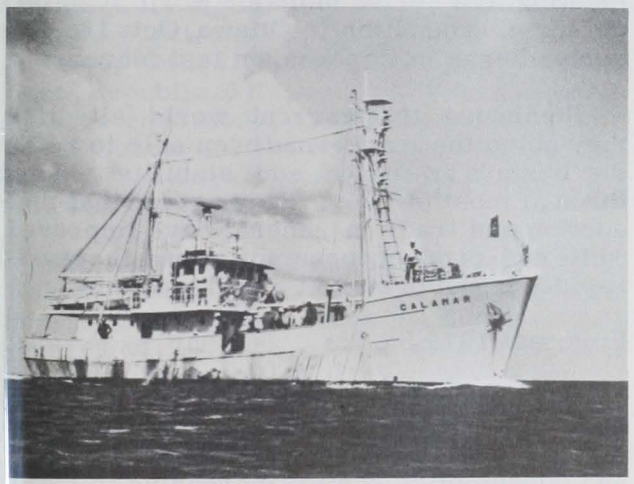
INTERNATIONAL

THE FAO FISHING FLEET

The United Nations Food and Agriculture Organization (FAO) operates one of the world's largest fishery research fleets. Its 28 vessels are found in nearly all oceans, in many seas, and in 4 large African lakes. Easily recognized by their brilliant blue stack with the UN insignia painted on both sides, each flies the flag of the country in which it is registered, although all are home-ported in Rome. They are manned by FAO experts and nationals of the countries they serve.



The vessels are used in FAO/UNDP fishing programs in 15 developing nations, and 3 regional projects that embrace 23 countries and territories. These include Argentina, Colombia, Pakistan, Ghana (Lake Volta), India, Korea, Zambia (Lake Kariba), Mexico, Nigeria, the Philippines, Senegal, Sierra Leone, Singapore, the UAR (Lake Nasser), S. Vietnam, Caribbean countries, Central America, and around Lake Victoria in Africa.

The Vessels

Each vessel has been designed by an experienced naval architect in the Boats and Equipment Section in collaboration with other branches of FAO's Fisheries Department. Most have been designed for particular projects, but all are versatile. They are used for experimental and exploratory fishing, scientific investigations, demonstrations of fishing techniques, training fishermen and mechanics, and for many other purposes.

They range from a pair of 8.23 meter catamarans in Lake Kariba to a 44.28 meter US$300,000 "Japanese-type" tuna longliner in Korea. Many cost more than similar commercial fishing vessels because of their specialized equipment and instruments. However, nearly all are fishing boats rather than sophisticated research vessels.

Latest Equipment

Twenty-three have steel hulls, 4 have reinforced plastic hulls, and one is wooden. Ship's complement--crew, scientists, and trainees--runs from 4 to 60. Their propulsion systems vary from 80 to 800 hp; the engines are manufactured in factories around the world. Many are equipped with the latest electronic, navigational, and fish-finding devices--radar, sonar, echo sounder, directional compasses, loran, radiotelephone, automatic pilots, and various winches and catch-handling gear. Some also have well-equipped scientific laboratories. Equipment is selected according to specific needs.

Over $5-Million Fleet

The cost of building, equipping, and delivering this fleet now exceeds US$5 million. The money is contributed by the UN Special Fund and participating governments. Nine were built in England, 8 in Japan, 5 in Holland, 4 in Norway, and 2 in Mexico. The first was built in Japan in August 1965. The two newest, also built in Japan, were to be delivered to the Korean Training Center for coastal fishing in 1969. The shipyards deliver them anywhere. They navigate under their own power, ride as cargo on other vessels, and are even sent by truck (for example, a boat destined for Lake Victoria).

Boats Leased Too

FAO also uses all types of leases and secondhand boats. During the past 3 years, about 8 have been used. One, a leased boat, is investigating pelagic fishing under a regional fishery project that will benefit nearly all West African nations.

The architects are kept busy designing new vessels as new assistance plans are drawn. Twelve are being planned or considered.

FAO SCHEDULES SECOND WORLD FOOD CONGRESS FOR JUNE 1970

FAO has scheduled the Second World Food Congress for June 16-30, 1970, in the Netherlands. The first phase will assess the world food situation, within framework of overall economic development; it will propose priorities for action. The second phase will discuss how to find the resources necessary for the action.

8 Commissions

The debate will be conducted in 8 commissions. The 4 commissions of Phase I are based on the vital factors in national development. The first commission will focus on ensuring food supplies; the second on higher living standards and improved diets; the third on people in rural development. FAO notes that populations are rising faster than job possibilities--even with the drift to urban areas. The number of people who make their living in rural areas is rising steadily.

Developing Trade

The fourth commission will consider ways of strengthening trading position of developing countries and increasing their export earnings. Their vital export trade is almost entirely agricultural products.

Phase II

Phase II will face the implications of proposals made in Phase I and concentrate on finding ways and means of carrying them out.

FISH-MEAL MANUFACTURERS EXAMINE WORLD TRENDS

Fish meal is in short supply. This was the major finding in an examination of world production, sales, and consumption at the 9th Annual Conference of the International Association of Fish Meal Manufacturers (IAFMM).

As a result, prices have risen to high levels. Some members are concerned that fish-meal sales will suffer and inventories accumulate.

Reasons for Production Decline

The production decline is attributed to the failure of the fish to appear in their usual areas off Peru and, to a lesser extent, in Scandinavia. (Regional Fisheries Attaché, U.S. Embassy, Copenhagen, Oct. 17, 1969.)

FROZEN GROUNDFISH SUPPLIERS MEET

Government officials from Canada, Denmark, Iceland, and Norway held the third meeting in a series of major world suppliers of frozen groundfish in Ottawa, Oct. 15. The series began in Copenhagen last March.

Reviewing the current world situation, they noted the market had been able to retain the basic strength and stability evident through most of 1969. They agreed that production and trade in general have improved, while end-product consumption has increased rapidly in the principal world markets.

Forecast 1970 Stocks

Examining the medium-term outlook, they concluded that current stock levels are normal. But with peak production period past, and consumption rapidly increasing in major importing markets, world stocks may be very low by first-quarter 1970. This should further strengthen the market.

The participants agreed to keep world production and market trends under review and to consult periodically. (Dept. of Fisheries and Forestry, Canada, Oct. 16, 1969.)

JAPAN-MEXICO FISHERY CONFERENCE ENDS

Delegates from Japan and Mexico met in Mexico City, Sept. 29-30, 1969, to discuss their fishery agreement. In effect since June 10, 1968, the agreement covers Japanese fishing inside Mexico's 12-mile exclusive fishery zone.

After reviewing operation of the agreement, Mexico did not propose further restriction of Japanese tuna fishing. Japan had anticipated this move in view of the Mexican President's recent statement urging that territorial waters be extended from 9 to 12 miles. ('Suisan Tsushin,' Oct. 4, 1969.)

5 NATIONS SIGN CONVENTION ON SOUTHEAST ATLANTIC

The Convention on the Conservation of the Living Resources of the Southeast Atlantic was formally signed by Cuba, West Germany, Italy, Portugal, and South Africa at a meeting in Rome, Oct. 23, 1969. Belgium, France, Japan, Republic of Korea (South Korea), Spain, and Togo endorsed, but did not sign, the document. Observers from Brazil, Republic of China (Taiwan), Ecuador, Poland, and the U.S. were present.

The agreement becomes effective when ratified, or is otherwise adhered to, by at least 4 states with a combined 1968 catch in the area of 700,000 metric tons. It is open for signature by all interested countries.

Terms of Convention

The convention's 21 articles establish an international commission for the southeast Atlantic fisheries. The commission, aided by a scientific advisory council and regional and stock committees, will study and recommend ways to conserve fish and other living resources in the area.

The convention area runs west and south of the mouth of the Congo River to the Cape of Good Hope and the Indian Ocean. It covers roughly 8 million square miles between 6 and 50 degrees south latitude, and between 20 degrees west and 40 degrees east longitude.

Area Heavily Fished

Fishing in this area has increased 30 times in as many years. It has risen from less than 100,000 metric tons a year before World War II to 2,600,000 tons in 1967, and to 3,300,000 tons in 1968. The 1968 catch value was about US$200,000,000. This increase has seriously strained certain stocks, mainly hake and pilchard. International action is necessary to avoid depletion. The area's tuna and whales already are covered by international agreements.

Predominant fishing countries in the southeast Atlantic are South Africa, USSR, Portugal (Angola), Spain, and Japan. In 1968, South Africa took 2,000,000 tons and the USSR almost 500,000. Other countries are Belgium, Bulgaria, West Germany, France, Taiwan, Israel, South Korea, and Poland.

Need for Conservation Stressed

A Portuguese resolution calling for an expert study of the state of stocks in the southeast Atlantic before the International Commission meets was approved. The resolution warned that certain stocks appear to be heavily exploited, and that conservation measures are needed urgently.

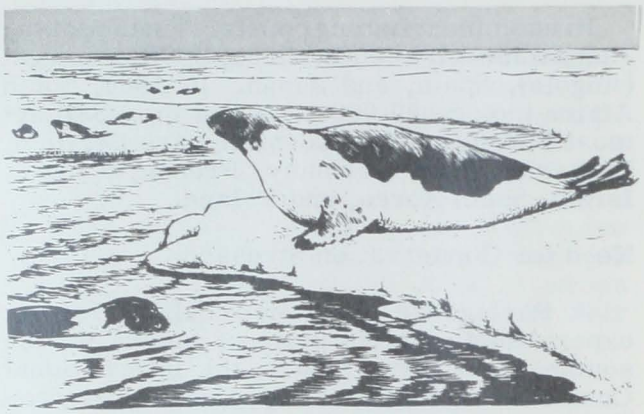
Another approved resolution recommended establishment of 'adequate medical, technical and meteorological services' for protection of fishermen in the area.

After the signing, the South African representative called for speedy action to bring convention into force. He warned of danger of depleting fishery stocks in southeast Atlantic. He added: "We cannot deny that pressures have been building up in our country to seek measures to protect our long-term interests more adequately." (FAO, Rome, Oct. 23, 1969.)

CANADA

HUNTING BABY SEALS BANNED IN 1970

Canada will ban the hunting of 'whitecoats' (baby harp seals) in the Northwest Atlantic in 1970. It is hoped the Norwegians will adopt a similar ruling. This would make ban effective in the Gulf of St. Lawrence and on the Labrador Front. Norway has been the only other country actively fishing harp seals in the Northwest Atlantic in recent years.



Under the ban, only 'beaters' (animals up to 80 pounds, and well beyond the 'whitecoat stage') may be taken. No longer accompanied by their mothers, they swim or 'beat' north to Arctic waters.

New Regulations

The hunt will have a later opening date. The use of aircraft, including helicopters, will be prohibited. Commercial operations will be confined almost entirely to ships. However, individual landsmen, walking out from shore, also will be allowed to take 'beaters' during open season. Because 'beaters' are far more mobile than baby seals, they will be hunted with rifles instead of clubs.

Advantages of Ban

The new regulation does away with the most offensive characteristics of the sea hunt. It also protects Canadians dependent on the seal fishery for a living. The sealing vessels employ mainly Newfoundland fishermen. The landsmen from Quebec and the Maritime Provinces also will gain because 'beater' skins now are more valuable than the smaller 'whitecoats.' (Canadian Dept. of Fisheries and Forestry, Oct. 15, 1969.)

* * *

MARITIME PROVINCES LAND BILLION POUNDS IN FIRST 9 MONTHS

One billion pounds, worth C$58.1 million were landed in the Maritime Provinces (N.S., P.E.I., N.B.) in first 9 months 1969. In same period 1968, landings were 1.1 billion pounds, worth C$57.4 million; in 1967, 855 million pounds, worth C$47.9 million.

September Landings

September landings were 163.4 million pounds worth C$7.2 million--51.9 million pounds of groundfish (C$2.4 million), 106.2 million pounds of pelagic and estuarial species (C$1.9 million), and 5.3 million pounds of shellfish (C$2.9 million). (Canadian Dept. of Fisheries & Forestry, Nova Scotia, Oct. 23, 1969.)

EUROPE

USSR

PURSE SEINING FOR COD & WALLEYE POLLOCK DEVELOPS IN FAR EAST

TINRO is introducing purse seining for cod and walleye pollock to the Soviet Far Eastern fishing fleet. The fleet operates in the Gulf of Anadyr (northern Bering Sea) and off West Kamchatka.

TINRO is the Soviet Pacific Fisheries and Oceanography Research Institute. It also plans to introduce purse seining for mackerel, tuna, sardines, and horse mackerel. So far, the Soviets have been seining only for herring in the Pacific. Purse seining for cod differs from herring in exploratory techniques and transshipment of catch to factoryships.

Purse-Seining Cod

Cod is a groundfish. Its schools are better detected by hydroacoustic devices than by conventional fish finders. Casting the purse seine following echo-sounder readings requires considerable experience. Soviet Far Eastern fishermen are now being trained in the new technique. Catches must be transshipped simultaneously to 2 or 3 vessels because cod are filleted as seines are emptied, and this takes time.

Large concentrations of cod and walleye pollock were discovered in the Gulf of Anadyr at 70-80 meters.

TINRO To Scout Fish

To prevent the commercial fleet from wasting time looking for fish, TINRO will assign one exploratory vessel to scout northwestern Bering Sea (off Soviet Coasts) from May 15. Another exploratory vessel will join in June. Due to weather, the fishing season in Gulf of Anadyr is from June to October. ('Rybnoe Khoziaistvo,' No. 9, 1969.)

