INTERNATIONAL

UN Calls for World Conference on Pollution

The United Nations has called for a world conference on pollution in 1972. The General Assembly has approved a resolution summoning a conference to promote international cooperation in "eliminating the impairment of human environment." The resolution was sponsored by 54 of the 124 member nations. It alerts all nations to the dangers resulting from man's ability to change and shape his environment. It emphasizes the "continuing and accelerating" pollution of water and air.

Sweden Is Prime Mover

Sweden is prime mover of the conference. She warns that the world soon may have "no escape" from the many forms of international pollution. Sweden outlawed the use of DDT in Apr. 1969.

Purposes of Conference

The Swedes see 2 principal reasons for the conference: (1) to exchange ideas on fighting local and regional pollution (including help for developing nations rushing into industrialization and urbanization). (2) To establish pollution-control standards and to determine who will pay costs of controlling pollution when it crosses national boundaries or threatens common environment. ('Resources,' Vol. 6, No. 1, 1969.)

World Program Launched to Conserve Sea Turtles

A campaign has been launched to save the world's sea turtles from extinction. Experts attended a 4-day conference in Switzerland to set plans. The conference was organized by the International Union for Conservation of Nature and Natural Resources and sponsored by the World Wildlife Fund.

Scientists and nature lovers are alarmed at the rate at which the 7 surviving species are being depleted. The turtles are being used for oil, calipee for soup, meat, eggs, leather, and shell.

The turtles are vulnerable from birth to death. The females often are killed when they come ashore to lay eggs; the eggs are taken by humans for food. Few baby turtles survive the long crawl from beach into sea; once in the sea, they face many enemies.

Conference's 7-Point Plan

The conference decided on a 7-point plan to "save this valuable marine resource from destruction":

(1) Action on breeding beaches to insure maximum incubating and hatching of turtle eggs.

(2) A survey and analysis of existing exploitation of marine turtles to provide basis for regulating size of commercial operations.

(3) A broad information program to educate public.

(4) Beach surveys to gather information for governments involved.

(5) Establishment of sanctuaries for turtles on islands in Atlantic, Pacific, and Indian Oceans.

(6) Appointment of scientist to coordinate conservation efforts.

(7) Periodic meetings of specialists to discuss conservation problems and progress. ('South African Digest,' May 9.)

U.S. & USSR Jointly Survey Ichthyoplankton on Georges Bank

R/V 'Prognoz' of the Soviet Atlantic Research Institute of Fisheries and Oceanography (ATLANTNIRO) and 'Albatross IV,' research vessel of BCF's Biological Laboratory at Woods Hole, Mass., have studied together

ankton samples and abundance of fish eggs
d larvae on the southern and eastern parts
Georges Bank. The survey was part of the
.S.-USSR scientific exchange under the bi-
teral mid-Atlantic Fisheries Agreement.

ethods

The vessels operated simultaneously for
hours on 6 sampling strata. The survey's
st phase ran from April 15 to 24; the sec-
l was scheduled for May 19 to 29. The ves-
s met off Martha's Vineyard to exchange
rsonnel and equipment. During the first
se, a Soviet scientist boarded the Alba-
ss IV and a U.S. biologist went aboard the
gnoz. Only about a third of the first phase
been completed when mechanical trouble
ced Albatross IV into Boston for repairs.
second phase was expected to take place
scheduled.

gnoz's Future Plans

The Prognoz will stay on Georges Bank
il early August and explore electric light
ning for Atlantic saury. Other ATLANT-
RO research vessels are in the area long-
ng for swordfish.

S. and Argentina nduct Oceanographic Project

For the third successive year, the U.S.
Argentina have collaborated in joint
nographic studies off the South Atlantic
t.

The icebreaker USCG 'Glacier' has just
pleted the 1969 program in the Bay of San
ias. Dr. Jack W. Pierce of the Smith-
an Institution and several Argentine
ntists boarded her in Buenos Aires on
l 9. Deep-coring operations, part of a
inuing coastal sedimentation study, were
ed on April 14. 'Glacier' had worked in
Wedell Sea from December 1968 to April
with the Argentine icebreaker 'San
tin.'

vious Studies

n December 1968, Dr. Frederic R. Siegel
eorge Washington University had worked
e project aboard 'Edisto'. Drs. Pierce and Siegel try to alternate in the research. They work aboard USCG icebreakers en route to and from the Antarctic. Their first voyage was aboard 'Oceanographer' in 1967.

Reports to Argentina

The U.S. scientists present regular progress reports to Argentine authorities on the results of this joint operation. The program is a fine example of cooperative bilateral scientific research. (U.S. Embassy, Buenos Aires, Apr. 23.)

Charges Up 10% for Chilean and Peruvian Fish Meal Shipped to U.S.

