

## 8 COUNTRIES REPRESENTED AT BILLFISH SYMPOSIUM

Sixty fishery scientists and other billfish specialists participated in the first International Billfish Symposium, August 9-12, in Kona, Hawaii. It was the first international meeting sponsored by the National Marine Fisheries Service since it became part of the National Oceanic and Atmospheric Administration (NOAA).

The symposium, open to the public, coincided with the 14th Annual Hawaiian International Billfish Tournament. Anglers from throughout the world competed. The tournament provided scientists with the unique opportunity to meet sportsmen and exchange ideas about research on billfishes, the fisheries for these pelagic creatures and, finally,

to examine the catch of billfishes on the dock. Eighty-two blue marlin and 11 yellowfin tuna were caught during the tournament.

### The Program

NMFS Director Philip M. Roedel gave the opening address.

The symposium was highlighted by four scientific sessions covering species identification, life history, distribution, and fisheries. Papers providing overviews of the status of world fisheries for billfishes were presented by Dr. Shoji Ueyanagi, Far Seas Fisheries Research Laboratory, Japanese Fishery Agency, who covered commercial fisheries--and by Donald P. de Sylva,



Fig. 1 - Philip M. Roedel, Director of NMFS, addresses opening session. In foreground are symposium co-chairmen: Richard S. Shomura, Director, NMFS Tiburon Fisheries Laboratory, and Dr. Francis Williams, Institute of Marine Resources, Scripps Institution of Oceanography. (Photos: Robert Bonifacio.)



Fig. 2 - Mayor Shunichi Kimura, County of Hawaii, addresses opening session.

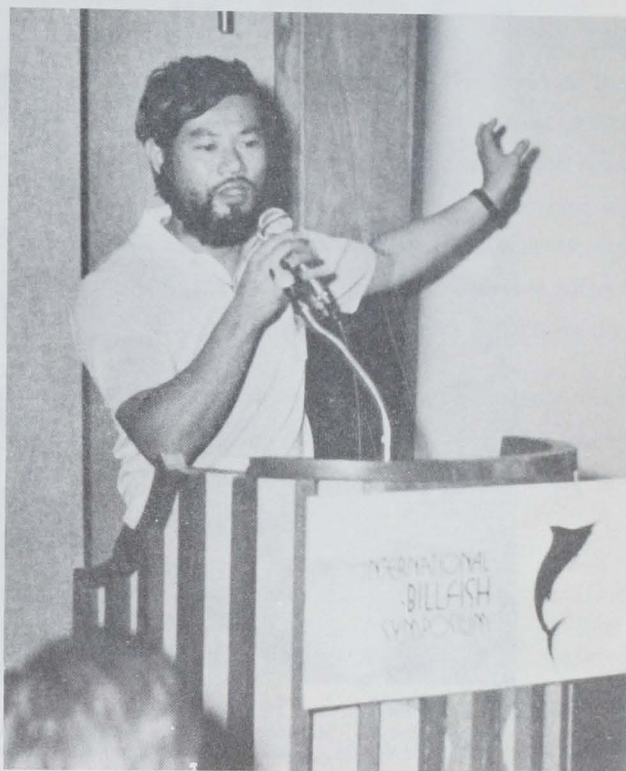


Fig. 4 - Dr. Izumi Nakamura, Acting Director, Fisheries Research Station, Kyoto University, Japan: "On the systematics and distribution of billfishes."



Fig. 3 - Dr. Francis Williams, Institute of Marine Resources, Scripps Institution of Oceanography, addresses opening session.

## 8 COUNTRIES REPRESENTED AT MAYOR'S RECEPTION



Fig. 5 - From left: Dr. Shoji Ueyanagi, Far Seas Fisheries Research Laboratory, Japan; Dr. V. Sokolov, FAO Fisheries Project, Mexico; Dr. W. L. Klawe, Inter-American Tropical Tuna Commission; Hiroyo Koami, Institute of Sea Sphere, Japan; and Yoshigara Kato, Asuka Industries, Japan, at Mayor's reception.



Fig. 6 - George Parker, a Kailua-Kona charter-boat skipper, describes "hook-less" fishing gear during sportsmen-scientists session. At left, Dudley Lewis, chairman of panel session and captain of winning team.

Institute of Marine and Atmospheric Sciences, University of Miami, who covered sport fisheries. The sessions included 40 papers covering aspects of the biology and life history of billfishes and the fisheries for them.

#### Mercury In Fish

A special evening session on August 10 was devoted to mercury in fish. The highlight was a presentation by Dr. Albert C. Kolbye Jr., Deputy Director, Bureau of Foods, Food and Drug Administration, Washington, D.C., His talk was followed by a lively question-and-answer period. The meeting did not result in a change of views by FDA or the sportsmen.

#### Sportsmen-Scientists Panel

A special sportsmen-scientists panel discussion of billfish biology and research was held on the final day. About 130 sportsmen and scientists exchanged ideas and views on how each group could help the other: the sportsmen by providing needed data, the scientists in working on problems of interest to sportsmen.

The use of a "hookless" fishing tackle to catch billfishes was discussed. This gear, de-

scribed as a mop-like affair of synthetic fiber, is attached to the end of the fishing line. The catch is made when the extended bill of the billfish becomes entangled with the mop gear. The question of whether this method was considered "game fishing" was answered by a representative of the International Game Fish Association. He said it was not presently considered legitimate for IFGA records.

The sportsmen-scientists meeting was chaired by Dudley C. Lewis, an IGFA vice-president. He also was captain of the tournament's winning team.

#### 'Gilbert' Tracks Marlin

Prior to the symposium, the NMFS 'Charles H. Gilbert' tracked 4 blue marlin with acoustic "beeper" tags for periods up to 5½ hours.

Richard S. Shomura, Director of NMFS Tiburon Fisheries Laboratory in California, and Dr. Francis Williams, Institute of Marine Resources, Scripps Institution of Oceanography, were co-chairmen of symposium.

The proceedings will be published by NMFS in early 1973.



## FAO TO SET UP SKIPJACK TRAINING CENTER IN S. KOREA

FAO plans to set up a pole-and-line skipjack fishery training center at Pusan, South Korea, around October 1972. This report comes from Masayoshi Kato, technical assistance officer for FAO's southeast Asia development program.

The center is part of FAO's assistance program for underdeveloped fishing nations. The plan calls for training 30-40 fishermen in 1½ years with about US\$550,000. Japan will send 3 technicians as instructors in fishing gear operation and livebait control. The center will buy one 250-ton fishing vessel from Japan. It plans to have 7-8 vessels built later in South Korea. ('Minato Shimbun', July 29.)



## FAO REPORTS ON MARKETING FISH IN MEDITERRANEAN AREA

The General Fisheries Council for the Mediterranean (GFCM), under FAO auspices, has published a report entitled Studies and Reviews, 1971; Marketing of Fresh and Frozen Fish in Mediterranean Countries (No. 50).

Countries covered include: France, Greece, Israel, Spain, Tunisia, Turkey, Egypt, and Yugoslavia.

Each country is examined in detail: factors of supply and demand; mechanics of distribution and marketing system; cost and price influences; trends in consumption; and regulations on distribution of fresh and frozen fish.

The publication can be obtained from UNIPUB, Inc., 650 First Ave., P. O. Box 433, New York, N. Y. 10016.



## ICELAND EXTENDS FISHING LIMITS TO 50 MILES

On July 14, 1972, Iceland advised the British Embassy in Reykjavik that she had issued regulations extending her fishing limits to 50 miles, effective September 1, 1972.