* * *

HOPES TO IMPROVE AT-SEA CATCH TRANSFERS

The Fisheries Ministry has announced a contest for the best method of "contactless" at-sea catch transfer. The Ministry hopes to discover an efficient at-sea transfer technique eliminating side-by-side anchoring. Present practice frequently damages vessels and causes delays while vessels await favorable weather and sea conditions. A "contactless" method would permit one-way transfers of 20 metric tons an hour in rough seas (winds up to 46 miles an hour).

Big Prizes

The contest, cosponsored by Scientific and Technical Society of the Food Industry, and Food Industry Workers' Trade Union, will award 7,750 rubles (US$8,525) in prize money. First prize is 2,000 rubles ($2,200). The contest closes June 1, 1970. It is limited to Soviet citizens. ('Rybnoe Khoziaistvo,' No. 8, 1969.)

* * *

TANKERS USED TO TRANSPORT FISH MEAL

Tankers supplying the Atlantic fishing fleet with fuel and water carry fish meal in the emptied holds on their return trips.

With recently improved transfer techniques, all 4 stern hoists of a stern factory trawler (BMRT) are used to lift nets with 50-60 110-pound fish-meal bags and lower them into the tanker's storage space. Using this method, 120 metric tons can be transferred in 8 hours. ('Rybnoe Khoziaistvo,' No. 8, 1969.)

* * *

OIL-SPILL "CLEANING" VESSEL IS BUILT

The Soviets have announced construction of an oil-spill "cleaning" vessel capable of collecting from the sea surface up to 7 metric tons of oil in one hour. Aptly named 'Sanitar,' she is the prototype of a class. (TASS, Moscow, July 29, 1969.) No additional details are available.

U.S. Model Tested

The U.S. Technocean Company announced that it has tested a small-scale model of a craft designed for the same purpose. The

USSR (Contd.):

17,000-ton vessel will be a 'hybrid': its forward section will have a conventional single hull; aft, it will be a catamaran. It will move backwards, suck up the water with the floating layer of hydrocarbons at a rate of 62,905 (or 10,000 tons) an hour, separate the oil, and pump the clean water back into the ocean.

Ocean Research Too

According to the designers, the space between the twin hulls of the catamaran portion can be used for high-seas oceanographic research and for operations with small submersibles or bathyscaphes. ('Ocean Industry,' Oct. 1969.)

* * *

SPORT FISHING DEPLETES COMMERCIAL STOCKS

Caspian Fisheries Research Institute (KASPNIRKh) scientists blame the stock depletion of Caspian roach, Rutilus rutilus caspicus, on sport fishing.

Caspian roach (vobla), a silver-white European cyprinid fish, is one of the most valuable commercial species of the Volga-Caspian region. KASPNIRKh's efforts to protect the stocks, by reducing net-mesh size in autumn and increasing it in spring, have been defeated by anglers who take small fish (3-year-olds, spawning for the first time) in the spring, and large fish (4-year-olds entering commercial resource for first time) in the autumn. The spawning stock reproduction decreases and abundance of future year-classes cannot be assessed.

Many Angler Groups

In January 1966, 2.3 million Soviet sport fishermen were listed in societies and organizations. There are many more who are non-members. In the USSR, sport fishing is free to all citizens. There, unorganized fishermen nullify the measures taken to protect and increase the stock.

Expanding sport fisheries are likely to become a major problem for Soviet commercial fisheries in addition to the Caspian or Bolga Delta. ('Rybnoe Khoziaistvo,' No. 8, 1969.)

* * *

STERN FACTORY TRAWLER EQUIPPED WITH UNDERWATER ELECTRIC LIGHTS

For the first time, a large stern factory trawler of the Northern Fisheries Administration (SEVRYBA) has been equipped with underwater searchlights, fish traps, and special catch-lifting gear. She will fish off West Africa. Heretofore, only medium trawlers have practiced underwater electric-light fishing. (TASS, Moscow, Oct. 10, 1969.)

* * *

FISHERIES MINISTER DENIES SOVIETS FISH SALMON OFF BRITISH COLUMBIA

After 2 Soviet trawlers had been arrested inside the 12-mile limit off Vancouver Island, rumors persisted among Canadian fishermen that the Soviets had been fishing salmon. Fisheries Minister Jack Davis and Fisheries Department officials flew over the Soviet fleet on August 11, 1969.

Soviet Trawlers Photographed

Fish aboard Soviet trawlers were photographed. Fishery biologists from Nanaimo Laboratory studied enlargements and determined that the catches were "silver-sided rockfish". Those glisten with a silvery sparkle like salmon, but are easily distinguishable from salmon by their round, flat shape.

Not Taking Salmon

The Minister said "there is no indication that the Soviet fleets are taking Pacific salmon." However, some claim that the Soviets may be taking salmon as incidental catch because this also happens to Canadian fishermen. ('Western Fisheries,' Aug. 1969.)

* * *

SOVIETS CONCERNED ABOUT CARELESS FISHING-VESSEL OFFICERS

An official of the Soviet Sakhalin Fisheries Administration has complained about the careless and scornful attitude of officers and engineers aboard fishing vessels that results frequently in vessel damage.

In September 1968, the factoryship 'Sovetskii Sakhalin' ran aground in Terpenie Bay

USSR (Contd.):

(southeast Sakhalin) off Cape Obshirnyi. Visibility was excellent, and the vessel was equipped with the latest electronic navigational instruments. An inquiry revealed that the first mate had changed the vessel's position twice without informing the captain; no watch officer had bothered to check the vessel's coordinates, and the third mate determined her position "by ear" and entered it in the log. The inquiry board ruled this accident "the result of criminal negligence on the part of the navigation officers, and a deplorable performance of the officers' duties."

Tanker Hits Bottom

The tanker 'Ursul,' en route from Korsakov to Nevel'sk (southern Sakhalin), hit bottom in Aniva Bay off Cape Anastasia. When the accident occurred, the second mate was drunk and had left the bridge without authorization. When the vessel was crossing the dangerous area, the captain himself was not on the bridge.

Fishermen, Not Seamen

The fishery official complained that crew members, old and young, frequently feel they are fishermen, not seamen. So they see no need to keep up navigational rules and traditions dear to seamen. Responsibility for this attitude is the navigation schools', which teach and train officers and specialists for the fishing fleet.

The official added that conspicuously absent at the Sakhalin School of Navigation, for instance, is a course in marine ethics stressing old traditions, discipline, and behavior. Instead, students readily adopt bad habits--"smartness and drinking while getting one's feet wet."

Of greatest importance is the example set by the captain, first mate, or chief engineer. Skippers "appearing on the bridge in a cloud of alcohol fumes" are bound to depress and demoralize the crew. ('Vodnyi Transport,' Oct. 18, 1969.

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TOP-LEVEL FISHERY ECONOMISTS CONFER

Soviet fishery executives met in Sept. 1969 to discuss: fisheries expansion; catch efficiency; new planning methods; results of the economic reform; economic stimulation in fisheries production; and improving bookkeeping, accounting, and economic analysis in the fishing industry. ('Rybnoe Khoziaistvo,' No. 7, 1969.)

Economic Reform Implemented

The Fisheries Ministry is one of 22 that have implemented economic reform throughout; 23 are still lagging. ('Ekonomicheskaia Gazeta,' No. 35, Aug. 1969.)

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FISHERY SUMMIT MEETING HELD IN LENINGRAD

Members of the Joint Commission on the Development of High-Seas Fisheries (Bulgaria, East Germany, Poland, Rumania, and the USSR) held a 10-day meeting in Leningrad September 1969.

They discussed coordination of fishery research, rational utilization of fishery stocks, fishing vessel construction, gear, equipment and automation. They also reviewed fisheries cooperation during the past 2 years. (TASS, Sept. 18, 1969.)

* * *

EXPORTED $6.3 MILLION OF MARINE PRODUCTS TO JAPAN IN 1968

Japan imported over 28,000 metric tons of fishery products worth about US$6.3 million from the Soviet Union in 1968. Both quantity and value were down from 1967, a

Soviet Exports to Japan, 1967-1968

Commodity	1968 Quantity (Metric Tons)	1968 Value (US$ 1,000)	1967 Quantity (Metric Tons)	1967 Value (US$ 1,000)
Fresh or frozen:				
Herring	4,277	717	3,365	534
Shrimp, northern	1,418	303	9,835	3,213
Other	9,666	2,267	15,619	2,058
Total	15,361	3,287	28,819	5,805
Dried, salted, or smoked:				
Cod roe	563	322	277	151
Herring roe	200	415	97	178
Other	2	1	819	134
Total	765	738	1,193	463
Canned	187	233	252	551
Oils and fats	574	58	432	65
Fish meal	11,488	2,013	6,320	1,002
GRAND TOTAL	28,375	6,329	37,016	7,886

USSR (Contd.):

peak year for Soviet fishery exports to Japan. The largest decreases were in "northern shrimp" and "other fresh and frozen products."

Northern Shrimp

The Soviets catch small North Pacific shrimp off Alaska, around the Shumagins on Portlock Banks, and in Anadyr Bay. The decrease in northern shrimp imports was reportedly caused by Japanese unwillingness to pay the prices demanded by DALINTORG, the Soviet Far Eastern fisheries trade firm.

Each year about 40,000-45,000 metric tons of fresh Alaska pollock are transshipped to Japanese fish-meal processing vessels in the Sea of Okhotsk. ('Suisan Tsushin.')

* * *

PNEUMATIC FISH-MEAL CONVEYORS BEING DEVELOPED

Pneumatic conveyors to transport fish meal and bulk storage of fish meal have been given top priority for successful fishing industry development in the USSR.

In 1966, the Azov-Black Sea Fisheries and Oceanography Research Institute (AZCHERNIRO) conducted granulometry, volumetry, viscosity, and suspension-velocity studies with 8 different samples of fish meal. The meal had been produced by large stern trawlers ('Maiakovskii' and 'Tropik' classes) of the Sevastopol High Seas Fisheries Administration. The tests were made to determine the most desirable characteristics for pneumatic conveyors and the best facilities for bulk storage. ('Rybnoe Khoziaistvo,' No. 9, 1969.)

* * *

FORBIDS CONTINENTAL SHELF RESEARCH OFF NORTHERN COAST

The Soviets have refused to allow a British research trawler, 'Ernest Holt,' to carry out seabed investigations off their northern coast. The vessel was to have drilled for specimens up to 25 miles offshore. The Soviets said one of their own research vessels was doing identical work in the area. The results would be given to Britain, if requested.

Contravenes Geneva Convention

Permission was refused despite British citation of an article in the 1958 Geneva Convention on the Continental Shelf stating that "qualified institutions" must not be denied permission to do scientific research on the Continental Shelf.

The Vessel

The 177-ft. Ernest Holt was built in 1949. Based at Grimsby, she has carried out much of Britain's Arctic fishery research. ('Fishing News,' Nov. 7, 1969.)

* * *

PROPOSES ELECTRICAL FISHING FOR SALMON IN FRESH WATER

PINRO (Polar Institute of Fisheries and Oceanography at Murmansk) scientists have proposed catching salmon in fresh water with an electrical fishing device.

Some scientists believe salmon become confused by the electric current, "lose their bearing," and then can be guided easily into nets by an electric field.

PINRO scientists have experimented for several years. They found the technique successful. The fish were landed undamaged. (TASS, Sept. 24, 1969.)

* * *

FISH MEAL EXPORTS DROPPED IN 1968

The USSR exported only 28,000 metric tons of fish meal in 1968--21.6% (7,700 tons) less than the 35,700 tons in 1967.

Increasing domestic demand and lower prices abroad may have reduced 1968 exports. In 1967, an average ton of fish meal brought 131.4 rubles (about US$145); in 1968, only 121.4 (US$135). As a result of lower prices and smaller quantity, 27.6% less in foreign currency was obtained in 1968 than in 1967.

Exports to W. Germany Drop

The large decrease in 1968 exports of fish was due entirely to declining exports of fish meal to West Germany. These dropped from 15,500 tons in 1967 to 5,900 in 1968.

USSR (Contd.):

The loss was offset somewhat by additional exports to other countries.

Whale Oil Exports

Whale oil exports remained relatively stable; quantity rose but value dropped. ('Vneshniaia Torgovlia,' SSSR, No. 8, 1969.)

Exports of Fish Meal & Whale Oil, 1967-1968

Item	Quantity		Value	
	1967	1968	1967	1968
	1,000 Metric Tons		1,000 Rubles--Officially one ruble equals US$1.11	
Whale oil	57.6	59.0	6,969	6,841
Fish meal	35.7	28.0	4,693	3,400

UNITED KINGDOM

FISHING INDUSTRY EXPERTS FORECAST TO 1975

The Fishery Economics Research Unit of the British White Fish Authority has forecast the size, structure, and profitability of the British industry in the mid-1970s. It did this at the FAO Conference on Investment in Fisheries in Rome, Sept. 18-24, 1969.

The forecast indicates that the distant-water trawler fleet will total 55 to 60 vessels. The near- and middle-water fleets will be only slightly smaller than now. The inshore fleet may increase about 15%.

White Fish Decline

By applying expected catch rates to assumed capacity of the fleet's different sections, total landings of white fish may decline 15% to 20% below present level.

Consumption of fish also may decline, but at a slower rate of 0.6% to 1.3% a year. Prices may rise. Imports would tend to increase at a rate of 2.9% to 3.4% a year. ('Fishing News,' London, Oct. 17, 1969.)

* * *

LAB WILL STUDY EFFECTS OF THERMAL POLLUTION

Britain's Central Electricity Generating Board has built a marine biological laboratory beside the 2,000-milliwatt power station at Fawley. The laboratory will study effects on marine environment of heated water from power stations.