Charges for shipping fish meal from Peru and Chile to U.S. Gulf of Mexico and Atlantic ports increased 10% on March 10. The increase was due to a surcharge on all goods shipped. It was agreed to by the West Coast South American Northbound Conference, which is empowered to set rates for shipping to U.S. ports.

The surcharge is designed to restore to the shippers money lost during recent longshoremen's strike, and to gain funds to pay for the new contracts with longshoremen.

Rates in effect before the strike (sacked meal):

Less than 300 tons	$29.50 a metric ton
300-1,000 tons	$27.50 a metric ton
Over 1,000 tons	$24.50 a metric ton

The new rates simply add 10%. (Federal Maritime Commission.)

Japanese Survey Philippine Market for Canned Mackerel

The Japan External Trade Organization (JETRO), a government trade-promotion agency, recently published survey results of the canned mackerel, sardine, and saury market in the Philippines. The survey found good potential for increased canned mackerel exports.

There are only 2 fish canneries in the Philippines. One, the White Rose Packing Corp., with modern facilities, has a daily processing capacity of 120 tons. Due to lack of raw material, the plant has not been put into operation. The corporation has its own fishing boats but finds it more profitable to sell the catch fresh. Another problem is the high tariff on imports of tinplate (40% ad valorem) and tomato sauce (150% ad valorem). The canning industry has appealed for tariff cuts on those items, but the government has refused.

Other Canneries

The second cannery, Visayan Packing Corp., a wholly Philippine-owned firm established in 1955, is the only fish cannery in operation. It packs tuna, mackerel, sardines, and tangerines, and exports frozen tuna to the U.S. A third tuna and mackerel cannery is scheduled for construction by the end of 1969.

Canned Sardine Imports Banned

The Philippine Government, in 1963 and again in 1967, banned canned sardine imports from the Union of South Africa because of her apartheid policy. In 1967, the Cebu United Enterprises had requested the Government to allow imports from South Africa, claiming South African product cost less than Japanese imports. Cebu also claimed that Japanese and U.S. canned sardines were actually South African sardines packed under different labels.

Japan Major Canned Mackerel Supplier

The Philippine population and the demand for protein continue to grow. These cannot be adequately supplied domestically, so Japan probably will continue to be a major supplier of canned mackerel. Since the Japanese product does not compete with Philippine domestic brands, imports from Japan are likely to increase. To expand the canned mackerel and saury market in the Philippines, efforts must be made to promote greater consumer interest and acceptance. ('Nihon Suisan Shimbun,' Apr. 4.)

Japanese-Australian Shrimp Venture Makes Good Hauls

A Nihon Suisan-owned fleet--6 shrimp trawlers (100 gross tons) and one 386-ton processing vessel--operating in Gulf of Carpentaria, northern Australia, made good hauls of shrimp (mostly banana) in mid-April. Catch per vessel per day was around 66[illegible] pounds; about 570 pounds is considered the break-even point for 100-ton-class shrimp vessels.

Other Joint Ventures

Nihon Suisan began shrimp fishing in Gulf of Carpentaria in Oct. 1968 jointly with Australian Hickman Company. They established the Northern Research Pty. Ltd. at Darwin. Two other Japanese-Australian shrimp ventures also are based at Darwin. ('Minato Shimbun,' Apr. 17.)

S. Korean Team Recommends Tuna Fleet & Freezer Plant for El Salvador

A S. Korean team studied El Salvador's fisheries for 3 weeks in late Jan.-early Feb. 1969. It has recommended that El Salvador obtain 10 longliners, build a freezer plant, and enter the eastern tropical Pacific tuna fishery.

The team's 114-page report recommends (1) purchase of ten 200-300-gross-ton longliners, (2) build a 1,000-ton-capacity (20 tons per day) shore freezer plant at Acajutla, and (3) develop the technical skill to use those facilities.

S. Korea would provide technical experts to train fishermen and get Salvadoreans started; she could build the vessels in her own boatyards.

Study Team's Thinking

The project could survive on an annual catch of 6,000 metric tons of assorted tunas; about 27% (yellowfin, skipjack, bluefin, albacore) could be marketed in the U.S. The rest could be sold to Japan. All tunas would be

ld frozen. El Salvador could encourage dings by foreign vessels to utilize plant's ess capacity and allow its operation when mestic vessels were unable to fulfill quotas.

lations With IATTC

The yellowfin catch--1,080 tons, about 18% 6,000-ton-projected tuna total--would not olve difficulties with the U.S. over the TTC. This is because the yellowfin catch uld be less than the 4,000-ton threshold t agreed to by IATTC in March. For 9, after closure, vessels under 300 tons l be permitted unrestricted fishing until gregate yellowfin catch for a country ches 4,000 short tons. After that, all ves- s would be subject to 15% limitation on lowfin. El Salvador is not an IATTC mem- r.