The regulations draw limits 50 nautical miles outside base-lines. All fishing activities within the fishery limits by foreign vessels are prohibited--except to the extent these activities are compatible with agreements with other countries to which Iceland is, or may become, a party.

Britain and W. Germany appealed to World Court. On Aug. 17, 1972, the court ruled provisionally in their favor. The ruling would allow continued operation of foreign vessels in Icelandic waters within 50-mile limit, but not within 12-mile limit. Court asked Iceland not to interfere with vessels within 12-to 50-mile limit. Iceland said she would enforce 50-mile limit and rejected court's jurisdiction.



## U.S. & CANADIAN FIRMS SEEK SEA-URCHIN ROE MARKETS

U.S. and Canadian businessmen are seeking to export sea-urchin roe to Japan, France, Italy, Chile, Hawaii, and other places, according to the Japan External Trade Organization. They are keeping an eye on the tremendous abundance of sea-urchins inhabiting the Pacific coast of the United States and Canada. At present, little urchin roe is being exported to Japan. To most Americans and Canadians, the urchins are a pest ravaging the kelp beds.

### Market Prices

On August 19, sea-urchin roe prices at the Tokyo wholesale fish market were: 500-1,400 yen (US\$1.67-4.67) per large tray of "White" roe; 1,350 yen (\$4.50) per large tray and 750-800 yen (\$2.50-2.67) per small tray of "red" roe. (Note: Japanese report does not indicate size of roe or weight per tray.) ('Shin Suisan Shimibun Sokuho,' Aug. 18, 'Minato Shimibun,' Aug. 20.)

## U.S. AND COLOMBIA SIGN CARIBBEAN FISHING TREATY

The U.S. and Colombia signed a treaty on September 8 in Bogota in which the U.S. renounces all claims of sovereignty to three groups of small Caribbean reefs - Quita Sueno Bank, and the cays on Roncador and Serrana Banks.

Colombia will guarantee to U.S. nationals and vessels continuation of fishing in waters adjacent to the cays on Roncador and Serrana. This will be subject to reasonable conservation measures applied on a nondiscriminatory basis.

Quita Sueno is submerged at high tide. So, in U.S. view, it is part of high seas and not subject to any sovereignty claim. U.S. and Colombian nationals and vessels will continue to exercise their rights to fish unmolested in the waters adjacent to Quita Sueno Bank.

### The Background

The three areas covered by the treaty are 380 to 460 miles from the Colombian mainland. All the cays in these areas are uninhabited. The largest one measures about 1,000 by 3,000 yards (about one square mile).

The U.S. claimed them in the late 19th century under the Guano Islands Act of 1856. In 1890, Colombia protested U.S. extraction of guano from these cays. It claimed that independence from Spain had given it sovereignty over the cays. In 1928, the U.S. and Colombia recognized the existence of each other's claims and agreed to maintain the status quo. For many years the U.S. has maintained a lighthouse on Quita Sueno and navigational beacons on Roncador and Serrana. Vessels of both countries have fished in the area.

### U.S. Cedes Navigational Aids

Now the U.S. agrees to grant to Colombia permanent ownership of the lighthouse and navigational aids. This will be done after consultations between experts of both countries to assure their continued safe operation and maintenance for benefit of all mariners.

## THE BALTIC IS DYING

Marine life in the Baltic Sea seems to be declining. Water probes at 70 meters revealed that only 34 varieties of living organisms survived in the Baltic in 1971. In 1970 there were 250, more than seven times as many as the following year. Oxygen is lacking at that depth and the fauna are rapidly dying out. The Baltic is considered to be one of the most polluted water bodies in the world.

### Stockholm Conference

The Stockholm Conference on the Protection of Human Environment studied the possible protective measures that could be taken to rescue the Baltic from contamination by industrial wastes, sewage, pesticides, etc.

## MAURITANIA CLAIMS 30-MILE TERRITORIAL WATERS

Mauritania extended its claimed territorial waters from 12 to 30 miles in July 1972. There are reports that Mauritania is effectively enforcing the claim by seizing foreign fishing vessels.

The 30-mile limit is measured from a straight base line between Cape Blanc and Cape Timris, and from the low-water mark elsewhere on the coast.



# SOVIET RESEARCH

## Marine Fish Can Be Cultivated

Vikenty Zaitsev

What is needed today in the interests of fuller utilization of the huge biological marine resources is that fishing cease to be a form of hunting and that we embark on a new path--the path of cultivating marine organisms in our seas and oceans. Setting up such farming is linked with studies of the coastal waters and continental shelf. The USSR continental shelf is 2.6 million square miles, one quarter of the world's shelf. Far from all the continental-shelf waters are suitable for fish farming. But if man took full advantage of the favorable conditions offered by coastal waters for reproduction of many beneficial marine organisms, the potential reserves of protein food would be augmented considerably. The productivity of cultivated fish farming, compared to the ordinary fisheries, would increase many times.

### Soviet Research

Studies relating to scientific fish farming have been carried out by Soviet researchers over different sections of our continental shelf. These have shown how much the setting up of controlled fish farming depends on the cultivation of economically important algae, certain marine invertebrates, and fish species.

Marine flora is represented by more than 10,000 varieties of plants, but only a few of these have economic value. They are being used to manufacture food and medicinal products, for fodder, and as raw material for the chemical industry. In the future, after selection and hybridization of marine plants, we can hope for the seas to yield food products as valuable as those obtained today from the land. Major crops for cultivation on salt-water plantations are anthelia, furcellaria, laminaria, fucus, zoster, and phyllospadix.

Research has revealed both the possibility and advisability of cultivating economically important sea algae. The research was carried out by the Arkhangelsk Laboratory of Sea Algae, under Ksenia Gemp, on the Solovets Islands in the White Sea, and by the Sakhalin

branch of Pacific Sea Fisheries Institute, under Vera Sarochan, in the South Sakhalin area. When algae are cultivated, there is greater accumulation of biological mass than under usual conditions.

The first experiments in aquatic-crop cultivation--the growing of anthelia--were carried out in the Soviet Union in 1957 in the waters of Busse Lagoon (Sakhalin Island). Later, the cultivation area was steadily increased.

### Marine Invertebrates

Marine invertebrates, like algae, are important future resources of our sea and ocean wealth. Invertebrates grow rapidly and easily replenish their reserves. Of the 69,000 species of invertebrates, we now use 800. The principal commercial invertebrates of the USSR are the bivalve mollusks--mussels, scallops, oysters; cephalopods--squids, octopi; crustaceans--crabs, prawns, lobsters, spiny lobsters; echinodermata--trepangs, sea cucumber, sea urchins. All have great nutritive value. This is due to their high protein content, important microelements, vitamins, and the presence in the protein of the greatly treasured amino acids.

First on the cultivation list come oysters, crabs, prawns, trepangs, mussels, and scallops. Research has shown that in ordinary conditions a great part of mollusk larvae perish for want of favorable substrata for settling, and the tiny mollusks are consumed by predators (starfish).

Scientific studies in the Bay of Pos'et (Okhotsk Sea) point to the advisability of cultivating scallops there. An experimental marine farm being launched there is expected to yield 50 tons of commercial scallops this year. The farm will shortly be provided with boats and deep diving and other aquatic apparatus. A laboratory and other buildings will be built.

---

Prof. Zaitsev is a board member of USSR Fisheries Ministry and deputy chairman of Scientific and Technical Council.

From Novosti Press Agency.

