INTERNATIONAL

JOINT N. ATLANTIC HERRING STUDY CONDUCTED BY CANADA, USSR, & U.S.

Research vessels from Canada, USSR, and U.S. began a cooperative study in September which fishery scientists hope will lead to accurate spawning estimates for herring of Georges Bank, off U.S. North Atlantic coast. Such estimates are necessary if the resource, now fished heavily by several nations, is to be managed wisely.

The international study was undertaken by BCF; the St. Andrews, New Brunswick, laboratory of Canada's Fishery Research Board; and Kaliningrad laboratory. It is sponsored by International Commission for Northwest Atlantic Fisheries (ICNAF), composed of 15 nations that traditionally fish Northwest Atlantic.

The study is part of 3-month international effort, which also includes annual survey of groundfish of Continental Shelf from Cape Hatteras, N.C., to Gulf of St. Lawrence.

The 'Kvant', a Soviet vessel assigned to groundfish survey, visited Woods Hole, Mass. Sept. 20-23.

Georges Bank

Georges Bank, about 150 miles due east of Cape Cod, Mass., is one of world's most productive fishing banks. It has supported for many years large and valuable U.S. fisheries for haddock, cod, redfish, flounder, and hake.

The large herring population was unfished until 1961. Then, it was fished first by the Soviet fleet, and later large German and Polish fleets. More recently, U.S. fishermen have been fishing for herring to export to Europe.

In 1968, the total catch reached high of 408,000 metric tons; in 1969, it dropped to 307,000 metric tons despite greatly increased fishing.

Based on the declining annual catch, BCF biologists have estimated that the herring population now has been reduced to less than 25% its original size.

Data Needed

Georges Bank herring normally are caught at various depths. Nevertheless, they spawn on the bottom during fall months. They attach their eggs to stones and gravel. Their general spawning area is known, but scientists lack data on spawn distribution and density of egg masses. So no reliable estimate of the amount of spawn produced each year could be made by collections of surface vessels with conventional gear. The joint study was deemed necessary.

The Operation

BCF's research vessel 'Albatross IV' sailed from home port of Woods Hole, Mass., September 23. A few days before, the Soviet 'Alferas' searched for concentrations of eggs and directed Albatross to location.

Submarine dives, using the 2-man Canadian submersible 'Pisces I' will observe distribution, characteristics of egg masses, and abundance of spawn, while photographs and samples are taken.

Samples of spawn also will be taken by scientific dredges from Albatross, and results will be compared with information obtained by direct observation from the submersible.

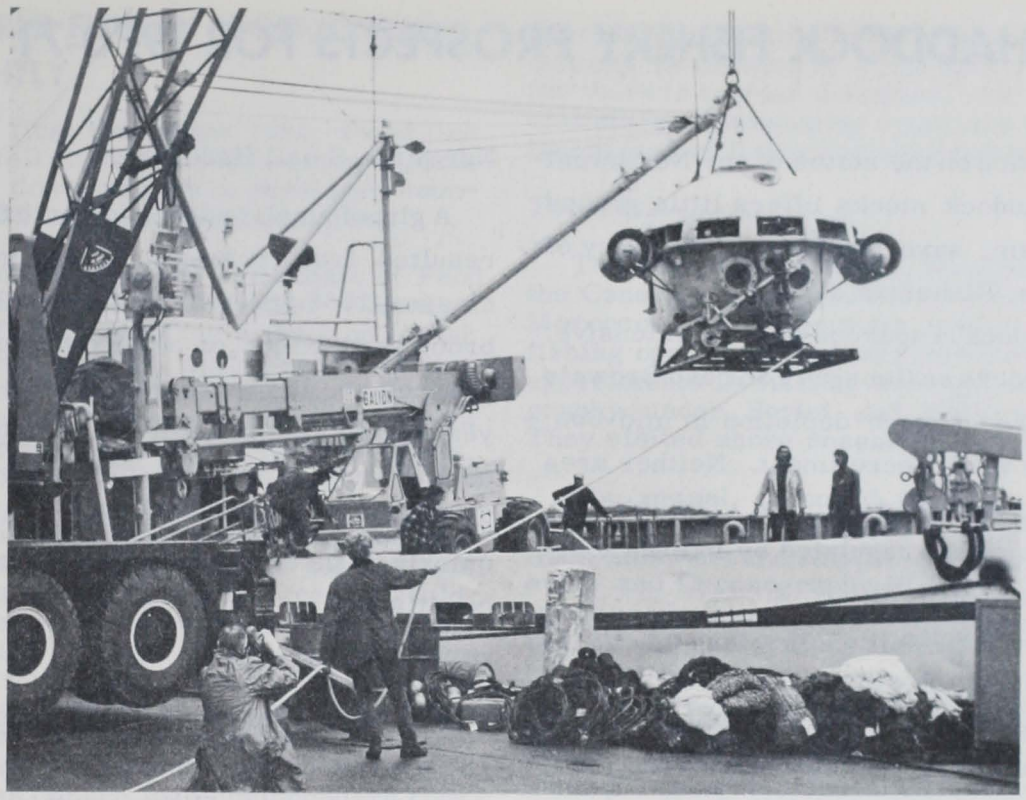

Fig. 1 - Loading Canadian submarine 'Pisces' aboard Albatross IV.

Fig. 2 - USSR research vessel M/V Kvant arriving at Woods Hole. (Photos: R. K. Brigham)

HADDOCK FISHERY PROSPECTS FOR 1970-71

Information on the status of the Northwest Atlantic haddock stocks offers little ground for optimism, says the British Ministry of Agriculture, Fisheries & Food.

The haddock resources are not extensive. The main stocks on Georges Bank and Brown's Bank suffered severe depletion in mid-60s, followed by weak recruitment. Neither area can now support good catches. The international catch is to be regulated by international agreement in 1970-72.

In Northeast Arctic

In Northeast Arctic in 1969, the British catch fell despite increase in fishing; most of catch was made off Norway early in the year. This reflects anticipated fall in abundance evident for all except "jumbo" haddock, the survivors from good year-classes of early sixties.

There are no prospects of real improvement until year-class spawned in 1969 (first evidence indicates it is very good) reaches marketable size in 1972-73.

Meanwhile, haddock landings will remain very patchy. There will be an occasional good catch when stocks are discovered. Catch rates of haddock off Iceland have fallen steadily over the past five years, due mainly to a succession of small year-classes. Returns for last-quarter 1969 indicate improvement in abundance of small haddock.

Faroese Haddock

The improvement in abundance of Faroese haddock in last-quarter 1969 should mean better catches of smaller fish in 1970. Medium fish are likely to be less abundant, and large haddock somewhat above average.

North Sea Small Haddock

A glut of small haddock in North Sea in 1969 resulted from presence of two good year-classes, 1966 and 1967. In general, the 1967 brood is stronger, on a par with record 1962 year-class. In some areas, however, the 1966 year-class also is contributing much. Haddock are now so plentiful that their growth rate has slowed; they are entering catches less quickly than they would under more normal conditions.