Trip's Expenses

These are some projected total expenses a 5-month fishing voyage for a vessel h 24-27 men: crew salary, $6,600 (less n $60 per man per month); food $600; bait 300.

The S. Koreans have about 40 idle long- rs they are recommending to El Salvador.

FMM Meetings Scheduled

The Executive Council of the International ociation of Fish Meal Manufacturers FMM) met in Madrid, Spain, Apr. 15-16. resentatives of fish meal producers from ountries attended.

The Association's Director reviewed the st information on current and potential duction, consumption trends, and market spects.

Meetings Slated

The Ninth Annual Conference is scheduled for Cannes, France, Oct. 6-10, 1969. Executive Council and Scientific Committee meetings have been scheduled for April 1970 in the United States (possibly at College Park, Md.). (U.S. Embassy, Copenhagen, Apr. 29.)

NEW DOCUMENTARY SERVICES
(Provided by the Food and Agriculture Organization of the United Nations, Rome, Italy)

The wealth of technical, economic and social information, contained in some 25,000 publications and documents produced by FAO since its creation in 1945, is now readily available through the services provided by the FAO Documentation Centre.

- Published indexes (Monthly "Current Index" - since January 1967 - and retrospective "Special Indexes" - for the period 1945-1966) permit the selection of documents of interest in the fields of agriculture, fisheries, forestry, nutrition, rural economy, etc., through thousands of subject matter, author and title references in each field.

- A "Question and Answer" service provides, on request, ad hoc bibliographies on specific subjects.

- Documents of interest can be obtained in original form (printed or mimeographed) or, if out of stock, in the form of photocopies or microfiches.

- The "Current Index" is sent, free of charge, on request. Details on other services (Retrospective Indexes, "Question and Answer" service, Reproduction Services) will be obtained by writing to the: FAO Documentation Centre (Ref.P.69), FAO Headquarters, Via Terme di Caracalla, 00100, Rome, Italy.

FOREIGN

CANADA

PLANS EXCLUSIVE FISHING ZONES

Canada will establish exclusive fishing zones on her east and west coasts, Minister of Fisheries and Forestry Jack Davis announced April 5. Lines will be drawn from headland to headland on both coasts. The lines will cover immediately all sections where Canada's territorial waters and fishing zones can be measured from the same baseline.

There are a few important exceptions, Davis noted. "I am thinking particularly of the Gulf of St. Lawrence. In this case, where it may not be desirable to close off all of the Gulf as internal waters, we can still make it an exclusive Canadian fishing zone. However, we will first have to change the law. This we intend to do in the next session of Parliament."

The Minister indicated that baselines will be drawn from headland to headland down the east coast of Nova Scotia. "This we can do right away," he said, "because there is no conflict between inland waters (i.e., navigation, etc.) and fishing zones along this section of our coast."

Statement of Intentions

The formal statement of the Canadian Government's intentions was outlined as follows:

The Canadian Government will shortly issue a list of geographical coordinates for the establishment of straight baselines, further defining Canada's territorial sea and exclusive fishing zones on both our east and west coasts.

Additional Baselines

Maps published in 1967 already show straight baselines down the coast of Labrador, and around the east and south coasts of Newfoundland. Further baselines will now be drawn from headland to headland down the east coast of Nova Scotia, and up along the west coasts of Vancouver Island and the Queen Charlotte Islands. These additional lines will also enclose as internal waters of Canada numerous bays and inlets. These will in their entirety become Canada's fisheries waters.

New Maps

Maps will be published illustrating this further demarcation of Canada's internal waters, territorial sea, and exclusive fishing zones. These maps will show several important gaps remaining along east and west coasts after issuance of the coordinates. The Government will deal with these gaps after amending the Territorial Sea and Fishing Zones Act. This is scheduled for Parliament's next session.

To Amend Present Act

At present, the Territorial Sea and Fishing Zones Act provides only for drawing straight baselines. These define Canada's internal waters, on the landward side of the baselines, and her territorial sea and fishing zones, which extend a total of 12 miles seaward of the baselines. To provide added flexibility for dealing with certain coastal areas, the Act will be amended to permit the Governor-in-Council to draw "fisheries closing lines." The lines will enclose these areas as exclusive fishing zones, without affecting the limits of Canada's internal waters or territorial sea.

Traditional Fisheries & Treaties

Traditional fishing practices of other countries will be considered. However, establishment of baselines, and fisheries closing lines along remaining sections of coastline, will make it possible to conclude negotiations for phasing out these traditional fishing practices. Existing treaty rights will be respected. Also it is proposed to maintain the present reciprocal fishing arrangements with the U.S.

Minister Davis concluded that this statement involving changes to Canada's Territorial Sea and Fishing Zones Act was being made now to advise other countries of Canada's intention to complete a national system of exclusive fishing zones. (Canadian Dept. of Fisheries and Forestry, Apr. 5.)