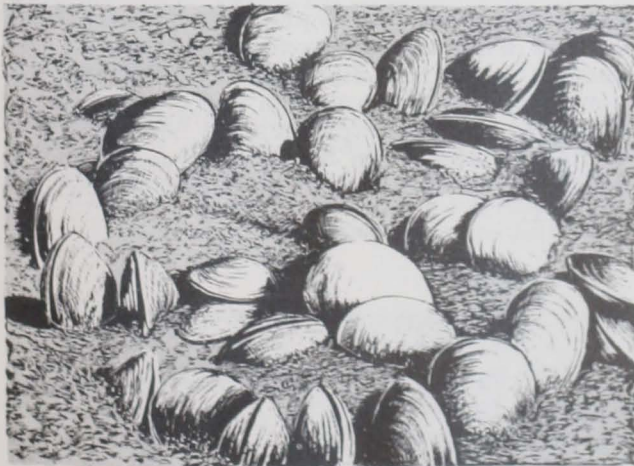
## Breeding Mussels

An experimental farm and collector system were started in the Strait of Kerch (Crimean Peninsula) for mussel breeding. Experiments in 1969 and 1970 make it clear that mussels grow much faster when cultivated than in their natural habitat. Such farms can yield per acre approximately 10,000 tons of mussels of commercial size or 1,250 tons of flesh for food.

In marine pisciculture, studies and practical measures concerning certain species of valuable fish have been carried out in the USSR.

## Artificial Fertilization & Incubation of Flatfish

Artificial fertilization and incubation of the spawn of the Black Sea commercial flatfish was carried out at Chernomorsk Bay. After the larvae were 4 or 5 days old, they were placed into special nursing ponds for additional feeding and further breeding. But to rear the small fry, these fishes must be returned to their natural habitat in the bays and estuaries, where they go on living until they are 2 or 2½ months old. Fifty percent of the small fishes reared in this manner



reach the mating age (5 to 6 years weighing 4.4 pounds). This ensures a considerable increase of the reserves of this valuable fish in the Black Sea.

## Acclimatizing Humpback Salmon

Noteworthy, too, are such large-scale experiments as acclimatization of the Far Eastern humpback and Siberian salmon to the White and Barents Sea basins. Large quantities of the fertilized eggs of these fishes are delivered from the Far East to the northern fish hatcheries. Here the young fishes are reared and then released into local waters.

When the humpbacked salmon reaches the mating age in the northern Atlantic, it comes to spawn in the rivers of northern Europe--in the USSR, Norway, Iceland, and other lands. Its spawn is normal. In years of favorable climatic conditions, it produces healthy progeny. Efforts continue to acclimatize Far Eastern salmon and crabs in the White and Barents Sea basins. A major program for restoring resources of valuable fish species, especially salmon and sturgeon, also is being implemented in the USSR. In 1970, 90 fish factories put out as many as 68 million sturgeons and 760 million small salmon.



THE COMMON STURGEON

*Acipenser baileyi* C. S. & G. (1895) p. 100  
Copyright by U. S. Fish and Wildlife Service, U. S. Department of the Interior, Washington, D. C.



THE SHORT-NOSED STURGEON

*Acipenser brevirostris* G. S. & G. (1895) p. 100  
Copyright by U. S. Fish and Wildlife Service, U. S. Department of the Interior, Washington, D. C.



## USSR

### TESTS NEW 'SUPERTRAWL'

Soviet stern factory trawlers of 'Natalia Kovshova' class (8,500 GRT) have been testing successfully a new, giant, 183-meter-long trawl (does not include cod end). It has a mouth perimeter of 550 meters and a mesh size of 1 meter. The Soviets call it "supertrawl". It was designed by specialists of the Sevastopol administration of the main Azov-Black Sea Fisheries Administration.

Test results in the Atlantic have encouraged the Soviets. Despite its size, the new trawl can be towed by the vessel at the conventional speed of 4.5 knots. The eddies formed during towing prevent the fish from escaping through the large meshes.

Natalia Kovshova-class stern trawlers built for the Soviet Government by a French shipyard are among the world's largest.

\* \* \*

### PROTOTYPE OF IMPROVED 'ATLANTIK' TESTED

Seatests were conducted recently with the prototype of an improved 'Atlantik'. It has a larger refrigerated hold capacity (1,800 cubic meters), a faster towing speed (4.5-6 knots), more powerful engines (3,880 hp), and a smaller crew (50 men).

The vessel is equipped with an alternated trawling system (called "double" by Soviets). With this, a second trawl is lowered into the water as soon as cod end of other has been hauled out. This will increase fishing efficiency by 10-30%.

\* \* \*

### WORLD'S LARGEST FISHERY VESSEL

The 'Vostok', world's largest fishery vessel (43,400 tons displacement) returned to her home port, Il'ichevsk on the Black Sea, after completing her first trip in the equatorial Atlantic, off Africa. She carries piggy-back 14 catcher vessels of 65 tons each, which can trawl and purse seine. Soviet sources reported that she put out her "first million cans of fishery products" on this experimental cruise.

Her capacity is 150,000 fish cans daily. Modifications will be made on her equipment before she sails again.

\* \* \*

### CAN STURGEON BE ACCLIMATIZED TO BALTIC?

Four sturgeons tagged by the Baltic Scientific Research Institute of Fisheries in Riga were caught off Sweden, according to Novosti Press Agency. They are part of Soviet research in acclimatizing European and Siberian sturgeon to the Baltic, where they have never before been found.

Soviet scientists are also doing work on artificial reproduction of migratory fish, and the settlement of valuable commercial species in newly created reservoirs. They have developed a unique method for breeding fry using a new feed called KRT. In experiments with salmon, KRT has made it possible to increase the average weight of the brood, reduce development time, and increase resistance.

\* \* \*

### FISHERIES PRODUCTION

Soviet fishermen caught 4.3 million metric tons during the first six months of 1972. If they repeat this achievement in the second half of the year, they will exceed the 1972 catch plan of 8.5 million metric tons. They have pledged to "overfulfill" the plan by 50,000 tons, or 0.6 percent of the target amount. The sales target for fishery products for January-June 1972 has also been exceeded but the production target for edible fishery products has not been met. Even though two of the 5 main Fisheries Administrations did not fulfill the 6-month catch plan, Soviet sources say this year's 6-month results are better than those in 1971.

\* \* \*

### FISH BREEDING EXPERIMENT

USSR is establishing an experimental fish breeding station in the Arctic, at the tidal electric power plant of Kislaia Guba, on Kola Peninsula, in the Barents Sea. It will include incubation facilities, aquaria, and a fish farm. If successful, the Soviets will build a whole series of such stations.

\* \* \*

USSR (Contd.):

### "NEW BREED" OF AMPHIBIAN

Specialists at the Leningrad Institute of Mechanization of the Fishing Industry designed an amphibian vehicle capable of trawling on lakes and rivers, then, like a truck, traveling on the highway to take its catch to market in its refrigerated holds. The truck-trawler, called Amfibiia in Russian, is built by the Moscow automobile factory ZIL which builds passenger cars and trucks. Tests have been successful, and serial production is to begin later this year. The "Amfibiia" carries a crew of 5.

\* \* \*

### FISH MINCE & FPC PRODUCTION INCREASED

Soviets have always used most trash fish for meal, fodder and fertilizers. Now the Soviet Federal Research Institute of Fisheries and Oceanography (VNIRO) is promoting their use for increased production of edible fish mince and fish protein concentrate.

Several years ago a VNIRO Laboratory worked out a fine-tasting fish mince or paste that could be prepared in about 20 different ways. To promote the new product, Fisheries Minister Ishkov, his deputies, and a group of journalists had a well publicized luncheon of fish mince delicacies. Since then fish mince seems to have become a popular product.

### FPC Not So Usable

Fish protein concentrate (FPC) is not as popular. It can be used only as an additive to basic foods like bread. According to Soviet test data, it deteriorates more rapidly. But the Soviets plan to increase the production of FPC from trash fish.