Biochemical Tests

Starting at the bottom of the food chain, effects on productivity of phytoplankton will be estimated under various conditions, according to the amount of carbon-14 assimilated. Various organisms, including the American clam, will be analyzed biochemically for relative contents of amino acids, peptides, enzymes, etc. Eventually, it may be possible to define effects of heating on specific enzyme systems. This work is to be carried out in conjunction with measurements of heat flux of the intertidal environment. The researchers intend to examine animals from particularly warm localities.

Chemical Tests

Chemists will use an autoanalyzer to look for long-term changes in sea water caused by organic nutrients. About 1,500 sq. ft. of laboratory space will be devoted to biochemistry, chemistry, ecology, physiology, and plankton. A 2,000-sq.-ft. aquarium building will receive warm sea water from the power station's outfall and cold sea water from the intake.

No Quick Results Expected

Rapid results are not foreseen because much needs to be learned about natural fluctuations in marine communities before the effects of power stations can be gauged accurately. It is hoped findings will show heated water discharged by power stations is not harmful to the sea environment. ('Nature,' Oct. 11, 1969.)

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AIDS FISHERIES IN DEVELOPING COUNTRIES

United Kingdom aid to fisheries in developing countries is about US$240,000 a year. It is given directly through projects initiated and carried out by the Ministry of Overseas Development. This aid will continue at present level.

UNITED KINGDOM (Contd.):

Favors Multilateral Aid

In the future, however, if the country's balance of payments position improves, the government intends to make any additional aid multilateral. It may be interested in proposals to establish a World Fisheries Bank. ('Fishing News,' London, Oct. 17, 1969.)

NORWAY

'FRIONOR' MAKES IMPACT ON WORLD FISH MARKET

Twenty-three years ago, 136 frozen fish fillet producers recognized that even the largest Norwegian factory was small internationally. They established Frionor. Two of the country's largest firms--a private bank and an insurance company--joined them to launch Frionor with a modest share capital of 2.5 million kroner (about US$360,000).

World-Wide Sales

Frionor now exports to 30 countries. It manages its own production and sales branches in the U.S., Australia, Kenya, and Great Britain. It manages a fish shop in Prague. Frionor scored its greatest successes on the U.S. and Australian markets. Sales increases to EFTA countries also have been remarkable--despite the 10% extra tariff Britain imposed last autumn on all frozen fish from Scandinavia.

Export Explosion

In 1968, Frionor's turnover was 240 million kroner (about US$34.3 million). During first 8 months of 1969, despite unrest and uncertainty on world credit markets, exports increased up to 48.5%. A turnover increase equalling the export growth is expected for 1970.

Plant Capacity & Productivity

The export growth was backed by a 39% production increase that involved neither new investments nor new plants. The extremely flexible production system would permit a 50% increase without increasing plant capacity. Frionor's system, horizontal and vertical for fishermen, manufacturers, and marketing groups, is completely integrated; the 3 groups are not isolated.

Total Catch Utilization

Frionor has been able to exploit catches almost totally because of its success on more new markets. Cod, coalfish, rosefish, and mackerel completely dominated production a few years ago; today, Frionor sells many once-unused species, including lumpfish, blue halibut, porbeagle shark, and all kinds of shellfish. (Export Council of Norway, Oct. 1969.)

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DRIED COALFISH USED FOR DOG FOOD

Dog food from dried coalfish--saithe or pollock--is fast becoming a large export item. A Norwegian firm in Aalesund has produced this type of dog food for several years. In 1968, its sales reached US$285,000.

The largest dog food market is in Sweden, but Germany and Denmark also are buying more. ('Fiskeribladet,' Sept. 19, 1969.)

DENMARK

FAROESE REBUILDING FISHING FLEET

The Faroese fishing fleet is changing. The change began in 1960 when large investments were made in so-called longline vessels of 250 to 400 tons. At that time, the entire fleet--55 longline vessels and 10 trawlers--was based on the cod fishery. The catch was salted for exports to southern Europe, South America, and Africa.

Switch to Herring

In 1965, several longline vessels were equipped with power blocks and large purse-seine nets patterned after Norwegian and Icelandic types. These vessels entered the herring fishery ranging from North Sea to Jan Mayen, north of Iceland. The Faroese herring catch increased from 20,000 metric tons in 1964 to 62,000 tons in 1968. This gave rise to a new industry, fish meal--although

DENMARK (Contd.):

half the herring were used for human consumption. Fish-meal factories have become even more important since the Faroese began fishing sand eel (launce), an important raw material in Danish fish meal.

Frozen-Fillet Production

The factoryship 'Stella Kristina' (2,000-3,000 tons) was delivered by a Norwegian shipyard a few months ago. She has a daily freezing capacity of 36 tons and, perhaps, an annual output of 2,000 tons of frozen fillets. Her entire production to 1970 already has been sold to U.S. buyers. Three sisterships have been ordered from a Norwegian shipyard for US$7 million. The State will contribute 15%; Norway gives a 7-year credit for 75%; the owners will pay 10%.

Further Fleet Expansion

The Faroese plan to add a new trawler every 12 months until 1975, and one every six months from 1975 to 1980. Their catch is expected to yield 30,000 metric tons frozen fillets in 1975 and 120,000 tons in 1980. ('Dansk Kiskeritidende,' Oct. 23, 1969.)

ICELAND

CATCH, EXCEPT HERRING, RISES

Except for herring, Iceland's catch through July 1969 was considerably better than in 1968. It has been a record capelin year--171,000 metric tons from January to April, more than double the 1968 catch, and exceeding the 1966 record of 125,000 tons. In the absence of substantial herring landings, the capelin has been used as a low-quality substitute in reduction plants.

Poor Herring Catches

The poor herring catch was the only bad news: only 15,000 tons through August. It had been 50,000 tons in same period of 1968, the worst year in recent times. A mitigating fact is that salted herring tonnage reportedly was about the same as 1968's, and price was generally higher.

Increased Export Value

The shift in emphasis from relatively low-value herring oil and meal to white fish also contributed to an increase in value of fish exports from January through July. This was US$46.4 million, compared to $40 million in same period of 1968.

The increase in export value is attributable to white or ground fish. An extremely good catch and better white fish prices and U.S. markets benefited export earnings. This improvement was reflected by changes in the frozen fillet trade. More fillets were being prepackaged in Iceland; fewer were exported in blocks or slabs for processing in the U.S.

White Fish Catch Increases

Preliminary January-August data indicate white fish catch in 1969 will be 16% higher than in 1968; by September, it may have equalled the 1966 and 1967 catches. The improvement over 1968, one of Iceland's best white fish years, apparently prevailed in both spring (January-April) and summer (May-August) seasons. The increases were 13% and 21%. (U.S. Embassy, Reykjavik, Oct. 1, 1969.)

FRANCE

MAY SUPPORT FRENCH-AFRICAN TUNA INDUSTRY

France may support the tuna industry of French-African countries, according to "La Vie Economique," Aug. 22, 1969.

France, Senegal, the Ivory Coast, Republic of Congo (Brazzaville), and the Malagasy Republic are members of a group that meets twice a year to make decisions on the French tuna market. These countries set prices to be paid to vessels for raw tuna, market prices for canned tuna, and quotas for canners and for individual countries.

There is a French tariff of 24.6% on canned tuna imports according to the General Agreement on Tariffs and Trade (GATT). Despite this, tuna is imported into France under quotas established for several countries, including Morocco.

FRANCE (Contd.):

Situation More Critical

Representatives of the 5 countries met in Oct. 1968. They were told that the French market could absorb only 40,000 metric tons of tuna--and that expected 1969 production would be around 46,000 tons. Sale of excess production is complicated because French vessels and fishermen are guaranteed higher prices than those received by other countries. The situation is becoming more critical as the tuna fleets of France, Senegal (and, in 1970, the Ivory Coast) continue to add new and more effective vessels.

What Article Says

The articles says in part:

"As far as canned tuna is concerned, the duty applicable to imports from third countries is 24.6 percent. The system of quotas is also very strict, and only Yugoslavia is allowed a quota which amounts to 900 tons. It is true that canned fish prepared in Senegal and other African countries tied to France by cooperation agreements is imported free of duty, but it should be noted that this canned fish is prepared almost exclusively from the catch of the French fishing fleet and processed in Africa by canneries in Senegal in which French canners own very important shares. Furthermore, these African countries, although allowed customs-free entry for fish, as well as for their other products, have agreed to continue to respect the limitation of their exports to the amount of a quota which is fixed every year in a conference between the countries concerned.

"This quota, which was 13,500 tons in 1966, and 12,500 tons in 1967, was raised to 15,400 tons in 1968, an increase which fails to reflect the progress of the French and Senegalese catch."

Discuss Common Policy

"In order to absorb the surplus and avoid flooding the French market for canned fish, the Senegalese Tuna Fishing Company has just agreed to export, during the current fishing season, 1,800 tons of frozen tuna to countries other than France. On the Community level, the search for protection can only result from a common policy. The rules of a common policy which are now under discussion among the member countries provide for a system of price guarantee for tuna which, if adopted, should enable the canners to obtain their fish supplies from the French catch at prevailing world prices, and to secure at the same time a fair income to fishermen.

"It is foreseen that canned tuna, as well as sardines, will be subject to a minimum import price." (Regional Fisheries Attaché, U.S. Embassy, Abidjan, Oct. 6, 1969.)

* * *

NEW TUNA SEINER
COMPLETES SHAKE-DOWN

A new tuna seiner, 'Jacques-Coeur,' completed fishing trials in early September 1969 off Concarneau. Third of her class, she was designed for maximum productivity.

She is 154 feet long; 35 feet wide; her 800-hp engine can make 14 knots; daily freezing capacity is 50-60 tons; hold capacity is 375-400 tons; at-sea time is at least 55 days, and she is valued at about US$1.1 million, equipped. Under a new agreement for large tuna vessels, her 18-man crew will rotate so that onefourth will always be on 45-day shore leave.

Could Double Seiner Catch

Jacques-Coeur's fishing grounds are more than 4,960 miles from Concarneau. She is expected to land 2,500-3,000 tons of tuna a year. In 1968, the best catch made by the preceding seiner class was 1,475 tons. ('Le Marin,' Sept. 19, 1969.)

SPAIN

FROZEN HAKE FILLETS PRODUCED
FOR U.S. MARKET

A new Spanish trawler, 'Ila,' is processing and packing frozen hake fillets for the U.S. market. This was reported by the managing director of Congeladores del Atlantico, the trawler's owner. The firm also owns 4 other trawlers fishing off South West Africa. It has about 30 fishing out of Las Palmas.

SPAIN (Contd.):

New Class

The 1,500-gross-ton vessel, completed earlier this year in Vigo, is 249 ft. long and has a 39½ ft. beam. Her engine is 2,670 b.ph. diesel. With a crew of 45, Ila is considerably larger than the earlier class of Spanish trawler now operating off South Africa. She is the first in a series of 8; three are now under construction. Her owners also are building a series of tuna vessels for equatorial waters.

New Export Product

The managing director said Spain is building an important export market for fish products. The new pack being produced by the Ila is expected to prove popular on the U.S. market. ('South African Shipping News and Fishing Review,' Sept. 1969.)

WEST GERMANY

INTEROCEAN '70 SLATED

The advisory committee for Interocean '70 has been named. The chairman is the president of the Deutsche Hydrographische Institut, Prof. Dr. Roll. The committee is scheduled to meet in Dusseldorf or Hamburg in December 1969.

Interocean '70

The Congress will have 6 principal themes: exploitation of the sea's nutritional resources; exploitation of the sea's mineral resources; pollution prevention; application of oceanology to shipping and shipbuilding; protection of the coast and coastal waterways; systems and components for oceanology research and techniques, and 20 sub-themes. Each of the 20 will have a chairman or discussion leader; some already have been selected.

To Obtain Information

Conference languages will be French, English, and German, with simultaneous translation. Requests for further information on authors and papers should be addressed to Dr. Roll or Dr. Weichhardt, Hamburg, Federal Republic of Germany. (U.S. Consulate, Dusseldorf, Oct. 3, 1969.)

HOW MUCH ELECTRICITY DOES AN ELECTRIC EEL GENERATE?

Although the electric eel (which isn't a true eel) is the best known generator of electricity, there are at least 500 kinds of fishes that generate appreciable amounts of electricity. The electrical discharge serves to stun prey and repel attackers.

The average discharge is more than 350 volts, but discharges as high as 650 volts have been measured. Current is low, usually a fraction of an ampere; however, brief discharges of 500 volts at 2 amperes have been measured, producing 1,000 watts. Although direct current is produced, it may be discharged as frequently as 300 times a second.

Severity of the shock depends on the size and state of health of the fish. Voltage increases until the eel reaches a total length of about 3 feet; after that, only amperage increases. Electric eels in South American waters have been known to grow to a length of almost 10 feet.

Other electric fish are found in other parts of the world. ('Questions About The Oceans,' U.S. Naval Oceanographic Office.)

LATIN AMERICA

PERU

ANCHOVY SEASON IS POOR

Peru's Sept. 1969 catch was extremely poor. October showed no improvement. Regardless of cause--oceanographic, overfishing, or other--it's a poor season for the hard-pressed anchovy industry. Despite exceptional prices--$425 per metric ton on Oct. 24--at least one firm, unable to meet its contracts, has gone bankrupt. Strikes for higher wages are expected.

Fish-Meal Production & Export Stocks, Jan.-Sept. 1967-69

	1969	1968	1967
		(Metric Tons)	
Production	1,110,937	1,323,995	1,082,138
Exports	1,368,412	1,478,769	1,123,604
Stocks on hand Oct. 1, 1969	99,908	408,306	313,330

Maybe Catch Pause

Scientists may recommend a catch pause in January and February 1970, but if catch doesn't improve, fishing probably will continue until June. (Sociedad Nacional de Pesqueria, Oct. 17, 1969; U.S. Embassy, Lima.)