Big Fleets in Action

The fleets began tapping this stock in 1968--very heavily by Danish cutters for industrial purposes. Fishing on this large scale has big effect on stocks, but the real threat comes from large fleets that do not normally fish in North Sea. They could easily scoop the pool.

Forecast Catches

There are masses of small haddock around legal minimum size (11 inches) still coming into fisheries. Catches almost everywhere should increase to a maximum in 1971, then start to decline. There will be a greater proportion of medium haddock in 1970 catches, and large haddock from 1971 to 1973.

But this rosy outlook could be reversed if heavy fishing materializes by countries not normally fishing the North Sea. If so, catch rates could be fairly high in 1970--but could decline sharply in 1971. ("Fishing Prospects, 1970-71," report of Fisheries Laboratory, Lowestoft and Suffolk, Ministry of Agriculture, Fisheries and Food.)

1969 WORLD FISHERY PRODUCTION FELL SLIGHTLY

For the first time since 1950, world fish production fell slightly in 1969, reports FAO. Output was down only 1% in developed countries--but 5% in developing countries.

FAO's annual review, "The State of Food and Agriculture, 1970," states: "Smaller landings of fish used for reduction to fish meal and oil were the main reason for this interruption of the rapid long term growth which has raised fish supplies to three times the pre-war and immediate post-war levels.

"Last year, price increases for fish meal and oil blunted to some extent the economic impact on the industry of short supplies. A continuation of recent price trends would, however, have serious market implications for industries in those countries where reduction products are in price competition with other components of animal feed rations or of food products. Substitution was already a significant phenomenon in 1969 in the United States, where feed compounders took advantage of low soybean meal prices and substantially reduced their purchases of fish meal."

Brighter Outlook for Food Fish

Some food fisheries also had poor catches, but these were compensated for largely by improvements in others. FAO believes a brighter outlook is justified for food-fish production. Predictions were for record supplies of north-east Pacific salmon for 1970 and accelerated development of fisheries for domestic consumption in developing countries.

FAO & USSR CONDUCT FISHERY TOUR OFF WEST AFRICA

Twenty fishery scientists from African countries participated in a study tour, July 27-August 29, along the northwest African coast aboard the Soviet fishery research vessel 'Akademik Knipovich' of Sebastopol. The vessel is a 3,730-ton stern-trawler.

The "Sea-Going Group Fellowship Tour," fourth of its kind, was arranged by FAO in cooperation with the USSR under the United Nations Development Program. Purpose of the tours is to train scientists and other specialists from developing countries in modern techniques of fishery science and technology.

The Tour

The tour began in Dakar, Senegal, sailed to the Canary Islands, and ended in Casablanca, Morocco. The scientists watched normal fishing operations and carried out studies and experiments in fishery biology and oceanography under Soviet and FAO instructors. They visited shore research institutions.

The vessel, launched in 1964, is named after a Soviet academician. It belongs to the All-Union Research Institute of Marine Fisheries and Oceanography (VNIRO) in Moscow and is used normally for Antarctic fishery research and exploratory fishing.

Tour director was Dr. A. Bogdanov, USSR, director of VNIRO, and co-director was Dr. Erdogan F. Akyuz (Turkey) of FAO's Department of Fisheries. Previous tours sailed the Black Sea, central Mediterranean, and Caribbean.

FROZEN-FISH PRODUCTION GUIDELINES PUBLISHED

A valuable guide for persons who produce and sell quick-frozen fish has been prepared by specialists on fish and refrigeration from the International Institute of Refrigeration (I.I.R.) and OECD.

The booklet meets a growing need. Production of quick-frozen fish is increasing worldwide. The preparation and commercialization of quick-frozen fish demands precautions to maintain quality.

This booklet is available for $1.80 in combined English-French version from:

OECD
2, rue Andre-Pascal
75 - Paris, France

MEETINGS

INTEROCEAN '70 IN DUSSELDORF, NOV. 10-15

Interocean '70, an international congress with an exhibition of marine research and exploitation, will be held in Dusseldorf, Germany, Nov. 10-15, 1970.

The following subjects will be stressed:

1. Use of oceans' food reserves.
2. Use of seas' mineral resources on and under sea bed.
3. Keeping seas free of pollution.
4. Application of ocean research to shipbuilding and shipping.
5. Protection of coast and security of coastal waters.

For more information:

Dusseldorfer Messegesellschaft mbH
Att.: Eulenberg
NOWEA
4 Dusseldorf 10 - Postfach 10203
Germany

FAO MARINE POLLUTION CONFERENCE

The FAO Technical Conference on Marin Pollution and its Effects on Living Resource and Fishing will be held in Rome, Italy, De 9-18, 1970.

INDIAN OCEAN SYMPOSIUM

A symposium on the "Indian Ocean a Adjacent Seas--Their Origin, Science a Resources" will be held at Cochin, India, Ja 12-18, 1971. It is sponsored by the Mari Biological Association of India.

For information, contact:

Dr. E. G. Silas
Jyothi Buildings
Gopalaprabhu Cross Road
Cochin - 11, INDIA

U.S.

INSTITUTE OF OCEAN LAW, MONTAUK, NEW YORK, NOV. 16-19

The New York Ocean Science Laboratory will sponsor an Institute Of Ocean Law at Gurney's Inn, Montauk, New York, Nov. 16-19.

The laboratory, at Montauk, N.Y., is operated by Affiliated Colleges & Universities, Inc., a consortium of 8 metropolitan colleges and universities.

The laboratory grew out of a 1966 meeting of scientists at Gurney's Inn "to discuss ways and means to combat the problems of pollution and erosion affecting the Long Island area."

The Topics

Topics to be covered include: coastal zo ecological problems; organizing to deal wi coastal zone jurisdictional conflicts and re sponsibilities; legal aspects of oil transpo and storage; local fishery problems toda the need for a New York law of acquacultur legal considerations of dredging and land fi operations; special problems of waste fro vessels, garbage and solid waste disposal; a thermal and radioactive pollution effects fro atomic and conventional generating station

For complete details, write: Dr. John C Baiardi, Director, NYOSL, Box 867, Montauk N.Y. 11954.

CANADA

NEW 'HALIFAX PROCESS' PROVIDES EXCELLENT FPC DINNER

On July 30, Nova Scotian and other dignitaries from as far away as Japan ate world's first fish protein concentrate dinner. (They included Premier G. I. Smith, the main speaker.) Host was Cardinal Proteins Ltd., which completes C$5 million FPC plant at Canso, Nova Scotia, in September. It was scheduled to process 200 tons daily of fresh fish, including abundant but not now marketable species. It is expected to employ 60-70 workers.

The dinner was excellent. It was impossible to detect the FPC by taste or odor.

'Halifax Process'

Halifax process was developed by Canadian Federal Government's Fisheries Research Board scientists. One who helped refine the process was a former BCF scientist, Dr. Ernst Pariser, now a Cardinal director and on M.I.T. staff.

The Canadian Food and Drug Directorate is in the process of approving FPC sale within Canada. No Canadian objections are anticipated. (U.S. Consul, Halifax, Aug. 10.)

SOVIET PORT PRIVILEGES IN VANCOUVER WILL BE REASSESSED

The Soviet Government has requested a meeting on the question of allowing its fishing supply ships to stop in Vancouver. The practice was banned recently by an amendment to Canada's Coastal Fisheries Protection Act.