For these products a likely species for large-scale exploitation is Alaska pollock. The Soviet catch has increased from 110,000 metric tons in 1960 to almost 700,000 tons in 1970. By 1975 the Soviets plan to have five Pos'et class 29,000-ton factoryships capable of processing 750 tons of fish daily. The prototype was launched at the end of 1971.

\* \* \*

### SPINY LOBSTER FISHERY IN INDIAN OCEAN

In September 1971 five Soviet trawlers began a successful spiny lobster fishery in the Indian Ocean. They determined this fishery could be conducted year round, except in the spawning season (May-July). Utilizing the entire animal was a goal they accomplished, presumably freezing tails and working heads into fish meal.

Soviet attempts at a spiny lobster fishery in the Indian Ocean go back to 1965. The Suez Canal closure interrupted that until last year. The USSR does not, however, consume spiny lobster domestically. The entire catch goes for export and is an excellent hard currency earner.

### UNITED KINGDOM

#### TURBOT CAN BE FARMED PROFITABLY

A British White Fish Authority's report says recent results suggest farming newly hatched turbot may be nearing commercial viability. Provided problems of feeding and weaning newly hatched turbot can be overcome, it could be a reality in a year or two. This species seems to take well to farming. It is tolerant of wide range of conditions and grows fast. Three-year-olds weigh, on average, more than 4.5 kg (10 lb).

Although it may be profitable to cultivate a single highly prized species, the economics of mixed cultures may be more attractive. Some experience has been gained in the cultivation of oysters and clams in the same tanks as fish. Plaice and sole are still the main experimental species, but saithe, cod and grey mullet have also been reared.

#### Disease Control

Whatever species are attempted, greater skill in fish husbandry has led to more efficient and comprehensive cover of the incidence and control of bacterial and parasitic diseases. There is also a better, though not yet adequate, understanding of nutritional requirements.

Development of feeds with improved nutritional and mechanical properties has resulted in much improved food conversion ratios.

## UNITED KINGDOM (Contd.):

Results in the last year indicate a production of 50 kg of fish every two years from one cubic meter of enclosure. ('The Irish Skipper,' August 1972.)

\* \* \*

## CAN AQUACULTURE BOLSTER FISH SUPPLY?

"Fish," says Sir Charles Hardie, chairman of the British White Fish Authority, "is reaching its economic value in the markets."

But, while fishing industry earnings are up, the catch remains about the same, with indications that future yields may decline. Smaller catches will mean higher prices. Consumers may then turn to cheaper foods.

### Aquaculture May Solve the Problem

The ultimate yield of known species to known methods of harvesting is still far away. Therefore, many countries have initiated very serious aquaculture programs.

Fish farming is a multi-discipline project involving the expertise of marine biologist, chemist, nutritionist, veterinarian, engineer and economist, and perhaps ultimately the most important of all--the geneticist.

Dr. Alan Jones of the Marine Laboratory in Lowestoft, England, says, "genetics may provide the key which will unlock a potentially huge new larder of high quality protein food. A necessary requisite for a domesticated farm fish is that it can not only be reared in captivity, but also be brought to maturity and successful spawning." He suggests the most promising species are turbot, Dover sole, hake and halibut.

### Genetic Engineering

Another Lowestoft scientist, Dr. Colin Purdom, is working on a direct method of genetic engineering that will produce a large number of highly inbred fish with desired characteristics, within one generation.

Modern genetic techniques for improving aquaculture, scientists feel, are worthy of the close attention of everyone concerned with fish production and related supply and demand.

## UK HAD GOOD YEAR IN 1971, OECD REPORTS

"The United Kingdom fishing industry enjoyed another good year in 1971." So states the "Review of Fisheries in OECD Member Countries 1971."

The rising trend in prices evident in 1970 was maintained. Most classes of vessels increased their gross earnings significantly. Costs, too, increased substantially. The OECD report says that indications for the immediate future suggest the firm market will remain that way. However, prospects for several distant-water grounds suggest that catch rates may decline somewhat; also, costs may continue to rise markedly.

### Highlights

Government policy towards the fishing industry remained unchanged. Financial support continued on the same basis--capital grants and operating subsidies.

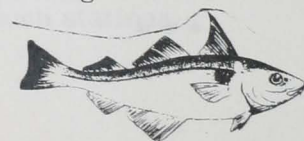
Investment for vessel construction, relatively small in recent years, began to show an increase. However, the trend in recent years of a decline in deep-sea vessels and increase in larger inshore ones continued.

In 1971, overall supplies were slightly below 1970.

There were no striking changes in "industrial structure, fish utilization or marketing."

### 1971 Landings

Landings in 1971 were estimated to be at about 1970 level, but the total value of most landings increased. Cod landings declined, mainly at ports from distant-water grounds. This decline was offset partly by larger landings of other demersal fish, especially haddock and whiting. Landings of pelagic fish, mainly sprats, increased. Scottish landings of herring rose; English landings fell. Shellfish landings were about at 1970 level.



# ITALIAN TUNA-PACKING INDUSTRY PROGRESSES

The Italian tuna-packing industry is making remarkable progress, according to the Japan External Trade Organization (JETRO), a semigovernment organization. Major Italian packers have increased their output sharply and are likely to modernize and expand their facilities. Even those canneries that had to suspend tuna packing in 1971 because of the furor over mercury have resumed operations at about one-third of normal capacities. Because of the year-round availability of raw tuna supply, the packers are increasing purchases from abroad. Other than Japan, such major tuna suppliers as Taiwan, South Korea, the U.S., France, Spain, and Cuba have increased their sales to Italy appreciably. Italy is the second largest tuna importer, after the U.S.

## Import 93% of Tuna

The packers import about 93% of the tuna they process. About 70% of the tuna purchased is yellowfin, 28% bigeye, and 2% skipjack. This percentage is not likely to change, particularly for skipjack, because Italian packers do not consider blending species for canning. The demand for bigeye, however, has been rising in recent years because of the high cost of yellowfin (over US\$820 a metric ton for Japanese gilled-and-gutted fish).

## Mercury

In Italy, the mercury-tolerance level for fish is 0.7 part per million (ppm) for frozen

fish and 1.0 ppm for canned tuna, according to JETRO. The mercury regulations, provisionally adopted by Italy, is effective until Dec. 31, 1972.

In early 1971, sizable shipments of large tuna from the U.S. ran into trouble at Italian ports, where incoming fish are checked for mercury by the Ministry of Welfare. This development slowed U.S. shipments. But, during second-half 1971, purse-seine-caught tuna from France and Spain began arriving in large quantities. Italian packers liked them.

In 1972, France already has exported around 6,000 tons to Italy at \$700-710 a metric ton (presumably c. & f. prices at port of destination) for round yellowfin. Converted to gilled-and-gutted fish, the price is \$800 a ton, or \$20 less than shipments from Japan.

The Japanese-supplied tuna to Italian packers are declining in each year. This is because most Atlantic tuna catches by Japanese vessels are taken home; of the remainder, medium sizes are exported to the U.S., and mixed sizes are sold to Italian packers. Also, the fish sold by Japanese trading firms for foreign vessels are poor quality because most of those vessels are old and manned by inexperienced crews. ('Suisan Keizai Shim-bun', July 26.)



# JAPAN

## UNIQUE UNDERSEA CRAFT TO BE TESTED

A model undersea craft propelled by electromagnetically created jets of water will be tested in September. The 1-meter-long model test craft weighs 90 kilograms. It was built by the Electro-technical Laboratory of the Japan Agency of Industrial Science and Technology.