ECUADOR

DISCOVERS NEW SHRIMP BED

The long-awaited discovery of a deep-water shrimp bed is being proclaimed by exuberant Ecuadorean fishermen. Optimistic early reports placed the bed about 30 miles offshore in 40 to 100 fathoms. It may extend into Peruvian waters south of Manta. Catches of 30,000 pounds by a single boat within two days have been claimed. Catches have been primarily medium, with some large sizes--about 50% brown, P. californiensis, and 50% pink, possibly P. brevirostris.

Record Exports Insured

It is too early to determine the extent of the new find. However, it is certain to insure a record for Ecuador's 1969 shrimp exports. Only companies with large modern refrigerated boats can be expected to benefit. This would include 2 major firms operating with U.S. capital, Empacadora Nacional and Empacadora Alberti. (U.S. Consulate, Guayaquil, Sept. 30.)

CUBA

ACQUIRES 3 FACTORYSHIPS FROM SPAIN

Spain and Cuba have concluded a new exchange agreement. If the Spanish government approves, 'Transimport' of Havana will acquire 3 vessels from a Spanish fleet that has been fishing off South Africa.

The vessels are 'Aracean' and 'Arcos,' owned by Armasur of Cadiz, and 'Pescafria' from Francisco Rodriguez fleet based in Parages de San Pedro.

Vigo-Built Vessels

The vessels, built in Vigo shipyards, have lines for fillet production and fish-meal plants. These Spanish operations, and frozen whitefish production, will be greatly reduced when the vessels leave. After the agreement is confirmed, Spain will build 3 new replacements. ('Industria Pesqueras,' July 1, 1969.)

MEXICO

GULF COAST SHRIMP CONTRACTS SIGNED

Shrimp vessel owners and cooperatives on the Gulf of Mexico have signed a 3-year contract. It became effective Sept. 30, 1969.

Under Mexican law, only members of cooperatives may catch 7 species of fish and shellfish, including shrimp. Although shrimp vessels usually are owned either by cooperatives or private owners, the crew members, in all cases, must belong to a cooperative.

New Contract

Basically, the new contract contains the same provisions as the previous one, except for some increase in payments to the cooperatives.

MEXICO (Contd.):

	Payment in Pesos		
	New Contract	Old Contract	Increase
Payment to Crew--Large Shrimp1/	3.45 per kg.	2.99	0.46
Payment to Crew--Small Shrimp	1.55 " "	1.30	0.25
Administration Costs	0.67 " "	0.65	.02
Crew Wages during Vessel Repairs or Dry-docking	83.00 per day	75.00	8.00
Crew's Food	52.00 " "	48.00	4.00

1/Large shrimp are sizes up to, and including, 21-25 (heads-off) a pound.

Note: One peso equals US$0.08. Crew wages are divided among captain, engineer, cook, and winchman.

The contract applies only to the Gulf of Mexico. There is a different contract for the Pacific Coast. There, after deduction of various expenses, 54% of the catch value goes to the cooperative, and 46% to the boat owner. (Reg. Fish. Attaché, U.S. Embassy, Mexico, Oct. 13, 1969.)

* * *

HOLDS 4TH NATIONAL OCEANOGRAPHIC CONGRESS

Mexico's Fourth National Oceanographic Congress was held in Mexico City, Nov. 17-19, 1969.

A general invitation to participate and to present papers had been extended to both Mexican and foreign scientists interested in marine studies. The papers covered: physical and chemical oceanography; marine meteorology; geophysics, geology, biology, engineering, and fisheries.

Latest Equipment Exhibited

The Congress provided an exhibit area for participants and sponsoring agencies to demonstrate marine-science activities and developments. Some of the latest instruments and equipment designed for oceanographic work also were exhibited. (Regional Fisheries Attaché, U.S. Embassy, Mexico, Oct. 13.)

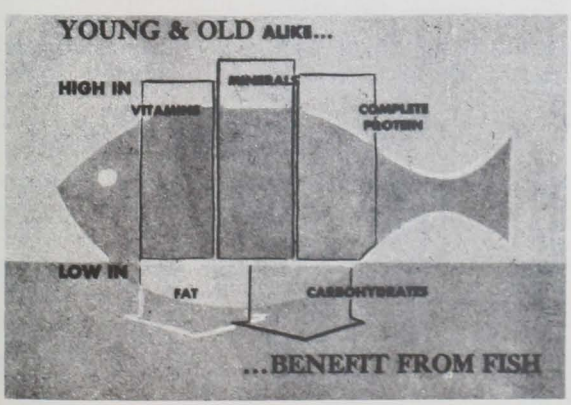
EL SALVADOR

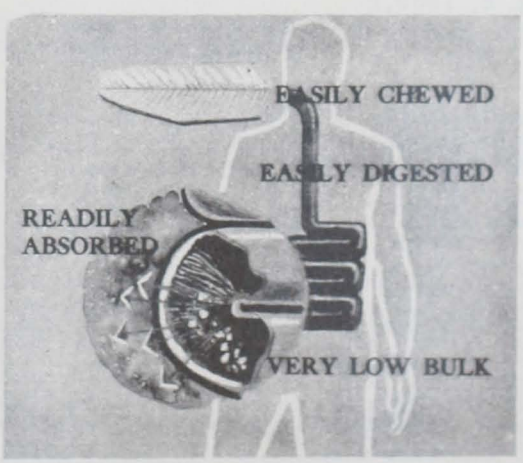
S. KOREANS INVEST IN SALVADORAN DEEP-SEA TUNA PROJECT

In 1968, a Salvadoran Trade Mission visited the Republic of Korea (S. Korea); in February 1969, S. Korean fishery technicians visited El Salvador. As a direct result, S. Korean investors have approved a tuna-fishing development for El Salvador.

US$1 Million Investment

An initial investment of US$1 million, at La Union, reportedly will involve procurement of new docks and warehouses, processing and canning facilities, and larger fishing boats. Some equipment might be supplied by S. Korean manufacturers; probably some will come from other sources, including the U.S. (U.S. Embassy, San Salvador, Sept. 23, 1969.)





ASIA

JAPAN

SOME TUNA LONGLINERS ARE LOSING MONEY

Some tuna longline-vessel owners have been operating at a loss in recent years, according to the National Federation of Japan Tuna Fishery Cooperative Associations (NIKKATSUREN). A NIKKATSUREN study found one-boat owners of 330-360 gross-ton longliners that land their catches in Japan had suffered net losses of about US$13,900 a year from 1963 to 1967.

1967 Compared to 1962

The study uses 1962 as a base year of 100. In 1967, the number of fishing trips a year declined to 73, and catch quantity to 67. Average fish price was 187 but, owing to a catch decline, value of landings was only 126. Sales commissions increased to 122; costs of fuel, water, bait, gear, repair and replacements jumped to 173; and labor to 152. All expenses combined, including taxes, rose to 142. As a result, gross profits in 1967 declined to 81. After deducting depreciation, net losses have run from $11,690-$15,550 a year since 1963.

Dangerous Trend

Equipment and labor costs rose sharply in recent years, while tuna prices, except for bluefin, leveled off. NIKKATSUREN warned that if the trends of the past 2-3 years continue, the very existence of the tuna fishery will be in grave danger within a few years. It urged the government to develop measures to cope with the situation. ('Suisan Tsushin,' Sept. 8, 1969.)

TUNA SEINE FLEET WITHDRAWN FROM EASTERN ATLANTIC

Nichiro Fishing Co. has decided to withdraw its tuna purse-seining fleet from the eastern Atlantic off west Africa. The unprofitable operations and poor efficiency of two-boat seining resulted in cumulative losses year after year. Five pair-seiners and 2 motherships were there in mid-October 1969.

U.S. Seiners Compete

Difficulties were compounded by intense competition from U.S. purse seiners off west Africa. These also sell their yellowfin catches to Italy, till now a very important market for Japan. The efficient U.S. seiners use helicopters to sight fish schools. Each vessel catches 30-50 tons a day.

The Taiwanese, who fish with seiners similar to U.S. seiners, also are reported doing well in the area. Nichiro may build U.S.-type tuna seiners for the eastern Atlantic, primarily to supply Japan's domestic market. ('Kanzume Tokuho,' Oct. 22, 1969.)

* * *

EXPLORATORY VESSEL FAILS TO FIND BLUEFIN IN SOUTHWEST ATLANTIC

The tuna longliner 'Azuma Maru No. 37' (314 gross tons), on a government-subsidized cruise in the southwest Atlantic off Argentina, has been unable to find southern bluefin. Its absence has caused much disappointment. The vessel's scientists now think that southern bluefin spawning grounds may be limited to an area off western Australia.

Earnings & Expenses of 330-360-Gross-Ton Tuna Longliners, 1962-67 1/

	1967	1966	1965	1964	1963	1962
No. of trips per year	22	23	26	26	28	30
Catch (metric tons)	353	370	430	435	455	526
Average price (US$/Short ton)	552	519	388	353	315	295
				(U.S.$)		
Value of landings	214,940	211,920	183,890	169,170	158,000	170,830
Sales commissions	6,440	7,190	6,440	5,250	4,000	5,280
Equipment cost	55,420	44,810	47,670	38,190	37,420	31,940
Labor cost	80,390	71,670	62,500	57,420	49,390	52,780
Other costs	36,220	33,670	40,780	35,530	35,830	35,830
Subtotal of costs	178,470	157,340	157,390	136,390	126,640	125,830
Gross profit	36,470	54,580	26,500	32,780	31,360	45,000
Depreciation	48,160	2/39,440	41,860	48,330	45,940	46,390
Net profit or loss	-11,690	-15,140	-15,360	-15,550	-14,480	-1,390

1/Average of sample operating units.
2/Unverified.

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JAPAN (Contd.):

Finds Bigeyed Off Brazil

In late September 1969, the vessel proceeded north toward 30 to 34° S. latitude and 53° W. longitude, off Uruguay and southern Brazil, to investigate an area where she had found good bigeyed concentrations earlier in the trip. She will return to Japan by way of Cape Town in March 1970. ('Suisancho Nippo,' Sept. 24, 1969.)

* * *

ALBACORE DISCOVERED OFF KURILS

Pole-and-line vessels fishing skipjack tuna unexpectedly encountered albacore near 40° N. lat. and 160° E. long. off the Kurils, north of Japan. They landed about 3,000 metric tons during late August and early September. The fish were small--around 3 kilograms (9.9 pounds)--but discovering albacore in this region has aroused considerable interest among Japanese tuna packers.

Albacore schools off Japan migrate northward with the Kuroshio current, but they are rarely found off the Kurils. ('Kanzume Tokuho,' Oct. 3, 1969.)

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BERING SEA BOTTOMFISH CATCH INCREASES

The 14 Bering Sea bottomfish fleets caught 627,000 metric tons from Jan. 1 through Aug. 22, 1969, 4% above the 608,200 tons for same period 1968.

Alaska pollock catch dropped about 20,000 tons below the 1968 period because of poor fishing from May to June. It later returned to normal levels, but frozen surimi (minced meat) production will be slightly less than estimated originally.

Since the catch of flounder doubled, total catch for the year should surpass 1968's 843,000 tons. ('Suisan Keizai,' Aug. 26, 1969.)

Eastern Bering Sea Bottomfish Catch, Jan. 1-Aug. 22

	1968	1967
	(Metric Tons)	
Alaska pollock	512,800	493,000
Flounder	40,900	84,900
Cod	30,600	27,700
Silver perch	1,250	3,200
Ocean perch	5,450	5,000
Herring	6,900	10,400
Red shrimp	5,300	2,900
Total	603,200	627,100

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EASTERN BERING SEA CRAB FISHING ENDED

The two 1969 Bering Sea crab fleets ended operations in September. 'Keiko Maru' (7,536 gross tons) and 15 catcher vessels left Bristol Bay on the 15th. 'Koyo Maru' (7,658 gross tons) and her 15 catcher vessels finished on the 28th. Keiko Maru carries 6 portable boats; Koyo Maru 4.

Quotas

The 2 fleets had been assigned a combined king-crab quota of 85,000 cases. This was 48% less than the 163,000 cases in 1968. The tanner crab quota was 16 million, about 17,500 metric tons based on individual crab weight of 2.4 pounds.

Profitable Operations

Bristol Bay yielded good tanner catches from the time fishing began in mid-March. This, and good prices (25% above 1968) on the Japanese market, helped the fleet operators maintain profits despite the 48% king crab cut. Nearly all king crab was canned; all tanner crab was frozen, shell on. ('Suisan Tsushin,' Oct. 2, 1969.)

* * *

ONLY 1 SEINER TO TRY FOR E. PACIFIC YELLOWFIN IN 1970

Only one of the 4 purse seiners that failed disastrously in the 1969 eastern Pacific yellowfin fishery will try it again in 1970. She is 'Hakuryu Maru No. 55.' In early October, she was fishing off west Africa.

Two others, 'Hayabusa Maru No. 3' (275 gross tons) and 'Nissho Maru' (252 gross tons) will abstain. Their owners, Taiyo and Nihon Kinkai Hogei, each lost about US$167,000 to $194,000 in the venture. They now consider these vessels too small for economic operation in the fishery. Each has a carrying capacity of about 90 tons and a daily freezing

JAPAN (Contd.):

capacity of about 20. With less than 10-knot speeds, they also lack mobility compared to the 13-14 knot U.S. seiners.

Taiyo plans to build a 700-800-gross-ton seiner in fall 1970 for the eastern Pacific tuna fishery.

