATION VISITS NORWAY TO STUDY FISHERY TECHNOLOGY

A Thai delegation representing major segments of the fishing industry visited Norway, March 25-April 7, to study fishery technology. The delegation leader and interpreter was M. L. Prachaksilp Tongyai, of the Marine Fisheries Laboratory, assigned by the Director General of the Department of Fisheries, Prida Karnasut.

Mr. Prachaksilp Tongyai reported to Commercial Fisheries Review:

"The fishing industry in Thailand has in recent years become progressively more mechanized. The landings from trawlers and purse seiners have steadily increased, but the fluctuations in fish prices have kept the fishermen from investing in enterprise-type fisheries.

"Fishermen and fisheries promoters, therefore, sought the aid of the Thai Department of Fisheries and the Norwegian Govern-

ment. Aid was granted for 5 fisheries representatives and one Fisheries Department official to visit Norway. . ."

Norwegian Hospitality

Through the Export Council of Norway, the delegates were hosted by Norwegian companies and Scandinavian Airlines. "The delegates were able to acquaint themselves with the advanced fishery technology of Norway and begin business contacts which would help them to help themselves towards more efficient and economical utilization of fisheries resources of Thailand."

* * *

RATIFIES 1958 LAW OF THE SEA CONVENTIONS

On May 23, the Thai National Assembly ratified the 4 Conventions on the Law of the Sea adopted at the 1958 Geneva Conference. Thailand's official gazette published the ratification the same day. The last step required--depositing the ratification with the United Nations--was expected to take place soon.

Thailand claims a 12-mile territorial sea, proclaimed unilaterally in October 1966. (U. S. Embassy, Bangkok, May 28.)



Taiwan

FISHES FOR TUNA ROUND THE WORLD

The Taiwanese deep-sea tuna fleet numbers about 280 vessels; 90 of these were added during 1967. In mid-1968, about 50 vessels were fishing from Abidjan and Monrovia, 70 from Port Louis (Mauritius), 30 from Penang (Malaysia), 100 from American Samoa, 20 from Fiji Islands and vicinity, and 10-15 from St. Martin in Leeward Islands (Caribbean). The fleet shifts areas occasionally depending on tuna abundance and other factors.

1967 Landings

In 1967, Taiwanese tuna fleets landed about 80,000 metric tons of fish--half from deep-sea fisheries. Production plans for the end of the 5-Year Plan (1972) provide for doubling the annual tuna production to about 200,000 tons and exporting much of it.

Taiwan (Contd.):

70-80 Vessels in 1968

In 1968, the Taiwanese have scheduled to build 70-80 more tuna vessels. Of these, 50-60 are to be built in domestic, and about 20 in foreign, shipyards. Foreign-built vessels of about 250 gross tons each will be financed by a World Bank Loan (US\$7.8 million authorized several years ago). Domestically built tuna vessels will be 150-200 gross tons each.

* * *

PLAN TRANSFER OF TUNA VESSELS FROM AMERICAN SAMOA

The Taiwanese tuna fishery operators based in American Samoa have vessels which, in 1967, accounted for over 35 percent of tuna landings. They plan to transfer their large refrigerated vessels to other oceans because the South Pacific catch is declining.

The Samoa-based Taiwanese fleet is about 70 vessels, about 50 equipped with refrigeration. The Taiwanese hope to use their large, 200-gross-ton, vessels in the Indian and Atlantic oceans.

Good Seasonal Fishing

There, the seasonal fishing for yellowfin and albacore is good. They expect no difficulty in finding suitable bases for their operation. This is because in the Indian Ocean the Japanese Overseas Fisheries Co. operates a large tuna base at Port Louis, Mauritius; in other areas, the Japanese trading firms are actively seeking to contract Taiwanese vessels to fish for them.

The China Marine Trading Co. also will represent Taiwanese vessels that will land fish at Port Louis and at Tema, Ghana. ("Suisan Tsushin," May 24.)



TONGUE OF THE OCEAN

The Tongue of the Ocean, a 160-kilometer-long, 3,600-meter-deep under-sea canyon in the Bahamas, has been a deep-water feature for at least 13 million years, probably longer.

The limestone that forms the rugged outcrops in the canyon walls was not made from the sediments that presently are accumulating in the area, according to a report by two U. S. Geological Survey scientists.

Comparison of data from test wells on nearby Andros Island with the depths of the rock formations in the Tongue of the Ocean suggests that the strata have either slid downslope into the canyon or been down-warped in that area.