If it works, the new craft should make undersea operations much safer and easier because it would eliminate the hazards of propeller-driven submarines. At great depths, heavy water pressure makes it difficult to maintain the air tightness of the propeller shaft's bearing section. Also, steering is difficult due to heavy propeller vibrations.

## Mercury Basic Moving Liquid

The laboratory has applied the principle of movements of any liquid in a magnetic field in a right angle to the field when an electric current is applied. It is using mercury as the basic moving liquid because it is far more conductive (earlier test with seawater failed) and will allow for miniaturization.

The power system involves a "U-shaped" container of mercury surrounded by a magnet. It is connected to storage cells and a square-shaped input/output piping system extending from the motor's core. Alternating currents will cause the mercury to move in different ways. This will cause seawater inside the motor to move. This movement will be regulated by a system of valves propelling the vessel in desired direction. ('Japan Economic Journal', Aug. 1.)

\* \* \*

## JOINT VENTURE WITH MALTA & LIBYA PLANNED

Taiyo Gyogyo's research vessel 'Hoyo Maru' left Malta August 18 on a 6-month cruise to survey Libyan waters. Later it will conduct a similar survey around Malta. The cruise will cost US\$500,000. Taiyo will pay for it from the catch. If results prove positive, Maltese and Libyans will have an opportunity to share with Taiyo in equal capital participation.

## Malta Is Headquarters

Headquarters of the still-unnamed joint company will be in Malta. Initially, the catch will be stored and sold in Malta and Libya; if catch is sufficient, a cannery may be constructed on Malta. (U.S. Embassy, Valletta, Malta, Aug. 18.)

NMFS COMMENT: Although information is not available on fish sought by the Japanese, herringlike species are an important resource in the Libya-Tunisia offshore waters. The Japanese are fishing groundfish, squid, octopus, and cuttlefish off northwest Africa.

\* \* \*

## GOOD SAURY FISHING OFF ALEUTIANS

The 'Hoyo Maru' (499 gross tons), chartered by the semi-government Marine Fishery Resource Development Center, returned to Japan after a 2-month saury survey cruise to the North Pacific. The vessel operated between 35°-48° N latitudes and 155°-180° E longitudes off southern tip of the Aleutian chain. It caught 32 tons of saury.

Fish size ranged from 15-35 cm (5.9-13.8 inches). The catch was quick frozen in 10-kg boxes. It brought prices ranging from 700 to 5,400 yen (US\$2.33-18.00, based on ¥300 = US\$1) and averaging 1,300 yen (\$4.33).

'Hoyo Maru' used the traditional "boke-ami" (stick-held dip net) and gill net. Fairly good catches were made with the gill net. ('Suisan Keizai Shimbun', Aug. 9.)

\* \* \*

## 12 VESSELS LICENSED FOR DISTANT-WATER SAURY FISHING

In late July 1972, the Japanese Fisheries Agency licensed 7 vessels for the 1972 eastern Pacific saury survey and was expected to license 5 more. In 1971, 48 vessels were licensed, although only 19 vessels actually fished.

Since 1969, owners have sent expeditions to the eastern Pacific seeking new grounds off the U.S. West Coast, but their attempts have been unsuccessful. Major fishery firms, such

## JAPAN (Contd.):

as Nihon Suisan, Hoko Suisan, and Nichiro, have given up hopes of developing new grounds in the eastern Pacific. ('Shin Suisan Shimbun Sokuho', July 18, 29.)

\* \* \*

GOOD SEASON FORECAST  
FOR COASTAL SAURY FISHERY

In early August 1972, Japan issued its first forecast for this year's coastal saury fishery beginning in late August. It predicted a 200,000-ton catch.

The coastal saury catch reached an all-time high of 575,000 tons in 1958. Then it began to decline steadily year after year. In 1969 it dipped to a record low of 52,000 tons. In 1970, the landings rose somewhat to 86,000 tons. In 1971, it jumped to 178,000 tons. This indicates that saury off Japan has begun to recover, although catches in recent years have been mostly small-size fish. ('Nihon Suisan Shimbun', Aug. 9; 'Suisan Keizai Shimbun', Aug. 1.)

\* \* \*

## SURVEY SOUTH AMERICAN FISHERIES

On July 22, NIKKATSUREN sent a two-man team to South America on a 38-day trip to survey the fishery situation in Argentina, Peru, and Ecuador. NIKKATSUREN is the National Federation of Japan Tuna Fisheries Cooperative Associations.

The experts will study the feasibility of establishing cooperative ventures. They will confer with government and industry leaders at Buenos Aires and Mar de Plata (Argentina), Lima (Peru), and Guayaquil (Ecuador). They will survey fish demands and marketing structures. The information obtained will affect the measures developed to secure fishing grounds for the Japanese fishing industry. ('Katsuo-maguro Tsushin', July 24.)

\* \* \*

WATER FROM ATOMIC PLANT TO BE  
USED IN FISH-CULTURE EXPERIMENTS

On Dec. 7, 1971, the Japan Fisheries Resources Conservation Association began construction of 12 ponds next to the Japan Atomic Energy Research Laboratory at Tokai-mura,

in Ibaraki Prefecture. Each will be 10 meters long, 6 meters wide, and 1.5 meters deep--a total area of 720 square meters.

The Association plans to build 34 such ponds totaling 2,040 square meters by March 1973. It hopes to begin commercial culture by 1975. Expected cost: about \$892,800; of this, the government is expected to contribute \$650,000 for construction and operation of the plant, the electric power industry the remainder. Supervisor of the work is Dr. Ryoji Tanaka, Tokai Regional Fisheries Research Laboratory.

## The Ponds

To maintain a constant temperature of 20°C necessary for successful culture of fish and shellfish, the ponds will be provided with 18 metric tons of sea water per minute and an equal amount of heated thermal discharge from the atomic energy plant.

Already, 20,000 seabream fry have been released in these ponds. The Association scheduled release of an additional 110,000 seabream, 40,000 "Kuruma" shrimp, and 3,600 kilograms of albalone in July-August 1972. ('Suisan Keizai', July 11)

\* \* \*

20% MORE VESSEL-CONSTRUCTION  
LICENSES ISSUED IN 1971

In fiscal year (FY) 1971 (April 1, 1971-March 31, 1972), the Japan Fishery Agency authorized construction of 937 fishing vessels over 15 meters long totaling 143,468 gross tons. They included 683 steel vessels (137,086 tons), 66 fiberglass-reinforced plastic vessels (1,826 tons) and 188 wooden vessels (4,556 tons). This was a 20% increase over licenses issued in FY 1970. ('Suisan Keizai', July 4.)

\* \* \*

TUNA-FLEET REORGANIZATION  
PLANNED

The Japan Tuna Federation (NIKKATSUREN) has announced a 5-year plan (FY 1972-76) for reorganization of the Japanese tuna fishing industry.

The plan provides for conversion of 160 tuna longline vessels to skipjack pole-and-line vessels and installation of automatic fishing

## JAPAN (Contd.):

machines aboard 403 skipjack fishing vessels. The Agriculture and Forestry Minister was expected to approve plan in mid-August. After that, a special loan with an interest rate of 6.5% per annum will become available along with a special tax benefit for participating fishermen. ('Suisan Tsushin', July 19.)

\* \* \*

## TUNA FLEET DECREASES IN 1971

On March 31, 1972 (the end of FY 1971), there were 2,806 Japanese vessels licensed to fish tuna and skipjack. This is 64 vessels below the FY 1970 figure of 2,870. The greatest decrease came in off-shore tuna vessels (1,520 vessels in FY 1971 versus 1,561 vessels in FY 1970). There was a decrease in tuna "motherships" (vessels carrying skiffs on board): 13 versus 21 (and 28 skiffs versus 41). The number of seasonal tuna vessels dropped from 116 to 114. The number of high-seas tuna fleet remained unchanged, but there were significant increases in 270-300 GRT class and in 360-420 GRT class. ('Suisan Tsushin', June 27.)