Canada's Minister of Fisheries and Forestry, Jack Davis, reportedly said this Soviet need gives Canada a "handy stick" in getting some agreement with the Soviets on where and when all fishing on the Pacific coast should be allowed.

Davis' Position

Replying to an open letter from the St. John's Port Association, Davis has indicated there is no thought now of closing east coast ports to foreign fishing and supply vessels. This course has long been recommended by the Fisheries Council of Canada. Davis said, also, that the situation will be kept under review and the policy reassessed from time to time in light of objective conditions. (Fisheries Council of Canada, Aug.)

* * *

ONTARIO CONSIDERS INTRODUCING JAPANESE SALMON INTO GREAT LAKES

The Province of Ontario is considering the introduction of two species of Japanese salmon, O. masou and O. rhodurus, into the Great Lakes. Experimental lots are being subjected to physiological tests. A few salmon have been planted in an isolated research area.

FRANCE MAY BE 1970's LARGEST FISHING VESSEL BUILDER

As 1969 ended, France became the world's top builder of fishing vessels in aggregate tonnage; she eclipsed Poland and East Germany.

In 4th-quarter 1969, France had 49 steel vessels (136,656 tons) under construction, and 72 more (92,898 tons) on order. Poland had 19 vessels under construction (101,039 tons), and 15 (65,949 tons) on order; East Germany was building 37 vessels (67,676 tons). This was reported in Lloyds Register Shipbuilding Returns.

1969 Construction

In 1969, France completed 68 fishing vessels: 9 seiners, 58 shrimp trawlers, and one training ship--a total of 11,791 tons.

Launched last year were 1 trawler, 1 seiner, 5 shrimpers, 1 research vessel, and 2 transport ships, and work was started on 1 transport, 2 trawlers, 2 seiners, and 24 shrimp vessels.

Aimed At Export

France is biggest fishing member of Common Market. Despite demands of her own large and diverse fleet, most recent building has been aimed at export. Of 1968 completions, more than two-thirds were for foreign owners.

Builds Smaller Vessels

Her nearest rivals, Poland and East Germany, concentrate on series-built trawlers and huge floating factories. France's efforts center on smaller vessels: mainly shrimp trawlers for Kuwait, Cuba, Greece, Senegal, the Ivory Coast, and the Cameroons. All 62 fishing vessels exported last year were under 350 tons, and 58 were under 150 tons.

Stern Trawlers In 1960s

During 1960s, France developed stern-trawler types--from 500 to 2,400 GRT--for French owners. These were designed for middle- and distant-water fishing in Atlantic, North Sea, and Arctic. They use both demersal and pelagic trawls.

Tropical Tuna Fisheries

The other main section of fishing industry is tropical tuna. After its start on U.S. west coast, French owners and builders have helped to pioneer the modern tuna purse seiner.

Versatile Builders for Export

It is for export that French shipbuilders have had to be most versatile. Nearly all orders have been for vessels entirely different from traditional French designs. Several years ago, a South Korean contract included 61 longliners and stern and side trawlers built to owner's requirements. These vessels differ from 8,425-GRT, French-built factory trawlers for Soviet fleet (still biggest fishing vessels in world).

A 36-meter, stern-trawler type designed for French owners has been sold successfully in Ireland and Mauretania.

Standard & Tailor-Made

For the future, French builders are ready to market standard fishing-vessel types, especially for "mass requirements" of developing countries. But they will remain open to tenders for tailor-made vessels. ('Fishing News International', July.)

USSR

DEEP-WATER TRAWL DEVELOPED

A trawl to catch halibut, grenadier, and poutassou (an Antarctic cod) at 2,000 meters has been designed by the Soviet Polar Fisheries Research Institute (PINRO). The trawl will be used by vessels in "little-explored areas of Atlantic, and in Antarctica." (TASS, March 10.)

(U.S. scientists from Institute of Marine Sciences, Miami University, aboard 'Elliot Pillsbury' in Puerto Rico Trench, caught a fish, "Bassogicas," at nearly 8,000 meters, a record. 'Mainichi,' June 18.)

Deep-Water Trawl Research

Soviet deep-water trawl research goes back to 1961. Intermittently, the Soviets report "successes in mastering the staggering technical problems" of deep-water trawling. Recent Soviet concern about Continental Shelf fishery resources induced them to expand deep-water fishery research. They are exploring availability of commercially exploitable species, and increasing the testing of reliable deep-water gear.

Murmansk Fleet's Trawls

In Feb. 1969, the Northern Fisheries Administration (SEVRYBA) ordered all factory stern trawlers of Murmansk fleet equipped by year's end with deep-water trawls (with special otter boards) to fish at 1,300 meters.

Kaliningrad Fleet

The Atlantic Fisheries Research Institute (ATLANTNIRO) is working on deep-water gear. The Kaliningrad fleet of Western Fisheries Administration is being equipped with deep-water trawls.

In late 1968, the Soviets, Poles, and East Germans began joint research of deep-water fishing gear.

In May 1970, the Soviet Western Fisheries Administration reported its stern factory trawler 'Slavgorod' had fished at 2,000 meters off Canada's Labrador Peninsula.

Soviet Plans

The Soviets either plan or are building a class of stern freezer trawlers especially equipped for deep-water fishing.

The Soviet Deputy Minister for Shipbuilding wrote in Dec. 1969: ". . .many coastal states will extend their territorial zones considerably. . .the need to develop means to bring marine animals from greater depth than before has arisen."

In Mar. 1970, an All-Union Conference on Deep-Water Fishing at Kaliningrad was attended by representatives of all 5 Main Fishery Administrations, the Ministry of Fisheries, and scientific research institutes. It indicated Soviet concern in this research. A large part of the enormous investments in the Soviet fishing fleet in the future depends on success or failure of this research. (BCF Office of Foreign Fisheries, Sept. 1970.)

NORWAY

FISHERMEN HAVE GOOD FIRST HALF

The Norwegian catch of most fish was considerably greater by July 1, 1970, than during 1969 period. Cod catch rose substantially. Haddock fishery in North Norway was less encouraging because catches in Finnmark were only 4,300 metric tons, compared to 13,400 tons in 1969 period.

Fillet plants received a record quantity of cod, 65,086 tons, against 47,749 tons last year (preliminary figures). Less cod went into drying because marketing outlook is poor until Nigeria returns to market.

Herring & Industrial Fishery Better

The herring and industrial fishery (for fish meal and oil) fared much better than expected. This was due to record catch of capelin, improved North Sea herring fishing, and good trawl fishing for Norway pout and other industrial fish. These fisheries rose 43% above 1969.

The quantity used for fish meal was about 1,100,000 tons, compared to 742,000 tons last year. The increase in herring was due to better fishing off Shetland and Orkney Islands. Capelin reached a winter record of about 998,000 tons (489,000 tons a year earlier). Landings of Norway pout and other industrial fish were 57,000 tons against 35,000 last year. Conservation controls on mackerel fishery prohibited large catches for industrial purposes before July 31. The brisling fishery was relatively weak: only 3,638 tons went into canning; in 1969, 5,400 tons.