* * *

anada (Contd.):

ARITIME LANDINGS IMPROVE

The fishery catch in Canada's maritime rovinces--Nova Scotia, New Brunswick, nd Prince Edward Island--for the first two onths of 1969 was substantially higher than 1968 and 1967. It also improved in total lue, although prices per pound were lower an in 1968 and 1967. The lower unit value 1969, compared with first 2 months of 1968, peared related to much heavier herring dings, which command lower prices. Dur- Feb. 1969, only haddock, halibut, pollock, d scallop landings were below the 3-year erage in quantity. (U.S. Consulate, Halifax, r. 21; Dept. of Fisheries of Canada, Mar. .)

Maritime Fish Landings

	Jan.-Feb.		
	1969	1968	1967
ndings (million lbs.). . . .	98.6	68.3	63.0
tal value (million C$). . .	4.9	3.6	3.8
ce per pound (C$)[1]. . . .	0.0497	0.0527	0.0603

Paid vessel by first buyer.

* * *

EWFOUNDLAND LANDINGS INCREASE

Newfoundland landings in first-quarter 69 were considerably higher than in same riod of 1968. Landings totaled 281 million nds through March, compared to 224 mil- n in 1968. Ex-vessel value was up from 4 million in 1968 to $4.3 million in 1969.

cies Landed

Landings of the more expensive varieties -- haddock, halibut, flounder, sole, turbot, pollock--were generally down for all ths. Only haddock had increased by the of March; cod had an initial upturn in uary, but was down nearly 6 million pounds nd of quarter.

Landings of less expensive varieties -- an perch, hake, catfish, herring--gained adily. Herring particularly showed a nomenal gain; it increased over 50 mil- pounds for first 3 months. This is es- ially noteworthy in view of the 'dead, red ring' scare plaguing fishermen in Pla- tia Bay and in St. Mary's Bay. Scallops showed a sharp upturn due to greater demand and more refined processing. (U.S. Consul, St. John's, Apr. 25.)

* * *

PRICE OF L. ERIE YELLOW PERCH TO BE STABILIZED

The Canadian Fisheries Prices Support Board (FPSB) has one million Canadian dollars available to stabilize the price paid fishermen for yellow perch from Lake Erie. This program is intended to firm up prices paid fishermen by both the processing industry and the trade. FPSB will buy frozen perch fillets from processors on condition that fishermen are paid a boat price of 8¢ a pound for spring-caught perch (Apr. 1 to May 31, 1969) and 10¢ a pound during rest of the year (June 1, 1969, to Mar. 31, 1970).

1968 Prices

The Board also bought large quantities of Lake Erie perch in 1968. Those purchases were conditional on fishermen being paid 7¢ in the spring and 10¢ in the fall. The main difference in 1969 is that the Board will not purchase spring perch "in the round."

Not A Subsidy

All of the Board's costs should be recovered by resale of the fish before Mar. 31, 1970, eliminating any element of subsidy in this year's program. (Canadian Dept. of Fisheries and Forestry, Apr. 3.)

* * *

CALLS FOR TENDERS ON FROZEN GROUNDFISH SUPPLIES

Fisheries and Forestry Minister Jack Davis announced April 24 that the Fisheries Prices Support Board was calling for tenders on the supply of Canadian frozen groundfish products. This followed his earlier announcement of a government purchasing program to strengthen and stabilize market prices for frozen groundfish products.

The program is one in a series designed to assist groundfish industry recovery from the severe market declines that began in 1967. Their object is to forestall further distress selling--and so raise market price to the point where it will cover the efficient producers' basic costs.

Canada (Contd.):

80 Processors Invited

The Fisheries Prices Support Board was to invite tenders from about 80 frozen cod and ocean perch processors on the Atlantic Coast. Initial contracts were to be awarded early in May.

Davis said this and other programs, including a working capital loans program already in operation, will have a salutary effect on the market. He added that the outlook for the 1969 season is good. (Canadian Dept. of Fisheries, Apr. 24.)

* * *

RECORD HARVEST IN 1968

Canada's harvest of fish and shellfish set another record in 1968. Estimated fresh- and salt-water landings were nearly 2.8 billion pounds; landed value was C$185.1 million.

The yield from sea fisheries on both coasts was more than 2.6 billion pounds; landed value, $169.1 million. The fresh-water fish harvest was 120,000,000 pounds worth $16 million exvessel. Landings by Atlantic coast fishermen were just under 2.4 billion pounds; landed value was $113.8 million. Pacific coast fishermen landed 255.8 million pounds worth over $55.3 million.

Lobsters & Salmon Led

Again, lobsters were the most valuable east coast species--over 37 million pounds with landed value of $25.1 million.

Salmon took the lead for British Columbia fishermen: nearly 180 million pounds with landed value of $44.5 million.