4th & 5th Probably Out

The fourth seiner, 'Gempuku Maru No. 82' (500 tons), probably will not enter in 1970. She has not cancelled her North Pacific purse-seine fishery license, so it is doubtful that she would be able to depart for the eastern Pacific before the end of 1969.

A fifth seiner (210 gross tons) was licensed, but did not enter, the 1969 fishery, and is unlikely to enter in 1970. ('Shin Suisan Shimbun Sokuho,' Oct. 2 & 9, 'Katsuo-maguro Tsushin,' Oct. 6, 1969.)

* * *

MANY COUNTRIES SEEK
JAPANESE HELP IN SHRIMP CULTURE

Many requests from abroad for technical cooperation have been directed to the shrimp research laboratory established by Dr. Motosaku Fujinaga. He is the authority on the culture of "Kuruma" shrimp, a species cultivated commercially in parts of Japan. The requests have come from the U.S., France, Spain, Ireland, Italy, Malaysia, and the Philippines.

In March 1969, South Korea bought 1 million and France 11 million "Kuruma" fry artificially hatched in Japan and shipped by air. About 30% of the French shipment survived the flight.

S. Korean & French Projects

South Korea cultivates the juvenile shrimp in a 3-million-square-meter pond built on an island off her west coast.

France has started a 3-year experimental shrimp-culture project in the Mediterranean. She aims to establish a "Kuruma" farm in Abidjan, Ivory Coast, in 1972. The subsidized Government project is being undertaken by Ajiral (phonetic) Trans-Atlantic Company; Fujinaga's laboratory provides technical assistance. Three Japanese experts now are giving technical assistance. ('Minato Shimbun,' Oct. 9, 1969.)

* * *

U.S. CHINOOK SALMON FRY
DOING WELL IN HOKKAIDO RIVERS

About 500,000 chinook (king) salmon fry (2-3 cm. long) were released in the Yoichi River, Hokkaido, in May 1969. The fry had been hatched from eggs sent by the University of Washington. In late June and July, local fishermen reported catching the smolt (12 cm.) in the Japan Sea near the mouth of the Ishikari River.

In the past, salmon fry have been released in the Tokachi river that flows into the Pacific, but this was the first release into a Hokkaido river flowing to the Japan Sea.

Hokkaido expects to release 4 million chinook fry in the Yoichi in a 5-year program to develop a fishing ground in Ishikari Bay. ('Minato Shimbun,' Aug. 7, 1969.)

* * *

TUNA PACKERS TROUBLED
BY HIGH COSTS & LOW YIELD

Tuna packers in Shizuoka Prefecture (south of Tokyo) are troubled by the high cost of raw tuna and the low meat recovery. In October 1969, they were paying about US$315 a short ton for skipjack (usually packed in oil). However, the fish were so small--about 4.4 pounds--that pack yield was very poor. The packers were considering raising the prices for 7-oz. cans of tuna-in-oil, then quoted at $8.33 a case (48 cans per case) exwarehouse.

Switch to Bigeyed

Because of short domestic supplies, the packers were using increasingly bigeyed instead of skipjack. As a result, the prices for bigeyed were rising daily. Bigeyed imports from South Korea and Taiwan were quoted at US$454 a short ton for dressed-with-tail, and $403 for gill-and-gutted, 50% above the $277 paid earlier in the year.

JAPAN (Contd.):

Albacore Prices

In September, exvessel price in Japan for frozen albacore was $554-580 a short ton, about the same as the c. & f. price for direct exports to the U.S. In October, packers prices for small (8.8 pounds) fish were around $441.

Between the high costs and the poor yield, the Shizuoka packers were said to be losing money. They were canning just to keep going until the fall tangerine canning season began. ('Kanzume Tokuho,' Sept. 26, & 'Suisan Tsushin,' Oct. 9, 1969.)

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RESTRICTIONS ON TUNA IMPORTS URGED

The Federation of Japan Tuna Fisheries has urged the Fisheries Agency to restrict tuna imports. The purpose is to help Japanese fishermen improve their international competitive status. The Federation contrasted the decline in Japan's tuna production during the past 2-3 years with the sharp gains made by South Korea and Taiwan. (The latter's output in recent years has increased 53% a year.)

The Federation explained that these countries, with no tuna markets of their own, definitely will increase their exports to Japan.

Federation's 12 Proposals

Twelve proposals to cope with import growth were presented to the Fisheries Agency. The Federation believes the Fisheries Agency should:

1) Prohibit foreign vessels from landing fish in Japan.

2) Reduce interest rates on long-term loans and raise loan ceilings.

3) Help establish a network of extra-low-temperature cold storages.

4) Improve fishery-law administration and revise some regulations.

5) Study model ship construction to increase economic value and efficiency of fishing vessels, and study vessel leasing.

6) Compensate fishing vessels seized and detained by countries with unilaterally declared extended sea limits.

7) Request South Korea and Taiwan to stop further fleet buildup. Encourage these nations to participate in the tuna scientific meeting proposed during Asian tuna conference.

8) Establish a home-owning system for vessel crewmen and reduce their income taxes.

9) Use imported labor.

10) Reduce wholesale fish market commissions and expand market facilities.

11) Set up council to regulate imports of competitive products.

12) Study feasibility of international management of tuna resource and adopt a country quota system.

7 Longliners Seized

The Federation noted that 7 Japanese tuna longliners have been seized off South America by countries claiming 200-mile limits--Ecuador, Peru, and Chile. Vessel owners have paid enormous fines ranging from US$10,000 to $33,000 per vessel.

The Federation is urging the government to revise seizure insurance to include payment of fines, and to establish a U.S.-type compensation law. It also proposed that economic assistance be extended to the seizing countries in return for assurance that they would not seize Japanese vessels. ('Suisan Tsushin,' Sept. 5, 1969.)

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TUNA CATCHES & EXPORTS DECLINED IN 1968

The 1968 tuna catch was 614,000 metric tons, down 38,000 tons from 1967's 652,000 tons. The distant-water longline catch was 339,000 tons, down 4% from 1967 (354,000 tons). Distant-water catch in the pole-and-line skipjack fishery was 136,000 tons, down 11% from 1967.

Tuna exports in 1968 were 107,078 metric tons, down more than 70,000 tons from 1967 (177,457 tons).

JAPAN (Contd.):

Catch, Average Exvessel Prices and Exports, 1967-1968[1/]

Species	Catch	Avg. Exvessel Price Fresh	Avg. Exvessel Price Frozen	Quantity Exported
	Metric Tons	$/sh. ton	$/sh. ton	Metric Tons
Tuna:				
Bluefin	57,000 (54,653)	922 (786)	648 (612)	194 (1,434)
Albacore	70,000 (97,980)	408 (386)	451 (444)	31,539 (67,546)
Big-eyed	96,000 (105,927)	645 (582)	474 (476)	- -
Yellowfin	116,000 (93,734)	557 (537)	358 (388)	54,653 (78,917)
Young tuna	14,000 (15,030)	- -	- -	6,260 (16,255)
Skipjack	168,000 (181,892)	257 (242)	(fresh & frozen)	14,432 (13,305)
Sub-total	521,000 (549,216)			107,078 (177,457)
Frigate mackerel:	23,000 (29,310)			6 (149)
Billfish:				
Striped marlin	23,000 (23,528)	832 (743)	832 (743)	711 (1,263)
Swordfish	19,000 (18,703)	592 (474)	592 (474)	7,035 (7,194)
Other billfish	28,000 (31,461)	- -	- -	- -
Sub-total	70,000 (73,692)			7,746 (8,457)
Total	614,000 (652,218)			114,836 (186,212)

1/Figures in parentheses are for 1967.

Average exvessel 1968 prices for all species, except frozen yellowfin and frozen big-eyed, were higher than 1967's. ('Suisan Shuho,' Sept. 15, 1969.)

* * *

TUNA IMPORTS ARE INCREASING

Japan imported 19,224 metric tons of frozen tuna during January-July 1969--26.2% over the 15,227 tons imported in same period 1968. Taiwan was the leading supplier, followed by Okinawa and South Korea. Their combined shipments were 16,200 tons, or 84% of Japan's total imports.

Becoming Tuna-Importing Nation

There are indications that 1969 imports will rise to 34,000-35,000 tons. Apparently Japan is fast becoming a tuna-importing nation. Imports have risen steadily over the past 6 years: 851 tons in 1963; 2,452 in 1964; 2,564 in 1965; 10,796 in 1966; 16,184 in 1967; and 28,964 in 1968. ('Nihon Suisan Shimbun,' Sept. 3.)

* * *

TUNA EXPORTS TO ITALY DECLINE

Japan exported 2,239 metric tons of tuna to Italy in September 1969, down from the average of 3,000 tons monthly during June, July, and August. Sales may decline further in October. According to Japan External Trade Organization representatives in Venice, 3,863 tons of yellowfin caught off west Africa by U.S. purse seiners, and transshipped from Abidjan, were delivered to Italy on September 4. ('Katsuo-maguro Tsushin,' Oct. 14, 1969.)

* * *

SEA URCHIN PASTE EXPORTED TO FRANCE

Daiwa Industries, Shimonoseki, has made the first Japanese shipment of sea urchin paste to France.

Daiwa is a leading processor of edible sea urchin paste. It received a French buy offer for 12,000 jars in mid-September 1969. On Sept. 20, it shipped 2,000 50-gram (1¾ oz.) jars priced at about US$0.28 each. About 15,000 jars are to be sent by year's end.

New Product on European Market

About 6 months before, after learning the French eat raw sea urchin roe, Daiwa developed a paste for French tastes. Samples were favorably received. The firm, hoping to develop more markets, also sent samples to Spain, Italy, and West Germany. ('Minato Shimbun,' Sept. 28, 1969.)

* * *

RAISE PRICE OF CANNED SALMON TO U.K.

Earlier this year (1969), the Canned Salmon and Crab Joint Sales Company announced the new offer price of canned red salmon to Britain. Later, the new offer price for canned coho salmon was set at US$22.80/case c.i.f., an increase of about 25% over 1968. The price of canned king salmon had not yet been decided early in August. ('Suisan Tsushin,' Aug. 12, 1969.)

* * *

JAPAN (Contd.):

1968 TUNA SURVEY IN SOUTH ATLANTIC REPORTED

The Japanese Fisheries Agency has released the results of a tuna survey in the central and western areas of the South Atlantic. The Government-owned research vessel 'Shoyo Maru' (604 gross tons) departed Japan Sept. 1968 and returned March 1969.

Cruise objectives were to assess abundance and distribution of tuna, primarily southern bluefin, and to test labor-saving devices.

First Survey Area

The survey began around 30° S. lat. and 10° W. long. in the central South Atlantic and continued west. Surface temperatures ranged from 18.2° C. to 19.2° C. (64.5° F. to 66.5° F.); water transparency was 30 meters or more; no current boundary was observed.

In the first phase, 27 albacore, 2 yellowfin, and 1 bigeyed were taken on 13 longline sets (800 hooks) and four trolling (4 hooks). The albacore were 91-110 centimeters (35.8-43.3 inches) long; these were assumed to be adults, based on a comparison with the Pacific albacore, which mature at around 90 centimeters. The albacores' gonads weighed 30 to 180 grams. This indicated they were not fully developed.

Off Argentina's East Coast

Waters off the east coast of Argentina, within the 200-mile sea limit, were surveyed with the Argentine Government's permission. Three longline operations were conducted in an eastward direction to 51° W. long. around 45° S. lat. Catch composition varied widely, depending on area. Five albacore and 126 sharks were among the important species taken. No southern bluefin were caught. The correlation of southern bluefin distribution and oceanographic conditions, so evident in the Indian Ocean, was not observed in the southwestern Atlantic. ('Katsuo-maguro Tsushin,' Oct. 21, 1969.)

* * *

SAURY (TUNA BAIT) SOUGHT IN NORTHEAST PACIFIC

Saury is the longline-tuna-fishermen's favorite bait. It used to be abundant off Japan, but the supply seems to be shrinking. Fishermen are looking for another supply.

Three Nichiro trawlers have been searching for saury in the northeast Pacific since July 1969. After a poor start, they finally located sizable concentrations off Oregon (U.S.) in September. Fishing began to improve around September 8. Reports from the fleet indicated an abundant resource. The trawlers are 'Akebono Maru', No. 21 and No. 17 (499 gross tons each), and No. 18 (492 gross tons).

Off Oregon

A Nihon Suisan trawler, 'Shinano Maru' (539 gross tons), also was scouting saury unsuccessfully off Japan. Encouraged by the Nichiro trawlers' reports, she proceeded to the Oregon coast about September 24. She made a good catch on her first day.

Fishing Methods

All 4 trawlers fish with 'boke ami' (stick-held dip nets) and make 8-10 sets a day. The medium size (10-12 inches) saury, similar to samples received from the U.S., are usable tuna bait.

Two Groups of Saury

The good fishing has raised Japanese hopes that this resource off the U.S. will support commercial operations. The survey has indicated 2 separate groups of eastern Pacific saury--Aleutian and Californian. The catches off Oregon were Californian. ('Minato Shimbun,' Sept. 28.)

* * *

EXPLORES FOR BOTTOMFISH OFF ARGENTINA

The government-owned research vessel 'Kaiyo Maru' (2,539 gross tons) departed Tokyo Oct. 9, 1969, on a 163-day resource survey cruise to the southwest Atlantic. She is investigating bottomfish resources off

JAPAN (Contd.):

southern Argentina and the Falklands. Six government scientists and 3 industry specialists aboard will conduct fish utilization tests, processing the catches into 'kamaboko' (fish cake) and sausages.