NORWAY (Contd.):

Favorable Export Conditions

Export conditions were reported favorable; prices for most products were higher. Herring and herring products are rather scarce. Exports of herring meal and oil are below last year's. Canned goods shipped rose 13.5%. Frozen fillets were in a sellers market: exports were up 16%, exceeding last year's record. A shortage of haddock fillets resulted in greater exports of saithe fillets to U.S. Export of fresh and frozen herring was also large because of improved North Sea fishing. ('Fiskaren')

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POOR HERRING CATCHES PREDICTED IN 5 YEARS

The herring-larvae census of March-April 1970 indicates very weak recruitment of herring larvae "Zero Group". It was lowest ever registered. The weak recruitment also applies to other year-groups of herring.

According to Norwegian researcher Ole Johan Østvedt, the consequence of weak zero group this year will not show up in herring fishery for 5 years.

Sharp Decline Unexplained

The data were scheduled to be released during late September. Østvedt emphasized that it is not known why number of herring larvae decreased so sharply. The number depends on feeding conditions in the sea, the spawning period, and temperature conditions. (Reg. Fish Att., U.S. Embassy, Copenhagen, Sept. 15.)

* * *

CONSIDERS EXTENDING FISHING LIMIT

Norwegian Fisheries Director Klaus Sunnanå recently proposed that the fishing limit be extended to include entire Continental Shelf. Fisheries Minister Einar Moxness called proposal "captivating". Despite consideration for Norway's extended coastline, Moxness questioned whether idea was realistic.

Moxness said extension would be necessary if international agreements and effective regulation fail. (Reg. Fish Att., U.S. Embassy, Copenhagen, Sept. 1.)

ICELAND

FIRM EXPANDS IN U.S.

The Federation of Iceland Co-operative Societies (SAMBAND) in Reykjavik is active in Iceland and abroad. After World War II, SAMBAND had several freezing plants. In 1951, a sales subsidiary, Iceland Products, Inc., was formed and an office opened in New York City. Fish sales increased considerably. SAMBAND's managers soon realized that Iceland Products would have to enter the processing field to establish itself under rapidly changing market conditions.

Steelton, Pa., Processing Plant

The company bought a small processing plant in Steelton, Pennsylvania, in 1958. It offered a variety of fish sticks and portions, along with the other Icelandic fish products. As sales increased, a processing plant was built in Camp Hill, Pennsylvania.

During first year in old Steelton plant, about 15 workers turned out 402,000 lbs. of fish sticks and portions. In 1965, Steelton's last year, production had risen to 4,912,000 lbs. In 1968, just over 11 million pounds were produced and sold. In 1969, production reached 19,187,000 lbs.

Camp Hill Plant

The Camp Hill plant uses high-speed cutting saws, slicers, breading and batter machines, conveyor fryers, blast freezer, carton sealers, machinery to close corrugated cartons, and hundreds of feet of conveyors. Over half the output is sold in precooked form, to be heated by users.

The plant operates under voluntary continuous inspection of U.S. Department of the Interior. All products bear U.S. Grade A quality shield. Strict standards apply to breading percentage, absence of defects, uniformity, etc. Most products are packed for institutional trade.

In 1969, the company sales to 43 states in U.S., Puerto Rico, and Canada topped $10 million.

The management team at Iceland Products is headed by 4 Icelanders, and several Americans. To follow up recent market gains and to explore fresh opportunities, a new marketing company has been founded. Called Iceland Products Marketing, its office is in Harrisburg, Pa. ('Atlantica Iceland Review')

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ICELAND (Contd.):

ECONOMY STRONG,
INDUSTRY BUYS TRAWLERS

With general economic prosperity and a favorable trade balance, Iceland's fishing industry is considering the purchase of new trawlers. The magic number seems to be two per firm.

Ogvrvik has purchased two stern trawlers of 1,050 GRT from Poland at about US$1.7 million each; UTHAF has contracted, tentatively, for two slightly used stern trawlers from Spain at US$7 million each. And, for some time, the Reykjavik municipal trawler firm has been in the market for two stern trawlers. Other fishing firms now are clamoring to get state and municipal loans necessary to buy new trawlers. (U.S. Embassy, Reykjavik.)

DENMARK

FIRM TO SELL NEW FISHING
VESSELS TO USSR

According to the director of Burmeister and Wain, Copenhagen, the shipyard is negotiating with the Soviet Fisheries Ministry for continued delivery of freezer fishing vessels. The vessels under consideration will be equipped with fillet plants to meet Soviet popular demand for improved consumer products.

The vessels will be more mechanized than the 17 delivered under the expiring contract.

Negotiations cannot be settled until October, when the Soviets have established the framework of their new 5-year plan.

The Danish Shipyard Assoc. invited a Soviet delegation to visit during September.

Soviet Shipbuilding

The Soviet Union has developed a large shipbuilding industry of its own and, recently, sold vessels to Sweden and Norway. But she still appears to need specially constructed vessels. During the last 6 years, Burmeister and Wain delivered vessels worth US$70.5 million. (U.S. Embassy, Copenhagen, Aug. 13.)

GREENLAND

COD FISHERY FAILS

The Greenland cod-fishery situation is catastrophic, reports the Royal Greenland Trade Department (RGTD). The primary cause is a climatic change. This has brought large ice floes along the coast, which block ports in southwest Greenland and trap boats in port. Foreign fishermen on the banks outside West Greenland have had to abandon these grounds. Greenlandic vessels are unsuited to fishing at sea.

First-Half 1970 Landings Drop

RGTD's director said cod landings amounted to only 2,828 metric tons during the first six months of 1970; these compared to 4,342 tons in the same period last year. It indicates a further substantial drop in the fishery because the 1969 fishery was only about half the 1968 amount. The 1970 catch was attributed largely to the new Greenland trawler. Catches by Greenland inshore fishermen were very small this year.

Shrimping Compensates Somewhat

To compensate somewhat for the failing cod fishery, four Danish cutters have been fishing shrimp at Godthaab, where they have discovered new shrimp grounds. The cutters are now landing large catches in Godthaab, at times more than the factory can handle readily. (U.S. Embassy, Copenhagen, Aug. 4.)

A Japanese expert working for FAO shows Indian fisherman how to measure opening of shrimp trawl. (FAO: S. Bunnag)

ASIA

ASIAN TUNA PRODUCERS DISCUSS AMERICAN SAMOA PRICES

Japanese tuna industry members and representatives of Taiwanese and S. Korean tuna fishing industry met in Tokyo on July 16 to discuss prices of tuna landed at American Samoa. They also discussed need for cooperation among Asian tuna suppliers in negotiating monthly tuna prices of tuna landed at American Samoa.

Rotate in Handling Negotiations

The participants agreed to have S. Korea, Taiwan, and Japan, in that order, alternate every 3 months in conducting price negotiations. S. Korea would handle these for Aug., Sept., and Oct.

Vessels of the three countries based in American Samoa number: 50 Taiwanese, 20 S. Korean, and 2 Japanese longliners. ('Katsuomaguro Tsushin', July 20, 21.)