Pacific salmon fishermen enjoyed good catches, but returns to the gill-net fleet were particularly high. Landings by salmon gillnetters were worth $20 million, nearly 40% above the 1958 record. The value of catch by salmon seiners, nearly $13 million, was $3.5 million above 1967.

B.C. Halibut

Halibut landings by British Columbia fishermen were 28 million pounds; landed value, 7.1 million dollars, up about 10% from 1967. Prices to fishermen averaged around 25 cent a pound, unchanged from 1967.

Herring Down

The herring reduction fishery was close in 1968 due to low stock level. Producti was limited to bait and experimental fishin Value of landings was only $160,000.

Groundfish & Shellfish

Landings of grey and ling cod and sole, a other groundfish, rose about 10% over 196 Landings were worth 1.8 million dollars fishermen. Landings of most shellfish we down from 1967, although shrimp produce recorded a slight increase.

Phenomenal Queen Crab Fishery

A highlight of the Atlantic coast fisher was the almost phenomenal growth of th queen crab fishery. It paralleled spectacula increases in herring catches. Until 3 year ago, the queen crab was regarded as a nui sance. Then it became a money-maker fo fishermen and a table delight for gourmets This resulted from efforts of federal-pro vincial agencies and the fishing industry.

From zero in 1965, landings reache 600,000 pounds in 1966. In 1967, the catc jumped to 2,000,000 pounds. The 1968 catc exceeded 9.3 million pounds worth ove $886,000. This hardy, 8-legged crustacean providing new income for more fisherme

Atlantic Herring Boom

The growth of the Atlantic herring fishe has been spectacular. It began when lar purse seiners began to make heavy catches This was followed closely by the introducti of midwater trawl fishing sponsored by fe eral and provincial departments. The ge has special advantage of being able to cat herring in daylight. During that period, the are largely dispersed and are found usuall at greater depths than during darkness. darkness, the purse seine is still the mos effective fishing tool.

The effectiveness of the midwater trav for herring was demonstrated effectively b a 156-foot stern ramp trawler out of River port, N.S. In one week's fishing, she lande 1,200 tons; the heaviest single catch was 42 tons.

nada (Contd.):

aweed Industry

The seaweed industry, too, is showing id growth on the Atlantic coast. One sea- ed, Irish moss, has become very important onomically to some fishing communities. he past 25 years, the Irish moss harvest he Maritime Provinces (N.S., N.B., P.E.I.) grown from 1.5 million pounds, worth ,000 exvessel, to over 79 million pounds rth nearly $2.5 million.

To promote this industry's growth, a Ma- e Plants Experimental Station was built by nada's Department of Fisheries at Mimine- sh, P.E.I. in 1966. This plant provides chanical drying facilities for Irish moss. thin 2 years, 2 commercial plants were es- lished nearby. Now the Station focuses on neral development of Canada's marine- nts industry where there is a seaweed po- tial.

Besides Irish moss, other seaweeds in the lantic Provinces are utilized.

ward Trend

The 1968 story of increased production is ine with the general trend of past 15 years. the decade ending in 1966, Canada's fish duction gained 18%; returns to fishermen ollars rose 67%. Better fishing techniques more efficient vessels and gear are dited. ('Fisheries of Canada,' Apr.)

* * *

GINS PRICE DEFICIENCY
MENTS FOR SALTED COD

Canada's Fisheries Prices Support Board being asked to support the price paid to ntic coast inshore fishermen for 1969 ed cod production. This deficiency pay- nt program is designed to assist fishermen suffered severe price declines as a re- t of devaluation and oversupply in foreign rkets in 1968. These fishermen would en- nter similar conditions in 1969.

Payment

The Board will pay fishermen an amount ring total price they receive for 1969 ch up to 1966-67 level. This supplementary ment will be made on certain grades of fish only. It will be made directly to the fishermen after the season is over and after the salted cod has been sold to exporters. Payment is being limited to certain grades to encourage production of better-quality fish.

Each fisherman would receive half the difference between price obtained for each specified grade of salted cod and "target" price for same grade. This "target" price is the one fishermen may receive from the private fish trade as market conditions improve.

Exact Payments Not Yet Fixed

At present, the market returns for 1969 cannot be forecast. So final payments to fishermen and support levels cannot be worked out precisely. Had the new scheme been in effect in 1968, the final price received by each fisherman would have been raised by 50% of difference between 1968 price and government's new "target" price.

The program is an interim measure. Other steps will be outlined to reorganize salted cod industry in 1970 and thereafter.

An advisory committee of fishermen and salted cod fish trade is being appointed to advise the Minister on administration of this new program and its impact on the incomes of fishermen in Newfoundland, Quebec, and Maritime Provinces. (Canada's Dept. of Fisheries and Forestry, Apr. 25.)