Conditions similar to the present have prevailed since the late Miocene epoch when the rock was apparently formed under 300 meters or more of seawater, according to Survey scientists Thomas G. Gibson and John Schlee.

"We do not know how the outcrops formed, but suggest slumping on the side of the canyon as a possible explanation."

The team studied the giant submarine canyon from the research submarine "Alvin" in August 1966. They made two dives approximately five kilometers southwest of New Providence Island ranging in depth to 1,676 meters. (Reprinted, with permission from "Science News," weekly summary of current science, copyright 1966, by Science Service, Inc.).

SOUTH PACIFIC

Australia

IMPORTS OF FISH OILS DROP

Australian imports of marine animal and fish oils dropped considerably in FY 1966/67 (July 1, 1966, to June 30, 1967), compared with imports in FY 1965/66. Exports also were down. (Agricultural Attaché, U. S. Embassy, Canberra, May 24, from Commonwealth Bureau of Census and Statistics.)

| | Imports | |
|--|--------------------------------|------------|
| | FY 1966/67 | FY 1965/66 |
| | . . . (Imperial Gallons) . . . | |
| Marine Animal and Fish Oils: | | |
| Whale oil | 747,068 | 1,718,352 |
| Cod-liver oil, incl. refined . | 92,591 | 107,495 |
| Seal and fish oils, unrefined . | 60,563 | 82,094 |
| Other marine animal oils . . | 7,136 | 14,626 |
| Processed Oils (Boiled, oxidized, dehydrated, blown, or polymerized): | | |
| Cod-liver oil | Not available | 20 |
| Whale oil | 102,112 | 59,472 |
| Other marine animal and fish oils | 7,686 | 12,021 |
| | Exports | |
| Whale oil | 932,934 | 1,287,603 |
| Other marine animal and fish oils | 471 | 1,828 |



New Guinea

JAPANESE-AUSTRALIAN SHRIMP VENTURE RUNS SMOOTHLY

The South Sea Fishing Co., a joint Japanese-Australian shrimp fishing venture established in Port Moresby, New Guinea, in early 1967, is operating smoothly and profitably. The company operates one 350-ton freezer ship converted from a tuna vessel--and 5 shrimp vessels that trawl off the southern coast of New Guinea.

Principal catches are tiger shrimp, averaging heads off 20 a pound, the size very easy to sell in Japan. ("Suisan Tsushin," April 30.)



New Zealand

BROADENS FISHING INDUSTRY SUBSIDIES

New Zealand has joined the ranks of nations increasing subsidies to their fishing fleets. She has broadened her subsidies to provide for purchase of new and used vessels, new engines for replacement, gear and equipment, mortgage guaranties, loans, and refinancing of loans.



BCF Holds Fishery Workshop on Okinawa

Three scientists from BCF's Biological Laboratory in Honolulu held a fishery workshop for researchers on Okinawa in May at the invitation of the government of Ryukyu Islands. The 3 were Richard S. Shomura, Deputy Area Director, and Tamio Otsu and Brian J. Rothschild, fishery biologists.

The workshop was held for scientists of the government's Fishery Division and the University of the Ryukyus.

The Ryukyus

Okinawa is the most important of the 73 Ryukyu Islands lying between Japan and Taiwan. Nearly 90 percent of the million Ryukyans live in Okinawa. Agricultural land is scarce and the islands are seeking ways to strengthen their fisheries.

The Honolulu scientists are interested primarily in skipjack tuna (aku) because it is the principal Hawaiian fishery. Okinawan catches are 8 million pounds; the Hawaiian average is 10 million. However, there are many more vessels and fishermen in Okinawa.

How Skipjack Is Processed

On Okinawa, most of the skipjack tuna catch is smoke-dried and made into "katsuo-bushi" (skipjack sticks). Most of the Hawaiian product is canned. Both fisheries are seasonal and peak in midsummer.

Fishery Techniques Similar

The fishing techniques are similar. In Okinawa, and in Japan, the skipjack are attracted to the ship by live bait and are caught with pole and line. In Okinawa, bait is relatively scarce.

Workshop Aboard Ship

The BCF scientists met with fishermen and inspected fishing operations. In the work-

shop, they discussed the methods used to study skipjack in their Honolulu lab.

They spent several days at sea demonstrating method of tagging skipjack. The purposes are to study migrations and other aspects of the skipjack life history.

As a result of the workshop, scientists of Okinawa's Fisheries Research Institute have promised to conduct a comprehensive tagging program this year.