TAIWANESE-INDONESIAN TUNA AND SHRIMP FISHING VENTURE PLANNED

The Taiwanese Tai-shun Enterprises and the Indonesian Hai-shun Co. plan a joint tuna and shrimp fishing venture based in Indonesia. The two firms acquired fishing rights in the Banda Sea from Indonesia in 1968. They will set up a joint company with a capital equivalent of US$55,600. Taiwanese will control 51% and Indonesians 49% of shares. The company was scheduled to begin fishing around mid-August 1970 with twenty 40-50 ton tuna vessels, and later 120 vessels.

Experimental Fishing Scheduled

After two years of experimental fishing, full-scale operations will get under way. Two 500-ton refrigerated carriers, to be purchased in Japan, will be used to freeze and transport the catches. Initially, the vessels will operate out of Ambon, pay a fishing fee of $1,750 annually per vessel of less than 99 gross tons. Most of the catch will be exported to Japan. ('Suisancho Nippo', July 20.)

Fish-pond farming in Hong Kong (FAO: J. Olsen)

S. KOREA & TAIWAN ORDER TRAWLERS FROM JAPAN

Two 3,000-gross-ton trawlers with freezing facilities will be built for S. Korea in 1970 at Japan's Shimonoseki and Nagasaki shipyards. A Japanese trading firm placed the order for a S. Korean fishing company. The trawlers will be the largest ever acquired by S. Korea.

Taiwan Orders Trawlers

Another shipbuilder has contracts to export two 350-ton trawlers each to 2 Taiwanese fishing companies. This will be the first private export of Japanese fishing vessels to Taiwan. The cost will be about US$833,000 per vessel ($3.3 million total).

Shipbuilder Applies for Loan

The shipbuilder has applied for loan with Japan Export and Import Bank through Ministry of International Trade and Industry (MITI). Terms are 30% down and balance in 6 monthly installments over 5 years.

The first trawler is scheduled to be delivered in 1970; the other 3 by Mar. 1971.

The entire catch of shrimp, sea breams, etc., by the 4 vessels will be imported into Japan by Daien Reizo. ('Minato Shimbun,' June 13.)

JAPAN

KRILL RESOURCE WILL BE TAPPED

Japanese experts plan in 1971 to exploit untapped resources of krill. They believe this will help solve the worldwide shortage of animal protein.

Krill is a species of small shrimp. It grows to about 5 centimeters in length 2 years after spawning. Its known habitat is the Antarctic Ocean, but it also is found in the Japan Sea and in the northwestern Pacific.

Development of krill resources long has been called for. For years, the Soviet Union has conducted research on exploitation of the resources but no effective method has been found.

Agency Plans

Under the Fisheries Agency's plan, a 100-gross-ton vessel will be chartered in 1971 to catch krill. The ship will operate from April to September off northern Japan and north of eastern Hokkaido. The catch target is about 1,000 tons in 19 voyages.

In the coming experiment, a fish-pump also will be used to ensure effective operations. Intensive studies on catching krill will be made during the next 2 years in the seas near Japan. Also, the use of smaller shrimp as a new source of animal protein will be studied.

Estimate of Resource

The agency plans to begin exploration of Antarctic krill resources in 1973. Krill resources are estimated to total 100 million tons by some officials. An annual sustained yield of krill is estimated at 50 million tons, or equal to the world fish catch.

Problems & Advantages

Fishery experts admit that consumption of raw or boiled krill has not been proved completely safe. But, they claim, in liquefied form it has protein, is rich in flavor, and good for seasoning and fish feed. ('Mainichi', Aug. 20.)

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EXPORTS OF TUNA CANNED AS PET FOOD RISE SHARPLY

Japanese canned pet food made of tuna approved for export during Jan.-June 1970 totaled 699,356 cases. This was 3 times above the 1969 period exports of 237,059 cases.

100,000 Cases Monthly to U.S.

Exports to U.S. during first 6 months of 1970 continued at about 100,000 cases a month. These were far above corresponding monthly exports during 1968 and 1969; then, U.S. buyers were holding down purchases to reduce inventories.

Export Prices

Export prices for canned pet food are US$ 2.78 a case, f.o.b., for pure tuna pet-food pack, and 10% higher for mixed vegetable-tuna pack. ('Suisan Tsushin,' Aug. 14.)

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JAPAN (Contd.):

EXPORTER TO BUY CANNED TUNA FROM PUERTO RICO FOR U.S SALE

A major Japanese firm that exports canned tuna to the U.S. plans to tie up with a U.S. tuna packer in Puerto Rico. The Japanese will supply raw material to the packer and buy the canned tuna from it. Major Japanese firms occasionally have purchased canned tuna from U.S. packers, but only when product was in short supply in Japan.

Benefits to Japanese

If arrangement develops, and Puerto Rican packer can be supplied Atlantic-caught tuna regularly, Japanese would benefit. They would be able to buy whatever size and style of pack they need. Moreover, they could plan sales more easily because price of canned tuna purchased from U.S. packer would be stable--so long as raw material price remained at a certain level.

Sales Planning Easier

Japanese firms that buy canned tuna from Tokyo Canned Tuna Sales Co. find it difficult to formulate sales plans because company sets price as well as quantity to be sold. If Puerto Rican-packed tuna is similar in quality to Tokyo's, other firms undoubtedly would start quietly to handle Puerto Rican product. Even some leading U.S. importers of Japanese canned tuna are reported turning to Puerto Rican packed tuna, which they sell under their own brand names.

Competition at Manufacturer's Level

Until recently canned tuna produced in U.S. and Japan was handled by different buyers at intermediate distribution level. Competition between two products did not arise until they appeared in Japanese supermarkets. Now, competition is at manufacturer's level; there, the price, quality, and supply stability largely determine whether buyer purchases Japanese product or Puerto Rican pack. All other factors are about equal, so determination will be made on whether supply is constantly available.

Japanese packers have had advantage in quality and labor costs. Because cost of raw material is rather high and many packers bid for frozen tuna, prices became unstable. Besides, the Japanese product is at a decided disadvantage because of higher freight costs, import duty, and difference in productivity. ('Suisan Tsushin,' July 29.)

Prices Increased

The above report is related directly to announcement by Tokyo Canned Tuna Sales Co., July 17, 1970, increasing export price for canned tuna in brine, packed in 13-oz. 24s by 80 yen (US$0.22) a case for canned white meat tuna, and 40 yen ($0.11) a case for canned light meat tuna.

The new prices are: canned white meat tuna 5,030 yen ($13.97) and canned light meat tuna 3,800 yen ($10.55), ex-warehouse, Shimizu. The company said prices were increased because of low supply of that can size, which is in good demand for both white and light meat packs. ('Suisan Tsushin,' July 20.)

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CANNED-MACKEREL EXPORTS TO U.S. ROSE DURING JAN.-JUNE 1970

Japan exported 69,240 metric tons of canned mackerel during Jan.-June 1970. This compared with 65,392 tons for first-half 1969.