* * *

OUTLOOK FOR EAST COAST FISHERIES IS OPTIMISTIC

A generally optimistic future for Canada's East Coast fishing industry was forecast in mid-March by the Atlantic Development Board (ADB), but employment prospects are expected to drop sharply.

The forecasts are contained in a review of the industry by ADB staff and fishery experts in 3 provinces. The industry is expected to increase its groundfish markets by 50% in 1967-1975.

Two-thirds of output now goes to the U.S.; Canada is expected to retain its share of total U.S. consumption, which is forecast to rise. Canadian demand will increase 20% to 130 million pounds.

Canada (Contd.):

Prospects are good for production of fish meal and oil from herring reduction. Large new fish plants are indicated in the Fundy region, Western Nova Scotia, and Eastern Newfoundland.

1970 Demand May Equal 1966's

The study says it will be 1970 before demand reaches the 1966 level. That preceded a decree by the Roman Catholic Church in the U.S. permitting the eating of meat on Friday.

Prices also were depressed by overrapid industry expansion. They have begun to improve.

Industry Needs Major Changes

While near- and longer-term outlook appears good, overall improvements will not be made without major industry changes. In 1965, the primary fishery employed about 45,000 persons, 8% of labor force in Atlantic Provinces. Of these, only 6,000 worked more than 10 months of year, 27,000 worked 5 to 10 months, and remainder less than 5 months. The industry contributes about 6% to net commodity production in the region: from 2.2% in New Brunswick to 10.5% in Prince Edward Island. It contributes about C$53 million to the region's total manufacturing output of $514 million. It employs 10,700 people in 520 fish-processing plants.

Deep-Water Fishing Trend

The major change predicted by the report is a quickened trend from inshore to deep-water fishing. This will lead to a substantial reduction in job opportunities in inshore fishery; increased manpower needs offshore will be only partial compensation.

Compared to inshore fishery, landed values per fisherman in Atlantic offshore fishery are high; these averaged $7,300 in 1964. The report sees growth potential here for East Coast fishery.

An expanded trawler fleet will draw on manpower reserves in inshore fishery. But a fleet increase of 3 or 4 times would provide jobs for relatively few fishermen.

Sufficient Resources

Contrary to common fears of depleting North Atlantic fisheries, the report says there is no doubt that sufficient resources exist to permit expansion of Canada's catch.

Landings and processing have tended to be concentrated in fewer ports--but not necessarily where greatest economic benefit might have resulted. A clear advantage has developed from larger-scale operations. The report states: "It is the larger firms which create the greater value added per man-hour on per dollar of wages. The conclusion is inescapable that the benefits to the region will be greater if future increases in production take place in a relatively small number of large processing plants."

Where Expansion Is Desirable

No expansion of groundfish capacity is desirable in the Gulf of St. Lawrence. Additions to processing should not be encouraged in Eastern Nova Scotia and Southern Newfoundland--but encouraged in Fundy area, Western Nova Scotia, and Eastern Newfoundland.

The study suggests Shelburne as the growth port in Western Nova Scotia. One major port in Charlotte County, N.B., should be selected as development point on Fundy shore. Harbour Grace is best suited for development as trawler harbor in Eastern Newfoundland. ('The Globe and Mail,' Mar. 21.)

* * *

DAVIS ASKS END OF CANADA-U.S. FISHERY TARIFFS

On May 6, Canadian Fisheries Minister Jack Davis called for abolition of tariffs on fish products between Canada and the U.S. He spoke at annual meeting of Fisheries Council of Canada.

Mr. Davis said: "We must obtain reciprocity with the U.S. not only in fishing in each other's waters, but also on the trade front as well. We must be able to buy our supplies and equipment at the lowest possible prices and we must be able to sell our products with a minimum of red tape.

"Essentially we must wipe out the tariff barriers between us. We must do away with quotas. And we must make sure, with

anada (Contd.):

d of a superior Canadian Inspection Service, at there is never any question about the uality of Canadian fish."

xporting Nation

Davis said Canada will always be an exrting nation. "We have a larger source lative to our population. We are also outshing our American brethren east and west, rth and south. We are out-fishing the Russns and Japanese as well. We are catching ore fish per fishermen, per boat and per y at sea."

rice the Problem

The most difficult area in industry was rice, he said. "Most prices, and certainly ost costs, have been going up. But the exrt price for some of our principal products s tended to go down. As a result we are ing caught, increasingly, in a cost-price queeze. We are being hurt even when the tail price for our fish in other countries is ing up."

He noted that the groundfish industry is ing squeezed hard. Plants had closed and w facilities were standing idle. "This esn't make much sense in the context of sing consumption and a stable price at the tail level in the United States." Many asons had been given for the setbacks, but blamed the industry's financial weakness. ne groundfish exporters were so badly off t they had to convert fish into cash imdiately.