Her Schedule

She was scheduled to call at San Diego, Calif., on October 24. In November and December 1969, she will call at Balboa, Santos in Brazil, and Buenos Aires and Mar del Plata, Argentina. She will return to Buenos Aires in January 1970, call at Cape Town in February, Singapore in March, and return to Tokyo on March 20, 1970. ('Suisancho Nippo,' Sept. 30, 1969.)

* * *

JOINT SHRIMP VENTURES PLANNED IN WEST AFRICA

Three different fishing firms are planning joint shrimp ventures with west African countries. Nichiro Gyogyo and Kyokuyo Hogei will operate in Gambia, and Hokkaido Gyogyo Kosha in Senegal (50-60 French vessels reportedly are fishing shrimp out of Dakar).

The Japanese Fisheries Agency has advised the 3 firms to conduct experimental fishing with 1 or 2 vessels for about a year before entering into joint agreements. The Agency also advised them to consult each other before making contracts to avoid disrupting the market.

Kosha in Gabon

Hokkaido Gyogyo Kosha established a joint shrimp venture in Gabon in January 1969. The vessel 'Kohoku Maru No. 3' (250 gross tons) operated by the joint company reportedly is landing about 1,000 pounds of shrimp (550-660 pounds processed weight) every fishing day. ('Minato Shimbun,' Sept. 20.)

* * *

JAPAN & MAURITIUS LAUNCH JOINT TUNA-PACKING VENTURE

The Japanese Overseas Fisheries Co. and the government of Mauritius will operate a tuna-canning plant at Port Louis. Mauritius requested it. Mauritius already permits the Japanese firm to use Port Louis as a tuna fishing base.

The venture, with an estimated capital of about US$83,000-111,000, will can about 250 tons of tuna-in-oil a month. ('Suisan Keizai Shimbun,' Aug. 26, 1969.)

日本

SOUTH KOREA

TRAWLING IN NORTH PACIFIC FAILS FINANCIALLY

W. P. Appleyard, Project Manager, FAO Advisory Services to Republic of Korea (ROK), reported to FAO Investment Conference, Rome, Sept. 18-24, 1969: "Only through trawling in international waters will Korea increase supplies for domestic markets and improve foreign exchange earnings since her coastal resources are fully exploited and increased fishing effort there would not add significantly to the total catch. Over the last 3 years various Korean companies have been operating in the North Pacific. All have fared disastrously. Poor equipment along with inexperienced management and crews have caused major problems and have almost forced 2 major firms into bankruptcy. Nor do the results obtained (in 1969) by a 9,000-ton factoryship appear more promising.

"Self-contained factory freezer trawlers have a better chance of success in the North Pacific. Recent results of a KMIDC (Korea Marine Industries Development Corporation) freezer trawler of 1,500 tons are encouraging, but it is hoped that the building of larger vessels (some of 4,000 tons are contemplated) will be the subject of detailed feasibility studies and not motivated by 'follow the leader' policy."

More Data in Seoul Paper

Additional data on ROK fishing in the North Pacific were disclosed in a Seoul newspaper. The ROK Office of Fisheries licensed the Korean fleet to fish north of 50° N. and east of 175° W. The total catch for 1969 was planned at 7,000 metric tons valued at 500 million Korean won (about US$1.8 million). The Office estimates that a large (1,500-gross-ton) stern trawler can catch fish worth about 200 million won (US$706,700) in 1 year of North Pacific operations. Operating costs are about 60% of

SOUTH KOREA (Contd.):

otal earnings. Net profit could amount to as nuch as 80 million won ($282,700) per year er stern trawler.

Trawlers Need Support Vessels

According to the newspaper, the "most important thing ROK has learned from her fishing ventures in the N. Pacific is that comprehensive support measures are essential." Small trawlers must have a mothership to service them, and "independent" (nonfleet) stern trawlers must have a supply base. ('Hankuk Ilbo,' Sept. 4, 1969.)

MALAYSIA

FISHERY TRENDS IN SABAH & SARAWAK

There are about 6,500 full-time fishermen and 1,000 fish culturists in Sabah. Fish-processing plants employ about 1,000 workers.

Sabah's catches have grown from about 19,000 metric tons, worth about US$4 million, in 1962 to around 36,000 tons worth close to $9.7 million in 1968. The value of exported fishery products increased from about $833,000 in 1963 to $2.8 million in 1968.

Shrimp

The 3,200-ton shrimp catch in 1968 was worth about $3.3 million. Frozen shrimp exports to the U.S., U.K., Japan, and Europe amounted to 1,540 tons worth about $2.6 million.

Oysters & Cockles Surveyed

Sabah's Ministry of Agriculture and Fisheries is surveying the commercial development of oyster and cockle culture. The mangrove swamps and brackish lakes along Sabah's 900-mile coast reportedly have large oyster and cockle stocks. Oysters could become a major export item.

Sarawak's Landings

Sarawak landed about 13,900 tons in 1968, almost 23% shrimp. Landed value (money actually received by fishermen) was about $3.8 million; retail market value was about $6 million. The Fisheries Department is attempting to reduce costs at the dealer and middleman levels, and increase fishermen's earnings. (U.S. Consulate, Kuching, Aug. 15, 1969.)

TAIWAN

TUNA MARKETING FIRM REACTIVATED

The China Marine Trading Company (CMTC), a Taiwanese tuna-marketing firm, has been reactivated. Established in June 1968, it had been inactive for over a year. Organized with a capital of 30 million yuan (US$750,000), CMTC exports tuna for member firms that own tuna longliners of 200 or more gross tons.

In August 1969, CMTC sold 1,500-2,000 tons of tuna, transshipped from Capetown, to a large U.S. packer. Fish not wanted by the U.S. packer, such as bigeyed and spearfish, were sold on contract to a Japanese trading firm, Tokyo Shosha, for shipment to Japan. Shosha provides tuna bait for Taiwanese fishing vessels. CMTC plans to sell Taiwanese tuna catches landed at Tema (Ghana) to the same U.S. packer.

Taiwanese Prefer CMTC

Taiwanese longline owners favor CMTC tuna sales for two reasons: 1) the tuna catch is sold directly to buyers, and vessel owners get to know export prices; and 2) sales by their own nationals provide a sense of mutual trust.

CMTC's stepped-up sales effort has intensified rivalry with Japanese trading firms handling sales of Taiwanese tuna catches. ('Suisancho Nippo,' Oct. 30, 1969.)

PERSIAN GULF FISHERIES

David K. Sabock and James A. Gurr

Lands of fabled mystery and adventure, the countries bordering the Persian Gulf are rich not only in "black gold" (oil) but in fish and shellfish, especially shrimp.

Several Persian Gulf countries are developing fisheries as additional sources of income to oil--with some success. Such modern techniques and methods that exist generally are found in the shrimp trade. Saudi Arabia, Kuwait, and Bahrain have had the most successful fishery developments and, with Iran, ship large quantities of shrimp to the U.S. Iran has the longest coastline and a large share of the Gulf fishery resources within her territorial waters, but she has done little to exploit them. The Trucial States and Qatar also have resources that could be developed, but projected plans have not yet been fully realized. Iraq has a very short and unproductive coastline and has shown little interest in developing a marine fishery. As a whole, however, the Persian Gulf has virtually unlimited potential for expanded fishery production. A conservative estimate is that the total yield could be increased at least tenfold.

Private companies from the U.S., U.K., Italy, Greece, and Japan have participated in the area's shrimp fisheries. The USSR also fishes in the Gulf.

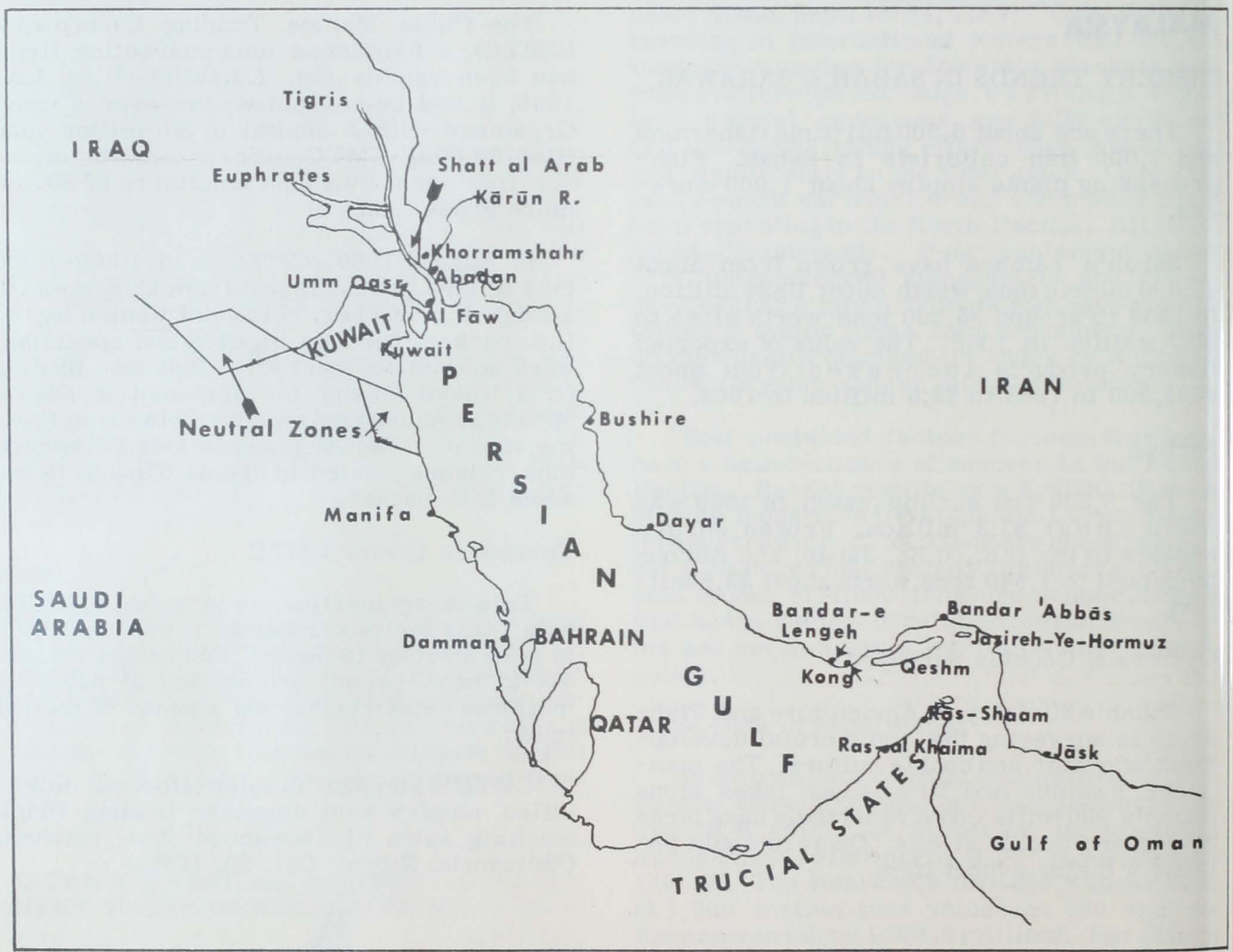

Fig. 1 - Fishing ports in the Persian Gulf.

Mr. Sabock is Foreign Affairs Officer
Mr. Gurr is Foreign Affairs Assistant
} BCF Office of Foreign Fisheries, Washington, D.C. 20240.

CATCHES INCREASING

Total fishery landings in the region are estimated at 75,000-100,000 metric tons (live weight), perhaps up to one-third higher than the total catch in 1960 (table 1). Official statistics are not available on individual species; historical data are fragmentary. The catch is fairly evenly divided among Iran, Kuwait, Iraq, and Saudi Arabia, although it is not known what proportion of Saudi Arabia's catch is taken in the Gulf compared with the Red Sea and Arabian Sea. Relatively small amounts are landed in Qatar, Bahrain, and the Trucial States, a loose-knit group of 7 shiekdoms on southeastern coast of Persian Gulf.

Table 1 - Persian Gulf: Total Fish Landings, 1963-67

	1967	1966	1965	1964	1963
	(1,000 Metric Tons)				
Iran[1/]	22.4	21.0	NA	NA	NA
Saudi Arabia	21.6	19.9	18.6	20.2	19.6
Iraq[2/]	NA	18.3	12.5	19.2	11.3
Kuwait[3/]	13.0	11.0	11.0	10.0	9.0
Qatar[3/]	NA	NA	NA	0.6	0.6

1/Includes landings of foreign vessels licensed to fish in Iranian waters.
2/Data refer to wholesale markets only.
3/FAO estimates.
NA - Data not available
Source: FAO Yearbook of Fishery Statistics, vol. 24, 1967.

Although many species of fish and shellfish are caught, shrimp has attracted worldwide attention. Shrimp landings totaled 17,900 metric tons (live weight) in 1967--66% more than in 1964.[1/] Saudi Arabia, Kuwait, and Iran, in that order, are the primary producers. Despite a large increase in world catch from 1964 to 1967, Persian Gulf countries have increased their share of world total from 1.8% to 2.6% (table 2). Industry estimates for 1968 indicate landings of about 20,000 tons, with 1969 results running at a comparable level. In 1965, catch per vessel peaked at 260 tons. Since then, the per-vessel catch has declined to less than 160 tons, while the number of vessels has increased.

MANY SPECIES AVAILABLE

Many species of demersal and pelagic fish abound in the fertile waters. Generally, the species are marine coastal types and include sea breams, snappers, pomfrets, mackerel, skipjack, spadefish, croakers, groupers, grunt, threadfin, gizzard shad, shad, yellowfin, shrimp, and many others. The shrimp is generally "pink," with a life cycle of 12-14 months.