\* \* \*

## SKIPJACK TUNA HATCHING

Skipjack tuna eggs have been fertilized and hatched in Japan. This is the first successful experiment of its kind known to history. Although twice in the past the Japanese have cultivated yellowfin tuna, the Fisheries Agency scientists and other researchers are viewing the recent development as an important breakthrough in tuna culture.

## Capture Tuna

The experiment started when a chartered tuna vessel captured 11 mature (male and female) skipjack about 35 miles south of Izu Peninsula. Biologists aboard immediately began collecting the eggs. Within two hours they had fertilized about 110,000 granules. Next day the eggs were sent to three culture laboratories, where they began hatching. The larvae, measuring about 2.7 mm in length, were placed in a water tank with temperatures of 27°-28° C. By 10 AM the following day they had grown to 3.7 mm and were being reared in a Chlorella-laden tank.

The experiment is being conducted by the Fisheries Agency, Takai University and the Shizuoka Fishery Experiment Station. ('Suisan Keizai Shimbun,' Aug. 23, 1972.)

\* \* \*

VALUE OF FISHERY EXPORTS  
ROSE 4.2% IN 1971

Fishery exports during January-December 1971 totaled 146,661.6 million yen (US\$407.4 million, based on ¥360=US\$1), reports the Japanese Fisheries Agency. This is a 4.2% increase in value over 1970 exports worth 140,720 million yen (\$390.9 million). However, the ratio of fishery exports to Japan's total value of exports declined to 1.7% from 2% in 1970 and was the lowest in post-World War II period. The highest was 6.8% in 1959.

## U.S. Leading Buyer

The United States was the leading buyer of Japanese fishery products: 125,122 metric tons worth \$111.4 million, 27.3% of total value of fishery exports. However, sales to the U.S. declined from 1970's 145,499 tons worth \$116.5 million, 29.8% of total value of shipments. This was attributed to the effects of dollar devaluations in 1971.

## Other Major Buyers

Great Britain received the second largest share of fishery exports: 32,247 tons worth \$43.8 million. This was 10.7% (12% in 1970) of total value of shipments in 1971.

Other major purchasers were Netherlands: 17,620 tons and \$19.4 million, 4.8% of total; West Germany: 14,769 tons and \$19.2 million, 4.7%. Exports to West Germany declined sharply from 1970 shipments worth \$25.2 million. ('Suisan Tsushin', July 10.)

\* \* \*

JAPANESE VISIT CHINA FOR  
BUSINESS TALKS

On August 4, Taiyo Fishery Company sent 4 vessel experts to China to negotiate the sale of fishing vessels. The men were the advance party of a 9-man team slated to visit at the invitation of China's Import-Export Corporation.

## JAPAN (Contd.):

The negotiation involves construction and sale by Taiyo of one 2,000-gross-ton refrigerated shrimp-processing vessel and five 400-500-ton refrigerated carrier.

This will be Taiyo's second trip to China this year. In June, it sent a team at the invitation of the Edible Food and Oil Import-Export Corporation.

## Nichiro Too

Another major fishery firm, Nichiro Gyogyo, sent a team on July 10 on a 3-week tour to discuss mutual cooperation and exchange of technology. The team was headed by Nichiro's President Hirano. Members discussed extension by the Japanese of technical assistance to refrigerate vessels and cold storages. Nichiro plans to send another team in late October to discuss frozen foods distribution system. ('Suisan Keizai Shimbun', Aug. 4; 'Minato Shimbun', Aug. 3.)

Only companies designated "friendly" toward China are permitted to do business there. ('Mainichi', July 22.)

\* \* \*

SIGNS PROTOCOL WITH AUSTRALIA ON  
NEW GUINEA FISHERY DEVELOPMENT

The Japanese and Australian governments signed the protocol of the February conference held in Tokyo regarding the cooperative establishment of a fish processing industry in Papua New Guinea. The proposed fishery promotion is based on the Japan-Australia Agreement concluded in November 1968. Australian interests and three Japanese fishery firms are participating in the project. Gist of the protocol, signed in Tokyo, is:

1. Australia, with Japanese cooperation, will endeavor to establish a skipjack tuna processing plant in Madang.

2. Japan will cooperate in protecting the skipjack tuna resource in Papua New Guinean waters.

3. Japan and Australia will cooperatively investigate the skipjack resource in Papua New Guinean waters.

4. Japanese pole-and-line vessels will be permitted to enter Rabaul, Madang and Cavieng until the end of 1973. Australia will consider extending this period, depending on progress made in establishing a skipjack fishery in Papua New Guinea and extent of Japanese cooperation in conserving the skipjack resource. ('Minato Shimbun,' Aug. 19, 1972.)

\* \* \*

EXPORTS OF GREENLAND TURBOT  
INCREASING

Japanese-Greenland turbot exports to the United States and European countries have been increasing in recent years. In 1972 they are likely to reach 20,000 metric tons.

## Prices More Than Double

Growing demand for turbot as export has more than doubled prices in Japan. At fishing ports in northeastern Japan, the ex-vessel prices in early August 1972 were reported as 1,300-1,500 yen/10 kilograms (US\$393-454 a short ton) compared with 610-658 yen/10 kg (\$184-199 a short ton) a year ago. As a result, some trawlers previously fishing in the North Pacific for Alaska pollock, Pacific ocean perch, sablefish and other bottomfish, are now concentrating on Greenland turbot. ('Minato Shimbun', Aug. 18, 1972.)

\* \* \*

WITHDRAWAL OF SALMON VESSELS  
SUBSIDIZED BY GOVERNMENT

As a result of fleet reduction carried out this year, the Japanese Government decided to subsidize the withdrawal of salmon vessels from the fishery. The reduction of 372 vessels, or more than 10% of the salmon fleet (mother-ship-supported and land-based), was necessitated by the reduced salmon catch quota adopted at the annual Japan-U.S.S.R. fishery negotiation in Moscow.

## Subsidy in One Lump Sum

The subsidy, totaling 1,907 million yen (approx. US\$6.4 million) will be granted to the remaining salmon fishery operators.



## JAPAN (Contd.):

They, in turn, have agreed to pay compensation to the owners of the withdrawn vessels for the loss of their salmon fishing rights. The amount of subsidy is based on the 10-year government loans to be granted the fishery operators who must pay the compensation. At the rate of 5% of the 8.5% annual interest of these loans, the Government will pay the equivalent of the 10 years' interest in one lump sum.

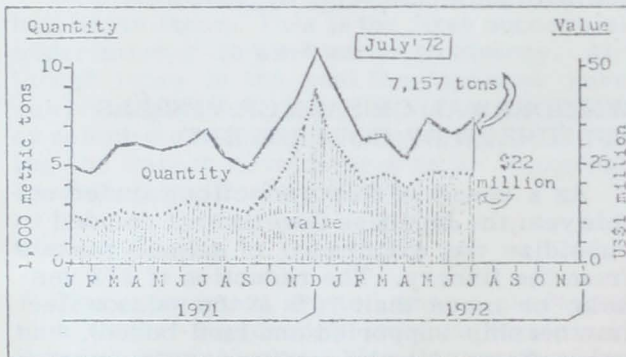
## Herring Fishermen Received More

The vessel owners had sought to receive treatment similar to that accorded the herring fishermen who withdrew from the fishery in 1971 because of the Soviet ban in the Okhotsk Sea. The Government had paid herring fishermen half the value of their fishing rights, 4,190 million yen (\$11.6 million.) ('Suisan Tsushin,' Aug. 3, 1972 and other sources.)