Price Support

Davis revealed: "In order to correct the situation the Canadian government has moved in. We have asked our fisheries prices support board to help stabilize the market.... This is not a subsidy operation. We do not intend to lose money." The board will buy fish at market prices, hold it until prices improve, and recover costs in market place.

Limiting Licenses

He said some things will have to be done in interests of conservation and good management. "One of these things is license limitation. We will have to limit the entry of new boats into some of our fisheries. Our lobster fishery on the East Coast is a case in point. Our salmon fishery on the West Coast is another. In both of these instances we are overequipped. We are overequipped by a factor of 2 to 1. So a gradual reduction on boats and gear is imperative.

"It is imperative if our fishermen are to earn a decent living and it is imperative if we are to cut down on the social assistance which is being paid to part-time fishermen on both coasts."

Predicts Fewer Firms

The Canadian Fisheries Minister predicted fewer firms and fewer fishermen in the industry. But the overall outlook was promising. Prices were rising and costs levelling off. "The cost-price squeeze will subside and life will be a little easier all round," he concluded.

EUROPE

USSR

SONAR STUDIES PACIFIC SALMON MIGRATIONS

Scientists from the Kamchatka Branch of the Soviet Pacific Research Institute for Fisheries and Oceanography (TINRO) are using sonar to track the migration routes of salmon in the Pacific and the Sea of Okhotsk. Sonar also will be used to determine the number of salmon. The scientists say this method enables accurate assessment of the status of the salmon resource, and allows scientific predictions of future catches.

Natural Salmon Reproduction

Kamchatka is first in natural salmon reproduction in the Soviet Far East. The sparsely populated area's many large and small rivers offer ideal conditions for salmon propagation. (TASS, Mar. 25.)

* * *

IMPROVE CULTURE OF FRESHWATER CRUSTACEANS & FISHES

Biologists have developed a method of breeding that has saved crayfish ('Astacus') from extinction in Lithuania. Up to 90 young have been hatched from each female stripped of fertilized eggs. Hatchings 6 to 10 days old are released into ponds in the spring when water temperatures range between 10° and 15° C. (50°-59° F.). This year, hatcheries in east Lithuania will release about half a million into rivers and lakes.

Carp

Acclimatization of silver carp and bighead has progressed well in the Azov-Kuban region. Rice field culture of these species has increased steadily in recent years. ('FAO Fish Culture Bulletin,' vol. 1 (2) Jan. 1969.)

* * *

BUILDS NEW STERN FACTORY TRAWLERS

Baltiia shipyards at Klajpeda is building a modified class of stern factory trawlers (BMRT). The first, 'Luchegorsk,' was launched in early January 1969. She displaces 4,000 tons and can produce 70 metric tons of fish meal and 30 tons of frozen fish a day. Equipped with automatic lines for fish-meal production, her production capacity is triple the regular BMRT's.

Probably Fish Pollock

Luchegorsk was assigned to the Far Eastern Fisheries Administration's Kamchatka fleet. On her way to the Pacific in March, she successfully tested her equipment off Spanish Sahara and the Canary Islands.

The new BMRT probably will be deployed in Soviet Alaska pollock fishery. Alaska pollock is used almost entirely for fish meal.

* * *

NEW UNDERWATER RESEARCH VESSEL TESTED

'Sever-2,' a new Soviet underwater research craft, passed her first (unmanned) tests successfully. She was lowered to 2,18[illegible] meters (1,000 fathoms) in the Black Sea, off Sevastopol, in Mar. 1969.

The 20-metric-ton craft is equipped with a movable mechanical "hand" modeled after the human hand, several searchlights, and a light outside the hull supported by a special arm. She also carries supersensitive sound recorders, underwater cameras, and instruments to measure chemical composition and physical properties of water.

Physical Characteristics

Not a hydrostat, like 'Sever-1,' she can move at "speed of a running man" (about [illegible] miles an hour) at depths of 1,000 fathoms. She also can spin around her axis on one spot. The hull is encased in streamlined plexiglas "casing." The searchlights, mechanical "hand," and light protrude outside casing. Living quarters for a 3-man crew are equipped with air-regeneration units, fresh water, thermos containers for hot food, and battery power for underwater stays up to 3 days.

For Research

The craft is expected to be operational by the end of the year. She then will be turned over to Fisheries Ministry for research in North Atlantic and Arctic.

USSR (Contd.):

A specially designed mothership will carry Ser-2 in a hangar alongside, where temperare and moisture will be kept constant. The cit will be used to develop a technique for afficial fish schooling, and to study the reaions of fish to light and sound. ('Pravda,' N. 22.)

* * *

COMPUTERIZED MODEL OF WORLD OCEANS PLANNED

Scientists in Leningrad have begun to build a mathematical model of the world oceans. They are using a system of equations that describes the oceans' basic characteristics--horizontal and vertical currents, temperature, and salinity.