PROPER PRECAUTIONS TO KEEP FISH FRESH FOR TABLE

Certain steps are in order if the fisherman wants his catch to reach the dinner table in the best possible condition, says Henrietta Gossett, home economist in the Seafood Marketing Division of the Texas Parks and Wildlife Department.

According to Miss Gossett, a few simple steps will retain freshness and help identify good quality fish.

The fish should be cleaned as soon as possible after it is landed with all of the internal organs removed. An alternative to this is to keep the fish alive in bait wells or on a stringer.

Since fish decomposes rapidly, it should be refrigerated as soon as possible. The lower the temperature, the slower the rate of spoilage, so ice would be a good investment to protect the catch.

Miss Gossett says that bruising and crushing hasten spoilage, so fish should be handled as little as possible.

To assure selection of fresh fish, she suggests that a few qualities be observed:

Fresh fish have full and transparent eyes. Sunken eyes are a sure sign of bad fish. Shiny skin is another clue to good fish. Gills on fresh fish are bright red or pink and become progressively duller as the fish spoils. Firm, elastic flesh which clings to the bone is another sign the fish is fresh.

Fish should have only a mild odor. If the fish has a strong, putrid odor, it should not be eaten.

Here are a few other hints which will heighten the enjoyment of fish:

Fresh fish should be rinsed in cold water and drained on absorbent paper. If the fish is to be cooked within the next 24 to 36 hours, it should be placed in a covered bowl or in plastic wrapping in the coldest part of the refrigerator. If the fish is to be kept for any time longer than 24 to 36 hours, it should be rinsed, drained, and wrapped tightly in moistureproof, vaporproof paper and placed in the freezer.

By following these procedures, the fish will retain a maximal moisture level, and the odor of the fish will not be transferred to other foods in the refrigerator.

Fish should not be frozen in wax paper, parchment paper, or polyethylene materials, which are not moistureproof and vaporproof.

When fish thaws, it should be cooked immediately and never refrozen. Frozen fish should be thawed in the refrigerator at 37° to 40° F. The fish should be held at this temperature only long enough to permit ease of preparation. It takes about 24 hours to thaw a one-pound package in this manner.

If a quicker method is necessary, the fish, still wrapped in the moistureproof, vaporproof wrapping, may be held under cold running water. One to two hours should be allowed for thawing a one-pound package by running water over it. (Reprinted from Texas Parks and Wildlife Department "News.")

AFRICA

1968 FISH CATCH UP IN
SOUTH AND SW AFRICA

South Africa's Cape west coast shoal fish catch for the first 2 months of the 1968 season, excluding both factory ships, was 67,224 short tons of pilchards, 867 of maasbanker, 3,410 of mackerel, 20,370 of anchovy, and 1,815 of red-eye herring. The total: 113,677 tons.

In the 1967 period, the catch was 110,319 tons: pilchards 48,551 tons; maasbanker 1,216; mackerel 9,526; anchovy 57,341; and red-eye herring 1,685 tons. In 1966, the Jan.-Feb. total was 54,928 tons: pilchards 20,772 tons; maasbanker 8,248; mackerel 1,400; anchovy 12,987; and red-eye herring 3,521 tons.

January 1968 Figures

The Division of Sea Fisheries reported the Jan. 1968 catch comprised pilchards 23,896 tons; maasbanker 696; mackerel 1,923; anchovy 10,810; and red-eye herring 836 tons. The total catch was 58,161 tons. In Feb., the total catch was 55,516 tons: pilchards 43,328 tons; maasbanker 171 tons; mackerel 1,478; anchovy 9,560; and red-eye herring 1,815 tons.

In Feb. 1967 the figures were: pilchards 34,763 tons; maasbanker 1,579; mackerel 1,957; anchovy 23,814; and red-eye herring 1,685 tons. In Feb. 1966: pilchards 16,135 tons; maasbanker 1,889; mackerel 6,062; anchovy 6,034; and red-eye herring 3,521 tons.

The Jan. 1968 catch yielded 13,467 tons of fish meal, 543,252 gallons of fish body oil and 1,852,512 lbs. of canned mackerel. In Feb. 1968, the catch yielded 13,664 tons of fish meal, 289,118 imperial gallons of fish body oil, and 101,136 lbs. of canned mackerel.

South-West Africa

In South-West Africa, the Jan. 1968 shoal catch was 14,862 tons of pilchards and 72 tons of anchovy; these yielded 3,872 short

tons of fish meal and 1,298 long tons of fish body oil. The Feb. catch reached 69,170 tons of pilchards, 3,575 tons of anchovy, and 54 tons of maasbanker; the catch yielded 16,766 tons of fish meal and 5,240 tons of fish body oil.