Exports of natural-packed mackerel in 1970 totaled 457,991 cases; this was above entire 1969 figure of 395,000. It was close to 467,429 cases (natural) exported to Philippines during Jan.-June 1970. In the past, the Philippines has been the predominant buyer of canned mackerel--taking 40-50% of Japan's exports; but, in 1970, she had purchased only 26% of the exports by June.

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IMPORTS HERRING FROM CANADA

Canada has shipped 1,430 tons of frozen herring to Wakkanai, Japan, part of the 10,000-ton 1970 import quota. It was Japan's first import of herring from Canada.

The imported herring were 20 to 30 centimeters long, somewhat small, but rate of yield of herring roe (12 to 13%) was better than expected. After roe is removed, herring is dried. ('Minato Shimbun', May 31.)

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JAPAN (Contd.):

SALMON MOTHERSHIP FLEETS END BERING SEA OPERATIONS

Japanese high-seas salmon fishing by 11 motherships ended last week in July, about a week later than in 1969. The delay was caused by lost fishing time because of rough seas in June, which slowed vessel movement.

Fleet operations

The fleets, anticipating a heavy run of Bristol Bay red salmon into sector west of Abstention Line (175° W. long.), remained there about two days longer than in previous years; however, the westward migration of reds fell somewhat below expectations. In late July, the fleets, in two groups, began to scatter in northern and southern sectors of Area A (north of 45° N. lat.), where good fishing for other species continued. ('Nihon Suisan Shimbun,' July 17.)

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SALMON MOTHERSHIPS IN NORTH PACIFIC REACH GOALS

The 11 Japanese North Pacific salmon mothership fleets and 369 catcher vessels that fished Area A (north of 45° N. latitude) attained their quota in late July. They had planned to catch 46,545 metric tons for 1970.

Catch composition was: 35.7% reds; 54.6% chum; 5.7% pinks; 2.8% kings; and 1.2% silvers. Despite preseason forecasts of abundance, the fleets had trouble catching Bristol Bay reds because there was no heavy migration into mothership fishing area. So, except for 'Meiyo Maru' (she returned with a 50.7% catch of reds), all other motherships failed to harvest 50% reds.

However, the fleet commanders expect a good season in 1971 because many immature Bristol Bay reds this year were observed migrating westward toward Attu Island. ('Suisan Keizai Shimbun,' Aug. 3 & 6.)

* * *

STUDY TEAM TO TOUR FOREIGN FISHING PORTS

The Japan National Fishing Port Association planned to send a study team, starting Sept. 17, on a 1-month tour of foreign fishing ports. The group was scheduled to visit 8 countries, including the U.S., Italy, France, Netherlands, and West Germany.

The purpose is to understand better the operations of foreign fishing ports in order to obtain data needed to modernize Japanese port administration and operations. The team will study basic port facilities: breakwaters and piers, fish distribution facilities (including wholesale markets and transportation systems), storage and processing plants, vessel operations, and marine engine repair facilities. ('Suisancho Nippo,' July 30.)

* * *

ARTIFICIALLY REARED LARVAL YELLOWFIN TUNA DIE

On Aug. 18, the last batch of artificially hatched larval yellowfin tuna reared at Kinki University's fishery laboratory died after 20 days.

After feeding had been started, it appeared the surviving larvae might continue to grow normally but, because of transportation, feeding, and water-quality problems, die-offs increased.

Reached 9 mm.

The longest surviving hatchlings had grown to a length of 9 mm., compared with 2.5-2.7 mm. at hatching, a record growth in Japan; separation was observed between dorsal and caudal fins. A week before they died, 200 of over 14,000 larvae hatched artificially on July 26, 1970, had still been alive. The larval tuna had been kept in a culture tank 5 meters in diameter.

Prof. Harada of Kinki said comparative studies will be made of data to determine the conditions necessary for tuna cultivation. He is hopeful of greater success next year.

The yellowfin tuna rearing project is being conducted with the Japanese Fisheries Agency's 3-year fish-propagation research program. ('Katsuo-Maguro Tsushin,' Aug. 20.)

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JAPAN (Contd.):

SAURY FISHING OFF CANADA'S WEST COAST IMPROVES

In late August 1970, six Japanese saury vessels were reported fishing off Vancouver near 49° N. lat. and 127° W. long. From August 25-26, those vessels began catching 5 to 10 metric tons per vessel per day. This was about same as during late-August 1969 explorations in that area.

Water temperature was reported around 14.5° C., or 58° F. The saury catch was medium fish (110 fish per 22-pound box) mixed with smaller sizes about 24 centimeters long.

More Vessels On Way

In late August 1970, several more vessels were reported proceeding toward Vancouver. They were expected to begin fishing in first week Sept. The number of saury vessels off Vancouver would total 9 (not counting 3 small vessels accompanying one mothership).

Japan Licensed More Vessels

In 1970, 33 commercial vessels and 2 government-subsidized exploratory vessels were licensed to fish saury in eastern Pacific east of 165° E. long. and N. of 34°54' N. lat. (excluding Bering Sea). The nine off Vancouver may be joined by vessels transferring from Pacific ocean perch fishery in Gulf of Alaska. It is unlikely that more will be sent from Japan because it would be too late in season.

The number of Japanese commercial vessels in 1970 eastern Pacific saury fishery will be less than half that licensed by Japan. ('Suisan Tsushin', Sept. 1.)

* * *

FROZEN AND CANNED TUNA EXPORT PRICES RISE AGAIN

Japanese frozen-tuna export prices continue to increase. F.O.B. prices for direct exports to U.S. are: $680-725 a short ton for albacore (round); $605-625 for yellowfin (gilled-and-gutted); and $360-395 for skipjack (round).

Compared with January 1970, prices for albacore are up $152 a ton; for yellowfin, $175.

Compared with August 1969, they have advanced $214 and $225, respectively.

Prices for Italy

Prices for yellowfin tuna exports to Italy are: cost, insurance, freight (c.i.f.) $720 a metric ton for gilled-and-gutted; $770 for dressed-with-tail. However, shipments are small, averaging around 700 tons a month.

Canned Tuna

The Tokyo Canned Tuna Sales Co. announced on August 24 a price increase for canned tuna in brine to U.S., effective immediately. It was 11th price increase since beginning of business year 1969 (April 1969). ('Suisancho Nippo', Aug. 31; 'Suisan Tsushin', Aug. 28.)

* * *

PLANS SALES OF REFRIGERATED TRUCKS TO STABILIZE THAI SHRIMP SUPPLY

The Japan Marine Products Importers Association plans to export 20 refrigerated trucks to Thailand over 5-year period. The purposes are to secure a long-term, steady supply of frozen shrimps--and to help balance trade now favoring Japan.

Thai Suggestion

Impetus was provided by Thai leaders. During recent cabinet-level conference with Japanese officials, they urged Japan to help offset trade imbalance by buying more primary goods. Frozen shrimp is Thailand's most important fishery export item to Japan.

Improve Trucking System

By exporting trucks, the Association hopes to improve trucking system from ports to Bangkok, where most shrimp processors are located. This would increase availability of good-quality shrimp for shipment to Japan.

In 1969, Thailand supplied 6,395 metric tons (worth US$15.15 million), or about 13% of Japan's frozen-shrimp imports. ('Suisan Keizai Shimbun', Aug. 13.)