\* \* \*

SHRIMP IMPORTS CONTINUE  
RECORD TREND

In July 1972, the Japanese imported 7,157 metric tons of frozen shrimp valued at \$22,607,000 (roughly \$1.43/lb), well over the July 1971 figure of 7,022 tons worth \$15.5 million.



Japan, frozen shrimp imports, by month, 1971-72.

Japan's January-July 1972 shrimp imports now total 48,055 tons, a 16 percent increase over the same period in 1971. They were valued at \$160,542,000, 66 percent higher than for the first 7 months of 1971.

In July, because of the heavily stockpiled shrimp market, Japanese shrimp importers were forced to lower their wholesale prices in order to move supplies.

\* \* \*

SURINAM-JAPAN FISHERIES  
COMPANY ORGANIZED

The South American Marine Development Company (formed by Japanese shrimp trawler owners) and Surinam interests have established a joint venture. It is a cold storage and shrimp processing plant in Surinam. The new company, Surinam-Japan Fisheries (SJAF), was organized in Paramaribo with a capital of US\$330,000. The Japanese invested 85%, Surinam the remaining 15%. The company will immediately begin construction of a cold storage plant (500-ton storage and 20-ton/day freezing capacity, 10-ton/day ice-making capacity). It is scheduled for completion by summer 1973.

## New Vessel Licenses

Now attention is focused on the number of new vessel licenses the Japanese Fisheries Agency will issue for the shrimp fishery off the Guianas. Seven Japanese firms are operating 70 shrimpers in that region. They are seeking licenses to operate an additional five or more. They have already ordered new shrimp trawlers from a U.S. shipyard. License applications have been received by the Agency for more than 200 vessels. Indications are that it will probably permit only about 70 additional shrimpers to enter this fishery off the Guianas. ('Minato Shim bun,' Sept. 5, and U.S. Embassy, Tokyo translation of 'Suisan Keizai Shim bun,' Aug. 14.)

\* \* \*

BRISTOL BAY TANNER CRAB  
PRODUCTION DOWN

The Japanese 'Keiko Maru' (7,536 gross tons) and 'Koyo Maru' (7,480 gross tons) crab factoryship fleets have been fishing in Bristol Bay since March. They report sharply reduced production of tanner crabs. Their catch to date is at least 30% behind the 1971 figure for the same period. They are not certain whether the lag in landings is due to change in oceanographic conditions or diminishing resources. In recent years catches have been abundant. The king crab catch rate, on the other hand, is better than in 1971. Reduced king crab quotas imposed by Japan-U.S. Crab Agreement make fishing for that species secondary to tanner crabs. ('Suisan Tsushin,' Sept. 2.)

\* \* \*

JAPAN (Contd.):

### FROZEN FOOD INDUSTRY BOOMED IN 1971

In 1971, Japanese production of frozen foods totaled 183,953 metric tons worth US\$143 million--an increase of 30% in quantity and 40% in value over 1970. This was reported by Japan Frozen Food Assoc.

Precooked foods (fried meats, hamburger, gratin) remained the leader. In second place were marine products accounting for 38,630 metric tons, 22% over 1970, and valued at US\$37 million.

	Quantity Metric tons	Value US\$1 million
Precooked foods	101,300	79.0
Marine Products	38,630	37.0
Vegetables	23,237	8.6
Chicken	8,047	10.6
Fruit	6,451	2.3
Meat	3,062	3.3
Other	3,226	1.9
Total	183,953	143.2

Institutional use of frozen foods totaled 120,489 tons (65.5% of market) versus 63,464 tons (34.4%) for family use. ('Suisan Tsushin', Aug. 17.)

NMFS COMMENT: In 1967, the Japanese frozen-food industry produced \$23.8 million worth of foodstuffs. Roughly 79% was used by institutional consumers, 21% by family members.

In March 1972, Suisan Tsushin reported that annual sales of frozen foods by Nippon Reizo, Nihon Suisan, Nichiro Gyogyo, Taiyo Gyogyo and Kyokuyo totaled \$149 million in 1971. This was \$6 million more than amount reported by the Association. These five firms reportedly control 80% of frozen-food market in Japan. The same article projected 1972 earnings of \$196 million.

\* \* \*

### CULTURE FRIGATE MACKEREL

In 1971, young mackerel cultured by fishery scientists survived only ten days after hatching. This year, however, young frigate

mackerel were still alive forty days after hatching and had grown to 12-13 centimeters.

These studies are part of joint research on tuna culture by Kinki and Tokai Universities and Shizuoka Prefectural Experimental Station. It is directed by the Far Seas Fisheries Research Laboratory (JFA).

Along with rearing experiments at Kinki, scientists at Tokai are studying food for postlarval tuna using copepods and seawater-acclimatized chlorella. ('Suisan Keizai', Aug. 4.)

\* \* \*

### FISHERY AGENCY BUDGET NEARS \$300 MILLION

On Aug. 29, 1972, the Japanese Fishery Agency (JFA) released the proposed budget for Fiscal Year 1973 (April 1973-March 1974). The budget totals US\$292 million, up 37.3% over FY-1972 budget.

The proposed budget is about 8% of total \$3,991 million allotted to Ministry of Agriculture and Forestry. ('Suisan Keizai', Aug. 31.)

NMFS COMMENT: The JFA budget has increased substantially during the past few years:

FY 1973 -	US\$292 million	
FY 1972 -	211	"
FY 1971 -	139	"
FY 1970 -	112	"
FY 1969 -	94	"
FY 1968 -	79	"
FY 1967 -	74	"
FY 1966 -	67	"

\* \* \*

### WILL FLY TUNA TO JAPAN

Toshoku Ltd. in Tokyo expects to begin importing fresh or frozen tuna by air from New York for distribution through its Tokyo supermarket chains. Tuna taken near Prince Edward Island off Canada's Atlantic coast will be trucked to New York within 24 hours and flown to Tokyo by Japan Airlines within 14 hours. Toshoku is interested in increasing imports of high-value commercial products from the U.S., Canada, Mexico, and Australia. ('Nihon Keizai Shimbun', Aug. 26.)

\* \* \*

## JAPAN (Contd.):

## NEW POLLOCK FISHING GROUNDS

In July 1972, 6 Japanese "surimi" (minced fish meat) fleets fishing Alaska pollock in the North Pacific found a new pollack fishing area between Anadyr Bay and Cape Navarin off the Soviet Union. This should help reduce fishing pressure on grounds previously exploited. ('Suisan Tsushin', Aug. 28.)

\* \* \*

TRAWLERS GATHER OFF  
NEW ENGLAND

Since June, the 'Nagasaki Maru' of Taiyo Gyogyo, the 'Akebono Maru No. 71' of Nichiro Gyogyo, and the 'Shirane Maru' of Nihon Suisan have been fishing squid ('matsu-ika') off New York. Nihon Suisan planned to send 5 more trawlers, all 2,500 GRT, in mid-September to fish mature herring.

The Japanese ICNAF quota for mature herring is 2,450 tons (1,200 tons off Georges Bank, 250 tons in Gulf of Maine, and 1,000 tons off Nova Scotia). The season for butterfish ("shizu" or *Poronotus triacanthus*) begins in mid-October. Squid fishing ("yari-ika") will resume in November. ('Minato Shimbun', Sept. 2.)