Table 2 - Shrimp Landings (Live-Weight), 1964-67

	1967	1966	1965	1964
	(1,000 Metric Tons)			
Iran	4.1	4.6	-	-
Kuwait	6.0	4.0	4.0	3.8
Saudi Arabia	7.8	7.1	6.6	7.0
Total	17.9	15.7	10.6	10.8
World Catch	690.0	626.0	587.0	590.0
Percentage of World Catch	2.6%	2.5%	1.8%	1.8%

Source: FAO Yearbook of Fishery Statistics, vol. 24, 1967.

PRIMARY FISHING AREA OFF IRAN

Fish and shrimp are found over a wide range, although more surveys are required to pinpoint additional commercially exploitable concentrations. The primary fishing area is off Iran. There, the Gulf's deepest part exists, and the flow of numerous streams into the Gulf results in much food.

The entire Gulf is rich in marine resources, but emphasis is on fishing in nearby, shallow coastal waters. This is only because sufficient vessels are not available to conduct distant fishing operations. Distant-water vessels are usually employed in shrimping.

Large concentrations of tuna, Spanish mackerel, sardines, and others, occur during September-March in the southern area from the Straits of Hormuz to Qatar. An influx of colder, less saline, more fertile water from the Gulf of Oman into the Persian Gulf carries with it large numbers of these fish. The primary fishery in this area occurs between Ras-Sha'am and Ras-al-Khaima. It is there that the deepest part of the Persian Gulf is close to the Trucial States. During the remainder of the year, fishing is conducted for shallow-water or bottomfishes for local markets.

Good catches are also made in the northern end, near Shatt al Arab, where the waters are enriched by the Tigris, Karun, and Euphrates rivers. The fishing grounds off Bushire and the island of Jazireh-Ye-Hormuz are among the best.

Shrimp are the principal off-shore species taken and are widely distributed. Main concentrations are in the northern, eastern, and southern sections and in the extreme northern part of the Gulf of Oman. The Iranian coast harbors the most valuable shrimp concentrations. Iranian shrimping centers are in the Shatt al Arab and Bandar 'Abbas regions.

1/The total shrimp catch probably is higher than that reported by official sources. Some catches are directly off-loaded and transshipped at sea and, therefore, are not recorded as landings.

PERSIAN GULF 1969

C.F.R. Decisions 1969

Much of Saudi Arabia's and Kuwait's shrimp catch is taken near the coast of Iran. The Trucial States are not near the major shrimp fishing grounds. Fair quantities are harvested in Bahrain's coastal waters. The species Penaeus semisulcatus is found in the Gulf's northern part down to Qatar. Penaeus merguensis are centered on the Gulf's eastern shore, generally near Iran's Bandar 'Abbas region.

FISHING SEASONS VARY

Large-scale fishing is conducted throughout the Gulf from September through June. September-May is the main shrimp season. From September-March, mackerel, sardines, tuna, sailfish, kingfish, and marlin are readily available; a peak is reached in November-January. Pelagic fishing is at a low ebb during the hot summer. Fishing then is based on shallow-water and bottomfishes, such as rockcod, seabream, snapper, grunts, and horse mackerel.

FISHING VESSELS: CANOES TO MOTHERSHIPS

Standard fishing vessels are small rowboats, canoes, and sailboats. Although no exact data are available, it is reasonable to assume that these number in the thousands. Despite the heat, most vessels do not carry ice.

About 200 modern shrimp trawlers, with 6 large motherships, work the Gulf. Shrimp trawlers have been built or ordered from Norway, Pakistan, W. Germany, France, Mexico, USSR, and the U.S. Most are about 55'-62' length overall (l.o.a.) of many tonnages; the average likely is about 150 GRT. The motherships are as large as 4,000 GRT. About half the shrimp trawlers are based in Kuwait as a result of that country's early concern for developing a viable shrimp industry. Iran has not developed a large motorized fleet despite its long coast (800 miles) or nearness to the richest Gulf fishing area.

The same types of native vessels are common throughout the Gulf, although the names vary. Iranian names are used in this article. The smallest are the huris, dugout canoes 19 to 22 feet long with 1 to 3 fishermen. They are used to tend traps and to fish with hand lines. Next in size are the small sailing boolams (29-32 ft.) with removable coverings made of palm-leaf ribs. These carry 6 or 7 men and are used to set drift and seine nets for smaller fish. The shah-restan-e minab boats are larger (up to 49 ft.) and have removable decks of wooden boards. They carry 12 to 30 men and are used to fish for tuna and sardines with drift gill nets. Largest native boats are the chah bahar, broad-beamed, 32-96-foot sailboats. They carry 12-15 men and are used in gill-net

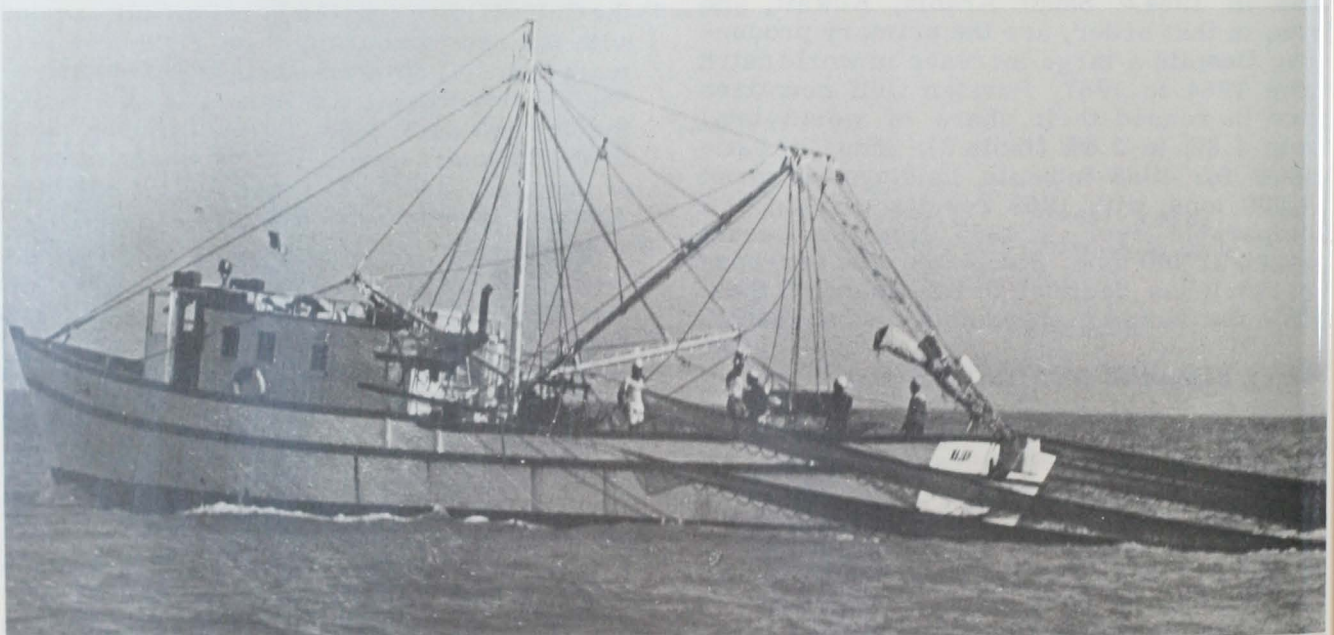

Fig. 2 - Saudi Arabian trawler.

fishing for tuna and kingfish. Except for the small huris, most boats are well constructed and seaworthy. The larger ones are suitable for mechanization.

MANY FISHING PORTS

Numerous fishing ports exist but none is well developed. Lack of fresh water and ice-making facilities and inadequate storage and distribution facilities are several principal deficiencies. In many instances, fish are landed at protected areas along beaches.

Primary Persian Gulf ports in Iran include Bushire, Abadan, Khorramshahr, Dayar, Bandar-e Lengheh, Kong, and Bandar 'Abbas.[2/] Bandar 'Abbas, where Persian Gulf and Gulf of Oman meet, is probably the most modern Iranian port. Located near the important shrimp, tuna, and sardine fishing grounds, it is developing quickly. Some 50 vessels are berthed at this port. The only fish-processing plant in Iran is the Southern Fisheries Co. canning plant in Bandar 'Abbas. There is a highway link to interior cities.

Kong is Iran's only boatbuilding yard. Most vessels constructed there are about 30' l.o.a., with small engines, however, vessels up to 200 GRT have been built.

Abadan and Khorramshahr are on the Karun River, about 100 km. inland from the Gulf. Both have good harbors and rail and highway access to other areas. A large cold-storage facility (capacity 160-180 tons) is located in Khorramshahr. Shrimp vessels are provisioned from it by small coastal freighters.

Bushire (or Bushehre) is an important shrimp and finfish port; 90 vessels fish out of it. Large landings support the 3 local ice-making plants. Only about a dozen vessels operate from Dayar, a small port with few facilities. Bandar-e Lengheh has declined in importance and its facilities are inadequate. Over 200 vessels fish tuna and sardines from Jask, a major port on the Gulf of Oman.

Iran has a very short coastline and very few port facilities. Except for the river towns of Al Faw and Umm Qasr in the Shatt al Arab region, beaches are the only places for landing fish.

The city of Kuwait is the largest and most highly developed port on the Persian Gulf. It handles more fishing commerce than any coastal city in the other countries.

Damman and Manifa are the chief fishing bases along the coast of Saudi Arabia's Eastern Province. The shrimp processing and freezing installations there are expanding rapidly with commercial success. The poor handling facilities of the port of Damman has hindered the industry somewhat, but efforts are underway to improve the situation.

Encouraged by the Saudi shrimping success, the shiekdoms of Bahrain and Qatar are also developing commercial shrimping industries. Foreign capital has been invested in developing modern fleets and processing facilities on the island of Bahrain and on the Qatar peninsula.

Commercial facilities along the 300-mile Trucial coastline, from Qatar to the Straits of Hormuz, remain rather primitive. The vessels are similar to native craft used along the corresponding Iranian coast. Most fish are used locally, but some are dried for export to Ceylon and Singapore.

FISHING METHODS MOSTLY PRIMITIVE

Gulf fishermen use a wide variety of fishing gear. Modern trawlers, introduced only recently, were first used extensively by Kuwait. Saudi Arabia and Bahrain followed with imported mechanized vessels. However, the most prevalent methods are still primitive. Fish traps, shore seines, drift nets, gill nets, cast nets, and handlines are common. Dynamiting and poisoning are also used.

Shore seines, drift nets, and gill nets are used along the beaches for catching sardines and herringlike fishes. These nets are fairly large, frequently up to 320 meters long.

Cast nets and handlines are used by individual fishermen for many varieties of fish, but yields are smaller than the others.

Occasionally, fishermen use a "fish poison" of toxic lilac-tree seeds pounded up with dead crabs and small fish. This is spread over shallow water when the tide is bringing in fish. After eating this mixture, the fish come near the surface and go into spasms. The fishermen then go into the water and catch them by hand. Actually, this is not a destructive practice because the drug's effects do not last long.

2/Andersskog, Bjorn. 'Report to the Government of Iran on the Southern Co.', FAO, Rome, 1968.

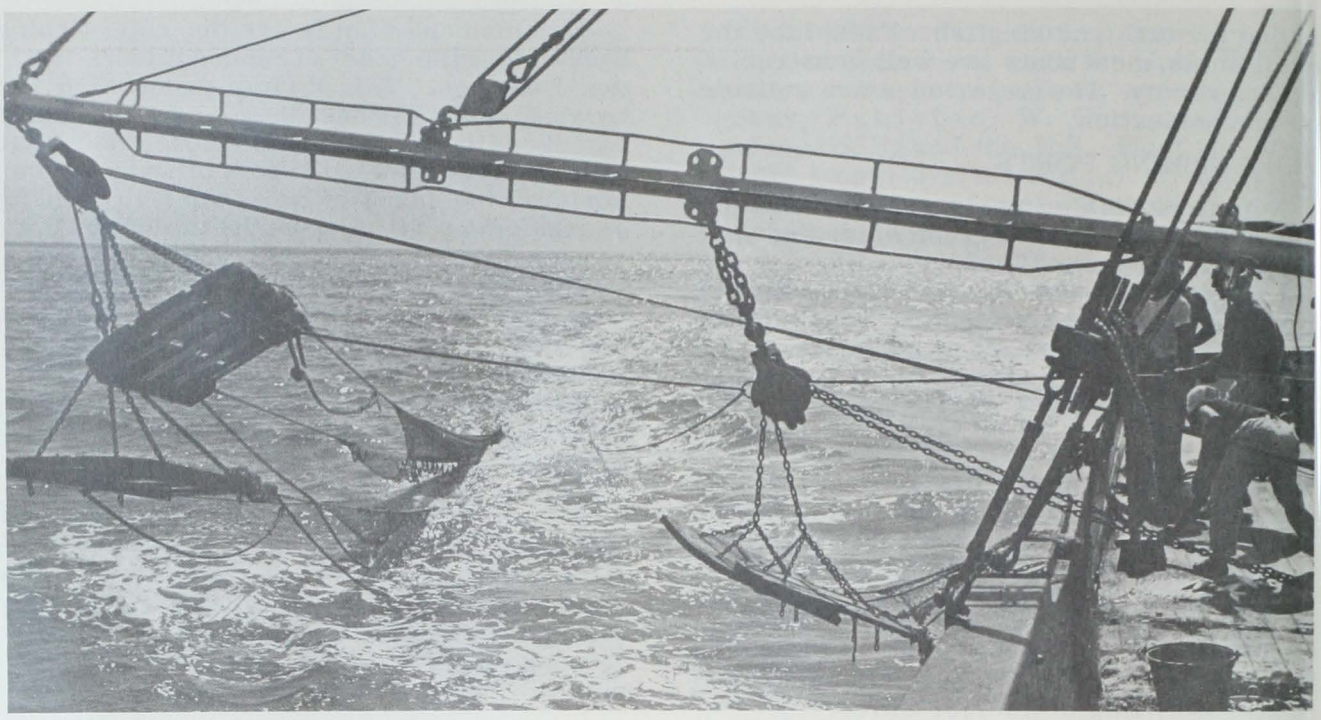

Fig. 3 - Hauling the nets.