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JAPAN (Contd.):

TO REGULATE VOLUNTARILY SOUTHERN BLUEFIN TUNA FISHERY IN PACIFIC

The Federation of Japan Tuna Fishery Co-operative Associations (NIKKATSUREN) recently decided to voluntarily regulate fishing to protect southern bluefin tuna in "high latitude" region of South Pacific. This is around Tasmania and New Zealand between 40-45° S. latitude. The Federation is composed of long-line tuna-vessel owners.

This decision attempts to stop sharp decline in catches of recent years. The catch per vessel has dropped to less than 1 ton per day; 7 or 8 years ago, it was 10-20 tons. Also, the Government's Distant-Water Fisheries Research Laboratory had warned about declining hook rate.

Vessel Owners Queried

Early in 1970, NIKKATSUREN sought opinion of all vessel owners fishing bluefin on condition of resource and need for regulation. The response indicated regulation was necessary.

In drawing regulations, NIKKATSUREN will consult Distant-Water Laboratory for scientific advice on fishing season and areas to be regulated.

Japan Alone Can Do It

Some Japanese feel foreign vessels fishing southern bluefin should be asked to help. However, NIKKATSUREN feels foreign fishing is at low level, so regulation by Japan alone would be effective. NIKKATSUREN hopes new regulations can be put into effect before FAO's Indian Ocean resource-management conference convenes this fall. ('Suisan Keizai Shimbun', Sept. 1.)

* * *

INCREASE OCEAN FREIGHT RATE FOR FROZEN TUNA TO U.S.

Beginning Oct. 1, 1970, the ocean freight rate for frozen-tuna exports from Japan to the U.S. west coast was increased 10.55% (from $45 to $49.75 a short ton).

The present freight rate for frozen-tuna shipments to Italy, a special rate of $67.10 a metric ton, expires at the end of October 1970. Japanese shippers hope the present rates will not increase. ('Suisancho Nippo', Sept. 2.)

* * *

NEW FISH-PROCESSING DEVICE IS OPERATIONAL

A high-speed fish-processing device, which mechanically removes head, tail, guts, and bones, and fillets fish, was developed by Takubo K.K. (Takubo Industrial Company), Sakai City, Osaka Prefecture.

Described as Takubo 707-Model D, the device was tested in June aboard the 'Haruna Maru' (4,000 gross tons) in the North Pacific. It demonstrated ability to process 124 fish (Alaska pollock) per minute, completely remove black membranes, and recover 42.5-43% of flesh.

Slated for Large Trawlers

The machine is a modification of an earlier model. It will be installed on recently launched 5,000-ton 'Yamato Maru' and other large trawlers under construction.

The Model D

The Model D is 4.3 meters (14.2 feet) long, 1.6 meters (5.3 feet) high, and 0.925 meter (3 feet) wide. Factory price is 3.6 million yen (US$10,000). ('Minato Shimbun', July 25.)

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FISH-MEAL PRODUCTION PROBABLY WILL TOTAL 550,000 METRIC TONS

Japanese production of fish meal and pressed cake during Fiscal Year 1970 (April 1, 1970-March 31, 1971) will total 551,800 metric tons: 402,300 tons by shore plants, and 149,500 tons by factoryships and trawlers. ('Minato Shimbun')

日本

PHILIPPINES

TO BEGIN INLAND FISHERY DEVELOPMENT PROJECT

As part of the Agriculture Four Year Development Plan (1971-74), the Philippine Fisheries Commission seeks national self-sufficiency in fish production (principal local source of animal protein) by mid-1972. Later, it will concentrate on expanding fishery exports.

What Must Be Done

To achieve these, all sectors of fishing industry must be improved: (1) processing and marketing expanded and modernized; (2) scientists trained to increase production; (3) more extension workers abreast of latest research findings.

Controlled Pond Culture

Basic to self-sufficiency drive, the industry is reorganizing and diversifing. It is moving from less productive fisheries into controlled pond culture.

Two pond-culture research stations (one brackish, the other fresh) will be established to provide technical base for increased production methods. Concurrent with research will be training of personnel--scientists, extension workers, and commercial pond operators. (U.S. Embassy, Manila, Sept. 1.)

THAILAND

TO CULTIVATE ALGAE FOR FOOD

Thailand is planning, with W. German aid, to cultivate algae for food. West Germany is to provide more than US$300,000 in technical aid for algae-food experiments. Her scientists will work with Thai scientists of Bangkok's Institute of Food Research and Product Development for the next 3 years. The Germans hope to grow algae that will meet "acceptability criteria" so production and consumption of algae food could be initiated.

According to the director of the German research team, the major problem is whether the single-cell fresh-water algae cultivated successfully in Germany will thrive in tropical climate.

Experiments in Germany

Initial experiments at the Cardisbiological Research Station in Dortmund, Germany, show that single-cell algae can be collected, dried, and reduced to a powder that provides the basis for highly nutritional soups, crackers, and puddings. Algae were processed into a palatable green powder and tested successfully on German hospital patients suffering from protein deficiencies. The algae powder contains 51% protein and all essential amino acids for protein formation.

Multiple-cell algae (or fresh-water weeds) already are used as food in parts of Thailand. According to the Germans, the single-cell algae have the advantage of growing much faster than the multicell variety. ('New York Times,' Aug. 2.)

LATIN AMERICA

PERU

FISH MEAL INDUSTRY RECOVERS

The fish-meal situation in Peru, world's major producer and exporter, is rebounding from 1968-69 decline of 386,000 tons. This is the word from the Foreign Agricultural Service of the U.S. Department of Agriculture.

Production in 1969-70 now is estimated at 2.15 million short tons--267,000 tons above 1968-69 and substantially above preliminary estimate. The increase reflects largely the fishing industry's success in its efforts to increase allowable catch by one-sixth over that recommended by Peruvian Marine Institute.

Exports Drop

Exports are expected to approach 1.9 million tons--14% below 1968-69 record and 11% below 1967-68. Supplies are only 3% below 1968-69 volume, so expected decline reflects more the high meal prices and uncertainty about export commitments under new Ministry of Fisheries than of reduced stock.

Much Stock Accumulates

Despite 1969-70 season's slow beginning, much stock accumulated in first quarter (Oct.-Dec.) from low volume of 110,000 tons on Sept. 30, 1969. Although stock accumulation continued in second and third quarters to volumes exceeding 1968-69 level, tonnage was substantially under 1967-68.

In third week of September 1970, the fish meal available appeared more than ample to handle rate of market uptake. Continuation of such prices into the 1970-71 season could push stocks to substantially higher volume.

U.S. Agriculture Service Observations

Foreign Agricultural Service observes: (1) Despite much talk from time to time about need to conserve Peru's anchovy stocks, it would appear that catch could continue to be sustained at present volume of 11 million tons. (2) A poor start of the fishing season does not necessarily mean a failure or a sharp decline in output. (3) Fish-meal prices in one season may indicate more the uncertainty of impending events and market psychology than of supplies. (4) Peruvians have not mastered fully the art of getting the most product value out of their exports, despite willingness and ability to hold a substantial volume of stocks. (5) Given present circumstances and price levels, Peru's exports may be related more closely to import demand in key importing countries--the U.S. and West Germany--than to supplies available for export.