## SOUTH KOREA

S. KOREA TO DISPOSE OF ITS  
FISHERY CORPORATION

South Korea plans to transfer to private ownership the Korean Marine Industrial Development Corporation (KMIDC), a 100% government-owned fishing company. KMIDC is capitalized at 10 billion won (approx. US \$25.3 million). It owns a fleet of 90 vessels (including 75 tuna longliners and a 10,000-gross-ton salmon vessel). Because of management problems, it long has been operating at a deficit. The government is asking 15 billion won (approx. \$38 million).

In early August, three firms were seeking to buy it. Hanjim Group (non-fishery firm), Jedong Industry, and Wongyang Fishing Company. KMIDC also is planning to enter

into a joint skipjack-fishing venture with a U.S. tuna packer. ('Katsua-maguro Tsushin', Aug. 8.)

\* \* \*

KOREA-INDIA IN JOINT  
FISHING VENTURE

In response to the investment proposal made by the Indian Government, The Republic of Korea (ROK) reportedly is planning a joint fishing venture. Details are not yet known but indications are that shrimp and tuna are included in the plan. Based on a previous feasibility study, the ROK Government is hopeful that fishery resources of India will expand Korean high-seas fishing operations. Further discussions of the proposed venture are scheduled. ('Suisan Keizai Shimbun', Sept. 7.)

\* \* \*

## EXPORTS ON TARGET

At end of July, Korean fishery exports totaled \$79.4 million, 59.7% of the \$133 million target for this year. ('O-Op Shinbo', Aug. 14.)

Item	Value US\$1,000
Live fish	13,977
Frozen fish	5,420
Squid	6,291
Salted fish	2,399
Canned	3,174
Agar-agar	1,463
Seaweed (all types)	1,334
Laver	800
Tuna	36,935
Others	2,555
Fishing net	5,113
Total	79,461

\* \* \*

## WITHDRAW FROM POLLOCK FISHERY

Twenty-one trawlers fishing Alaska pollock in the North Pacific have moved to the Atlantic Ocean. More trawlers are expected to leave soon. The reason for this move is attributed to the low price for pollock. In July, Korean market price for Alaska pollock was US\$0.04/lb., 30% lower than the price in June. ('O-Op Shinbo', Aug. 14.)

# LATIN AMERICA

## MEXICO

### SONORA FISHERMEN REAP RECORD CATCHES

In spite of a strike that idled many Sonoran fishing boats, the production of shrimp, sardines and fishmeal from this Mexican state reached new highs by the end of the first half of the year.

The Sonoran shrimp catch for the period September 1971-June 1972 (shrimping ends in July) amounted to 5,141 tons compared with the 1970-71 total of 4,564 tons.

This year is also going to be a good one for Sonora's sardine fishermen. By mid-year they had already caught 38,431 tons of sardines (compared with a total of 25,436 tons in 1970-1971).

Fishmeal production has also registered a sizable gain thus far, with 8,334 tons being produced through June (7,233 tons were produced last year).

\* \* \*

### INDUSTRIAL PARK FOR FISHING INDUSTRIES

Guaymas' proposed industrial park for fishing industries received a big financial boost when the Nacional Financiera agreed to provide a US\$4 million credit for the installation of facilities.

The new park will be 100 hectares of land located 4 miles from the city of Guaymas. All existing fishing industries (shrimp, sardine, fishmeal and boat construction) will move to the new site when completed.

The park will help develop the fish-processing industry by eliminating the need to transport fish elsewhere. It is believed the project will require 2 more years before completion.



## OAS FISHERIES EXPERTS MEET IN LIMA

The first meeting of the OAS Ad Hoc Group of Governmental Experts on Fisheries was held in Lima, Peru, in September.

It provided an opportunity for representatives of 19 countries to discuss common problems, exchange ideas, and recommend possible solutions. The problem areas were identified as: (a) training, (b) applied research, (c) financing, and (d) infrastructure.

### Cooperative Plans

The consensus was that, because of widely differing fishery conditions, solutions to problems would necessarily differ among countries. Among the cooperative steps decided upon was consideration of establishing an Inter-American Program of Fishery Development, the study of training matters, identification and evaluation of Latin American institutions able to offer fisheries training, and encouraging fishery research under OAS technical assistance program.

Other recommendations include upgrading fisheries in government organizations, asking for higher financial priorities, improving exchange of fisheries information, and charging Inter-American Center with study of fishery export problems. They suggested an annual meeting of Government Fisheries Experts and eventually an Inter-American Advisory Committee for Fisheries Resource Development.

### Support Existing Institutions

Rather than set up any new institution, center, or other agency involving additional expense and bureaucracy, it was decided emphasis should be placed on strengthening and supporting existing institutions and activities.



## SOUTH PACIFIC

### AUSTRALIA

#### FLY FISH TO JAPAN IN NEW POLYSTYRENE BOXES

The Australian export firm Tober of Dover in southern Tasmania has begun regular shipments of live abalone to Japan. The abalone is packed in lightweight polystyrene boxes designed to hold about 18 kilograms; 300 kilograms are normally sent in each shipment. The abalone sells for about US\$2.97 per kilogram, which covers the cost of flying the abalone from Tasmania to Japan.

#### The Boxes

The polystyrene air-foam boxes are lightweight, do not bend or collapse in heavy rain or humid conditions, and have thick foam walls and a double-lip seal that provide good insulation and retain temperature. The boxes were developed by Hanimex Pty Ltd at their Brookvale plant in New South Wales.

The firm also has sent a trial shipment of live lobsters packed in wood shavings. ('Yomiuri', July 8.)

Australia also airships fresh, chilled, and frozen tuna (bluefin) to Japan.

### NEW ZEALAND

#### FISHING CADET COURSE INITIATED

Otago Polytechnic School of Nautical Studies has an 18 months training course designed to benefit the fishing industry. Cadets are given rigorous sea training, actually working on fishing vessels. They are also taught basic fundamentals in classroom studies of navigation, gear, engineering and practical fishing. Sponsorship of cadets comes from members of the fishing industry who are interested in developing a new source of qualified fishing expertise.

The first class has begun with 7 students, one a girl who assists her lobster fisherman father.

\*\*\*

#### JAPANESE OYSTER APPEARS IN NEW ZEALAND

Until now the only species of 'Crassostrea' known to New Zealand was the northern rock oyster. It occurs in the intertidal areas of Northland, attached to rock and other hard surfaces. However, in January 1971, a few oysters were noticed growing on asbestos battens in a rock oyster farm at Mahurangi. They not only looked different but also were clearly larger than the other oysters. Because the battens were sections of spat collectors put out by the Marine Department and supplied to oyster farmers, most oysters were approximately the same age, about 1 year. The larger oysters had several features of shell and soft anatomy characteristic of the Pacific or Japanese oyster, 'Crassostrea gigas.'

These larger oysters are widely distributed throughout Japan and Korea. They have been introduced to many parts of the world: both North American coasts, Australia, China, Manchukuo, Hawaii, and Okinawa.

#### Surprise Appearance in New Zealand

The appearance of Japanese oysters in New Zealand waters raises the important question of their origin. The nearest well-established population is in Australia, 1200 miles (1900 km) across the Tasman Sea. Considering this distance and the normal larval life of 2-3 weeks, the few specimens found off Northland are unlikely to be the result of larval migration. It is much more likely the Mahurangi specimens originated by accidental, passive dispersal.

#### Possible Explanations

Japanese oysters on ships' bottoms may have spawned in Northland waters at the higher summer temperatures; larvae in ballast water may have been discharged by ships off Northland; adult oysters discarded from visiting ships may have survived and spawned. *Crassostrea gigas* seems to have been distributed to several Northland oyster farms along with rock oyster seed from the same Marine Department batch. Scientists will be watching with interest the possible reproduction by this existing small stock.