Pilchard boats were making good catches both north and south of Walvis Bay in March. The oil yield was still high, averaging around 23 imperial gallons per ton of fish.

However, the snoek fishing had deteriorated. Only a few Cape Town boats were reported operating. ("The South African Shipping News and Fishing Industry Review," April.)



South Africa

FACTORYSHIP HAS GOOD TRIP

The 31,000-ton South African fish factoryship "Willem Barendsz" arrived in Cape Town, South Africa, in early June with a processed fish catch worth about US\$1.6 million. The catch already had been sold to European buyers. This is the vessel's best earnings in about 18 months as the country's first fish factoryship.

Large Catch

In 6 weeks, the ship's 10 seiners caught about 52,000 metric tons of pilchards. These were processed by the factoryship into 12,500 metric tons of fish meal and 3,600 long tons of fish oil.

The ship steamed as far as 1,000 miles from Cape Town to find the fish. ("South Africa Digest," June 7.)



MID EAST

Iran

SHRIMP INDUSTRY

The Iranian Government has turned over shrimp catching, freezing, and exporting rights to 2 private firms. The frozen shrimp are delivered from factoryship to refrigerated cargo ships for transport to the U. S. Quality controls and sanitation are reported by the Iranians to be equal or better than those of U. S. producers in the Gulf of Mexico. Ships have U. S. processing supervisors aboard who have worked in the Gulf of Mexico.

2 Concessionaires

Concession rights to catch, freeze, and export shrimp are granted by the government-owned Southern Fisheries Co. (SFC). Only 2 companies are using their concessions: Gulf Fisheries Co., a Kuwaiti firm, and Ross Persian Seafoods Corp., a British-Iranian venture. Gulf catches about 2,000 metric tons of shrimp a year, twice Ross' catch. The U. S. and Japan are the largest consumers.

The Operation

Ross Persian has fifteen 80-foot trawlers and 2 factoryships, 4,000 and 2,000 net tons. The trawlers deliver the catch to the factoryships, where the shrimp are processed, graded, and frozen into 5-kilogram (11-pound) packages. Periodically, the packages are transferred directly from factoryship to cargo vessels of the Concordia Line for delivery to the U. S.

The frozen shrimp for export are never landed in Iran. The shrimp are cleaned and the heads removed before freezing; the shrimp are not deveined until they reach the U. S. for further processing.

The processing and sorting machinery is U. S. made. Nearly one-fourth the personnel processing shrimp are U. S. or European nationals.

Gulf Fisheries operates similarly, although it has 30 trawlers and production is proportionately higher.

Inspection

Dr. Amin Keyvanfar, a marine biologist, supervises sanitation and quality controls over shrimp harvest in the Persian Gulf's Iranian waters. He works for the government-owned Southern Fisheries.

According to Dr. Keyvanfar, the shrimp are caught, separated from rest of catch, decapitated, and washed with sea water. They are placed in 5-pound cans (with one pound of sea water added), frozen on ship at -35°C . (-31°F .) and stored at -25°C . (-13°F .) The catches are transferred to motor ships at least weekly and are transferred again to cargo ships at least monthly.

Dr. Keyvanfar visits trawlers and mother ships at random to insure maintenance of sanitation.

No precautions are taken or preservatives used to prevent enzyme spoilage. (U. S. Embassy, Tehran, Mar. 6, Apr. 20.)



United Arab Republic

FISHERY DEVELOPMENTS

Three of the 8 new refrigerator trawlers ordered by the United Arab Republic (UAR) from Spain were delivered and now are fishing together off West Africa.

The vessels, about 140 feet long, reportedly have a nonstop range of 15,000 miles and a refrigerated hold capacity of 850 tons. Another 14 modern trawlers are scheduled to be built at the Alexandria shipyards to complete the planned UAR high-seas fishing fleet.

Sponge Fishers

UAR sponge fishers harvested 500,000 pieces off the country's Mediterranean coast last season. Until 2 years ago, the area was fished under a concession agreement with Greek entrepreneurs.

High Dam Cuts Catch

Though complete figures are not available, indications are that the catch from the Nile Delta lake and offshore areas--normally about half the UAR's fish catch--has fallen noticeably in the last 2 years. This results from the operation of the High Dam. In holding back the Nile flood, the dam also held back much food in the flood waters. Apparently the UAR's sardine catch has been particularly affected. (U. S. Embassy, Cairo, June 11.)