VENEZUELA

PLAN TO MAKE GUIRIA WORLD FISHERY PORT

The Corporacion Venezolana de Formento (CVF) and the Venezuelan Ministry of Agriculture (MAC) are attempting to develop the fishing grounds of the "Golfo de Paria" on the eastern coast and make of Guiria an International Fishery Port and the area's fishing center. Already under construction are breakwaters, quays, and a shipyard in the Port of Guiria.

Financing 60 Vessels

CVF is helping to finance 50 shrimp and 10 tuna vessels.

The shrimp vessels are about 80 gross tons; estimated cost without equipment, US$191,000; 510-hp. engine; length 27 meters, steel hull.

Tuna vessels are about 50 gross tons, estimated cost without equipment US$143,000, 425-hp. engine; length 23.60 meters, steel hull.

Sales Opportunities for Foreigners

The vessels are to be constructed locally. This offers opportunities for foreigners to sell motors, marine hardware, communications system equipment, and navigation equipment. Construction of the Guiria Port creates need for equipment to freeze, process, and handle fish.

Firms interested in either project should contact: Corporacion Venezolana de Fomento (Programa Pesquero) Division de Promocion Industrial, Edificio La Perla, Bolsa a Mercaderes, Caracas, Venezuela.

A Chicago firm is negotiating with Ministry of Agriculture concerning use of a self-propelled fish-freezing and processing plant for Guiria. The plant would process shrimp, tuna, catfish, and others for domestic use and export. The Ministry is very interested in this proposal. It suggested the firm form a local company or a joint venture with local company. (U.S. Embassy, Caracas, Aug.18.)

BCF'S TROPICAL ATLANTIC BIOLOGICAL LABORATORY, MIAMI, FLORIDA

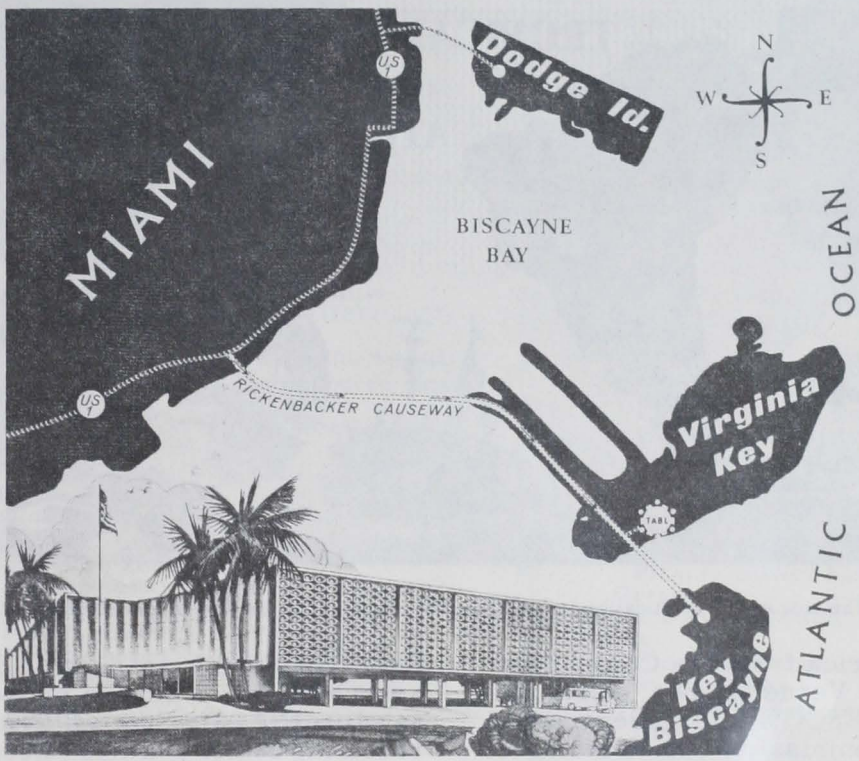

Fig. 1- Tropical Atlantic Biological Laboratory, Miami, Florida.

BCF's Tropical Atlantic Biological Laboratory occupies a 5-acre tract of land on shores of Biscayne Bay. The laboratory (TABL) is near Virginia Key Campus of the Institute of Marine Sciences, University of Miami; the site of a U.S. Dept. of Commerce Environmental Science Services Administration facility; and the Miami Seaquarium. There are 75 employees, of whom 26 are scientists. The Laboratory's two research vessels, 'Geronimo' and 'Undaunted,' logged nearly 2,000 days and about 2,000 miles on 27 research cruises completed between 1964 and 1970 in the Caribbean Sea and the tropical Atlantic Ocean.

Laboratory facilities include specially designed aquaria for rearing fish, a nontoxic dual seawater system, a serological laboratory, a photographic laboratory, hard and soft X-ray capabilities, a modern library of 1,500 books of which 700 are current periodicals from all parts of the world, and an ichthyological museum containing thousands of marine specimens. The staff also has access to the excellent library of Rosenstiel School of Marine and Atmospheric Sciences, University of Miami.

The Laboratory was first established in 1959 at Wash., D.C. The staff was transferred to Miami in 1965 when a new building was constructed on land donated to the Federal Gov't. by Dade County. The Laboratory was founded as a result of U.S. Government's participation in ICITA (International Cooperative Investigations of the Tropical Atlantic)--a 2-year synoptic survey of fishery resources of

Fig. 2 - The area under investigation by TABL marine scientists and some of the research operations.

waters off West Africa from the Congo River north to the Cape Verde Islands, under the sponsorship of UNESCO's Intergovernmental Oceanographic Commission. The finding of potential commercial quantities of tuna and other fishery resources made it feasible to continue investigations in the area of the Gulf of Guinea.

Broad objectives of the Laboratory are: (1) to obtain and make available to U.S. fishermen knowledge needed to increase total fishery yield at reduced costs; (2) to assist fishermen to increase the yield of marine protein food resources from the tropical Atlantic Ocean; and (3) to provide knowledge needed to develop and apply sound conservation policies, particularly for Atlantic tunas.

The Laboratory's several significant contributions during its short period of existence include: participation with other nations in discovery of Guinea Undercurrent and Atlantic Equatorial Undercurrent; participation in first transmission of oceanic data from a r search vessel on station via communicatio satellite (NASA's Syncom II) to a shore-bas receiving center (National Oceanographic D ta Center, Washington, D.C.) and return corrected data to vessel; coordination o statistical and biological sampling progr with West African countries; publication (the American Geological Society) of an at of mean monthly sea surface temperatur in tropical Atlantic between Africa and So America from about 3 million observatio and preparation of more than 170 scient papers. The Laboratory is carrying out r search necessary for the participation of t U.S. in the International Commission for t Conservation of Atlantic Tunas. A progra of intensive investigation of large stocks calico scallops found off the coast of northe Florida was begun in 1969.

Visiting investigators are welcome. A rangements should be made by correspon ence with the Laboratory Director. (BC Circular 305.)