Fig. 4 - Man at winch guides net onto deck.

Fig. 5 - Emptying the net.

Fig. 6 - Homeward bound fisherman mending nets. (Photos: Ali Khalifa)

PROCESSING & MARKETING PROBLEMS

Processing and marketing techniques in Persian Gulf countries are modern only for the shrimp export industry. Fishery development plans all have as important objectives the modernization of processing facilities (i.e., ice production, cold-storage facilities) and better marketing methods. At present, however, marketing and processing are primitive, equipment old, and hygienic conditions suspect.

Fish is not an important item in the diet of Persian Gulf countries. Fresh fish and dried fish are popular forms for domestic consumption; fish is an important food only in coastal areas. Frozen fish are not an important market form. Some fish are smoked or salted for marketing.

Relatively little fish canning, if any, is done in any Persian Gulf Country except Iran. There, the plant at Bandar 'Abbas operated by the Southern Fisheries Co. cans tuna and sardines for domestic use and export to nearby countries. Its output has reached 33 tons a day. It has a 180-ton cold-storage area and plans to expand this. The plant closes from June through August because of extreme heat.

The most modern processing and distribution techniques and facilities are in the shrimp business, oriented primarily towards the U.S. Most of the processing--grading, cleaning, freezing, and packing--is done on board factory ships in the Kuwaiti and Iranian fisheries. Shrimp are not deveined until processed in the U.S. Sanitation methods and quality are reported to be equal to U.S. standards. In both countries, however, shore-based plants and cold-storage facilities are in operation. In Saudi Arabia, most processing is done at Manifa and Damman. However, there is a factoryship operation with packing, freezing, and storage.

FOREIGN TRADE SMALL

Foreign trade in fishery products, including imports and exports, is not significant. The notable exception is shrimp exports to the U.S. These have increased from 1.4 million lbs. in 1960 to 19.2 million lbs. in 1968 (table 3). Shrimp exports were 10% of total U.S. shrimp imports in 1968 and worth US$14.4 million. This area ranks only behind Mexico and India as leading supplier of shrimp to the U.S. Japan also is becoming an important market.

Kuwait is the area's main U.S. supplier. She increased shipments from only 146,000 pounds in 1960 to almost 9 million pounds in 1968. Saudi Arabian exports to the U.S. increased from 77,000 pounds to 3.7 million during the same period. Shrimp exports from Bahrain, which began with a modest 51,000 pounds in 1962, totaled 4.4 million pounds in 1968. Iranian shrimp exports have been erratic. These varied between 87,000 lbs. in 1963 and 9.1 million pounds in 1966--but fell to 2 million pounds in 1968.

Table 3 - U.S. Shrimp Imports from Persian Gulf Countries, 1960-64 Average, 1965-69

Country	1960-64		1965		1966		1967		1968		1969 (Jan.-Aug.)	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value		
	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000	1,000 Lbs.	US$ 1,000
Iran	934	496	6,800	4,400	9,106	7,371	1,674	1,212	2,016	1,680	1,603	1,597
Kuwait	1,968	1,330	5,818	3,829	5,744	4,203	8,053	6,229	8,960	6,653	1,660	7,748
Saudi Arabia	121	60	1,201	677	1,622	1,026	2,427	1,347	3,709	2,320	1,444	1,163
Bahrain	10	8	-	-	126	98	1,640	709	4,430	3,684	96	96
Arabian Peninsula	7	2	61	30	12	8	-	-	68	45	973	1,006
Total	3,040	1,896	13,880	8,936	16,610	12,706	13,794	9,497	19,183	14,382	5,776	5,610

SHALLOW & WARM PERSIAN GULF

The Persian Gulf is an area of about 70,000 square sea miles with a coastline of 1,740 sea miles. The coastlines of bordering countries are: Iran, 720 miles (260 of them on Gulf of Oman); Iran, 30 miles; Kuwait, 80; neutral territory, 40; Saudi Arabia, 240; and Trucial Oman, 630.

The Persian Gulf is a shallow, warm, salt-water body. Its average depth is about 35 meters. Near Shatt al Arab, at the northern end, the water is extremely shallow and there are extensive tidal flats. There also are mud flats east and west of Al Qatar, north and west of Qeshm Island, and at the northern end of the Straits of Hormuz. The Gulf's channel, ranging in depth from 40-50 fathoms, is along the Iranian coast. The bottom there, and in the delta of Shatt el Arab, is soft mud and clay. Along coastal regions, sand, coral, shell, and gravel interspersed with numerous coral reefs make up the bottom sediments. Coral reefs are especially numerous along the shallow southern coast.

WEATHER WINDS & HOT

Strong winds and hot temperatures characterize the weather. During winter, winds are generally light except for unexpected squalls. Squalls become more frequent in March and April when south and southwesterly winds come in. From gentle breezes early in the day, the winds freshen in the afternoon. It is hot in June and July, with winds variable from west and southwest. A swell caused by southerly monsoon coming from Gulf of Oman can result in turbulent seas that make fishing difficult even in calm weather. Later in the year, strong southeasterly winds arrive, and these support the monsoon swell. The weather calms after mid-August with light breezes in afternoon. From mid-September, weather clears, winds are light, and the southerly monsoon swell decreases.

In the summer, land temperatures are consistently over 100° F., water temperature varies from 90° F.-100° F. These conditions affect fishing in many ways. The techniques used to catch and store the fish, and the machinery aboard vessels, must be adequate to cope with extremely high temperatures.

Note: Information sources for this article include reports from U.S. Embassies and consulates, articles in trade journals, FAO reports, and other sources. A 49-entry bibliography is available on request from Office of Foreign Fisheries.

IS THERE ANY DANGER OF OVERFISHING?

In some areas of the world, overfishing is already a problem for some species. Stocks have been depleted in heavily fished areas such as the continental shelves of Europe, particularly the North Sea. Cessation of fishing during two World Wars proved that a decrease in fishing could result in an increase in the number of large specimens.

The U.S. Bureau of Commercial Fisheries has listed the following species as being seriously depleted: Pacific sardine, Atlantic salmon, Atlantic sturgeon, blue whale, fin whale, Atlantic shad, sperm whale, humpback whale, oyster, and sea otter. Depletion of these species is not caused entirely by overfishing; disease, predators, and water pollution all take their toll.

When the catch of a species reaches the point where the reproductive capacity is unable to compensate for the losses sustained, the species is headed for extinction. However, before this point is reached, operation of fisheries becomes uneconomical, and fishing of many species to extinction is thus prevented.

There is little agreement among fisheries experts on how much the world's fisheries could be increased. Estimates of the percentage of potential yield have varied from 1 percent to 75 percent. Undoubtedly the fish catch could be increased through exploitation of areas in the Southern Hemisphere and through fishing for species not now widely used for food. ("Questions About The Oceans," U.S. Naval Oceanographic Office.)

AFRICA

SOUTH AFRICA

FACTORYSHIP MOVES TO INTERNATIONAL WATERS

The factoryship 'Suiderkruis' is being geared to fish anywhere in the world, not just in South and South-West African waters. She may venture as far as the North Sea and the Newfoundland fishing grounds and compete with Soviet, Japanese, and Portuguese fleets. The ship, and her fleet of small trawlers, already have made a successful pioneer long-range fishing trip off the bulge of Africa.

Catcher Boats Too Small

The catcher boats used by Suiderkruis off North Africa were drawn from the South African fishing fleets. They are too small to be used off the African bulge, which is lashed by northeast trade winds. A company official said: "The spirit of the men was fantastic after their long trip. After sailing almost 5,000 miles in small 72-ft. boats . . . not suited for these stormy seas, there were hardly any incidents when the men came ashore."

To Buy New Catchers

The official added: "We are buying some of the most modern catchers in the world, which will enable us to fish anywhere from the Arctic to the Antarctic." The first 4 or 5 will be built in Norway. Possibly, others will be built in Spain, or elsewhere. They will be steel, about 320 tons--much bigger than the South African boats--centrally heated and air-conditioned.

Based at Las Palmas

Two of the new Norwegian catchers should be in Las Palmas now. Suiderkruis, with full support from the Spanish authorities, is being allowed to use Las Palmas as a permanent unloading port. The S. African company has made Las Palmas its northern base.

Good Distant-Water Catches

In the first 2 months after Suiderkruis sailed from South African waters, the fleet caught 14,300 long tons. These yielded 3,000 tons of fish meal. Fishing was mostly a probing operation. The vessel kept moving instead of fishing one area for some time. Fish were caught in deep water 50 miles south of the Congo for 2 or 3 days. Then the fleet moved round the bulge of Africa. At times, Suiderkruis found herself among 93 boats from 7 nations. She was scheduled to spend 2-3 months off North Africa before returning to South-West African waters. ('Sunday Times,' Cape Town, Oct. 26, 1969.)

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FACTORYSHIPS DO WELL OFF NORTHWEST AFRICA

South Africa's two industrial fishery factoryships, 'Willem Barendsz' and 'Suiderkruis,' were sent to fish off Spanish Sahara during South and South-West Africa's closed fishing season. Both ships left South African waters early in September to cruise off Northwest Africa.

Suiderkruis' Success

The Suiderkruis found fishing promising and will remain in the area for several more months. She unloaded 3,000 short tons of bulk fish meal at Las Palmas in early October and returned to the fishing grounds.

The Barendsz

Owners of the Willem Barendsz said only that the closer the ship was to Las Palmas, the better the fishing. ('Cape Argus,' Oct. 11, 17, 1969.)

SOUTH & SOUTH-WEST AFRICA

CATCHES DROP

The 1969 fishing season presents a mixed picture. While higher meal and oil prices seem likely to push inshore industry earnings to about US$1.4 million ($1.2 million in 1968), there are signs that the Southeast Atlantic resource is being overfished. The factoryships fell short of their combined quota of 570,000 short tons of fish. They caught only 519,000 tons. They now have ventured into international waters.

SOUTH & SOUTH-WEST AFRICA (Contd.):

Spiny Lobster Canning Drops

When only two months remained in the season, the spiny lobster industry reportedly had canned only about half of 1968's total of 554,000 cases (20 lbs. a case). Finally, the local trawl fishery, facing heavy foreign competition, has indicated a further catch decline. This spurred calls for government assistance. (U.S. Consul, Cape Town, Oct. 28, 1969.)

TANZANIA

LAKE VICTORIA LANDINGS RISE

In 1967, Lake Victoria fishermen caught 43,752 short tons of fish. In 1968, the catch increased 35% to 59,853 tons worth US$5,635,492. The catch was composed of 23,742 tons ($2,415,593) from the Mwanza region; 25,215 ($1,817,860) from Mara region; and 10,896 ($1,402,039) from West Lake.

Species & Gear

The catches included 13 different species. Haplochromis led with 21,063 tons; Tilapia zillii trailed with 725. The catches were made by 11,517 fishermen in 2,538 canoes, using 80,573 gillnets, 616 seine nets, and 296,500 long lines. This was an increase over 1967 of 3,104 fishermen, 723 canoes, 7,536 gillnets, 462 seine nets, and 157,798 long lines.

Mechanization

Only 166 canoes had outboard engines in 1967; in 1968, there were 304--189 in West Lake, 93 in Mwanza, and 22 in Mara.

Fishermen's Income

Average income for fishermen in each of the 3 regions was $794 for a 5.53-ton catch in West Lake, $486 for 5.59 tons in Mara, and $402 for 4.44 in Mwanza. ('Mwanza Regional Fisheries Officer's Annual Report, 1968', U.S. Embassy, Dar es Salaam, Sept. 26.)

SOUTH PACIFIC

FIJI

TUNA LANDINGS RISE IN 1969

South Pacific tuna fishing has been generally good this year, although landings have declined since late August after season's peak had passed. From January through July 4,700 metric tons of tuna were landed--80% of total 1968 landings (5,800 tons).

The Fleet

Twenty-nine vessels are based at Fiji--9 of Minami Taiheiyo Gyogyo (Japan), 18 of Korean Fisheries Development Corporation, and 2 Taiwanese vessels from separate companies. The catch is 80-85% albacore, and about 1% yellowfin. The high-priced albacore catch is greater than the others, so fishermen's profits have been good.

Prices

August prices, per metric ton: US$448 for frozen albacore, $432 for chilled albacore, $361 for frozen yellowfin, and $331 for chilled yellowfin. ('Suisancho Nippo,' Sept. 4, 1969.)

AUSTRALIA

TAIWANESE VESSEL SEIZED

The Taiwanese fishing vessel 'Fu Chih No. 1' was seized inside Australia's "territorial limit" on August 29, 1969. Australia claims a 12-mile fishing limit and a 3-mile territorial sea. Captain and crew were fined US$2,775. The vessel was permitted to leave after the Taiwan Embassy in Canberra guaranteed payment.

She sailed on September 3, but was apprehended again on Sept. 16 fishing inside the limit off North Queensland. This time the skipper was fined $1,100 but no charges were pressed against the crew. On Sept. 30, she departed for Taiwan. (U.S. Consulate, Brisbane, Sept. 4, 17; Oct. 1, 1969.)