In a successful trial, the computer calculated correctly changes in currents off the western shores of the Atlantic and the Pacific. The calculations were confirmed by independent oceanographic observations. It also computed accurately the time needed for currents to develop in relation to wind force and direction.

Being Built at Leningrad

The model is being built by the Leningrad Branch of the Central Institute for Mathematical Economics and the Leningrad Laboratory of the Institute of Oceanology. If successful, it will provide a true "portrait" of the ocean. The scientists believe the model will allow them to determine changes in the velocity of currents without sending out research vessels. (TASS, Mar. 25.)

Note: Soviet research is interesting and exciting. The model's utility will be demonstrated only after years of practical testing. Soviet oceanographers probably have covered more of the oceans than other oceanographers because of large oceanographic research vessels they have received from Poland East Germany and their own wide-ranging research vessels. A successful model could affect world fisheries and shipping.

* * *

NEW DEVICE DETERMINES SALINITY

Soviet oceanographers used to determine sea water salinity by taking a sample every 5 to 10 kilometers and determining the most important factors by chemical analysis. They often complained about the lapses in information between time of sampling and when they obtained the results of measurements.

Now the Far Eastern Scientific Research Institute for Geology's Geophysical Laboratory has designed a new device for continuous measurement of water salinity. The device will be tested by vessels from the Institute of Oceanology's Leningrad branch.

Note: U.S. oceanographers have used U.S.-manufactured continuous salinity-measuring devices for several years.

* * *

'VITIAZ' ENDS CRUISE IN EQUATORIAL PACIFIC

The Soviet research vessel 'Vitiaz' has completed her 44th cruise in the equatorial Pacific. Expedition chief M. E. Vinogradov reports the collection of unique quantitative data on biological productivity. For the first time, the growth rate of animals feeding on microscopic algae was determined.

Bacteria were shown to form special agglomerations, important as a food component for small marine animals. Previously, bacterial cells were not considered food because of their miniscule size; to explain their role in plankton, the scientists measured the amount of energy transferred from one food level to another.

Plankton Research

Intensive plankton research was conducted with special nets, bathyphotometers, and radioisotopes to determine photosynthesis intensity. This research yielded for the first time a detailed picture of the vertical distribution of plankton.

Large, stable accumulations of animals, microorganisms, and detritus were discovered at several dozen meters. These perform important functions in the life of the ocean's upper layers.

The collections will be used to design a mathematical model of vital links between marine animals, and to compile a generalized 'biological productivity map' of the ocean. ('Izvestiia,' Feb. 20.)

* * *

THE SUGGESTION BOX PROVES VALUABLE FISHING GEAR

The Soviets have suggestion boxes and know how to use them. The Sevastopol Trawler Fleet Administration received 154 suggestions during first-half 1968; the 118 adopted saved thousands of rubles.

USSR (Contd.):

One suggested a continuous production line for gutting, filleting and packing fish. Installed aboard a BMRT, it saved 50,303 rubles (US$55,300) during one trip. A suggestion that various repairs be performed at sea, without docking, saved 6,168 rubles (US$6,785) per vessel. ('Rybnoe Khosiaistvo,' Feb.)

* * *

VESSEL STUDIES FISHERIES OFF SENEGAL

Soviet scientists on the research vessel 'Blesk' of the Atlantic Research Institute for Fisheries and Oceanography have conducted a joint survey with Senegalese scientists off West Africa. The survey was made to assess the fisheries, and to recommend measures to utilize, conserve, and expand fishery resources.

This was the first joint USSR-Senegalese scientific fisheries exchange. Joint cruises and expanded exchanges of scientific personnel are planned. (TASS, Mar. 16.)

U.S. Groundfish Survey

The Blesk, on her maiden cruise during Sept-Nov. 1968, participated in a joint U.S.-USSR groundfish survey under the Mid-Atlantic Fisheries Agreement. The survey, conducted from BCF's Biological Laboratory at Woods Hole, Mass., covered an area from the Gulf of Maine to Cape Hatteras.

* * *

EXTENDS SEAWEED AGREEMENT WITH JAPAN

On April 14, 1969, after only 3 days of negotiations, the Soviets signed an extension of the "private" seaweed-collection agreement with Japan. The Japan Fisheries Association President (Nakabe) signed for Japan; the Acting Director of Commercial Fishing Division, Ministry of Fisheries (V. Lipanov) for the USSR. The Soviets first concluded this agreement (also known as "kelp agreement") in 1963 at Japan's insistence; they have extended it every 2 years.

The 1969 Agreement

In the past, the Japanese were permitted to deploy 300 seaweed-collecting vessels in the Straits of Nemuro, off northeast Hokkaido, in areas the USSR claims as territorial waters. In 1969, Japanese will be allowed to deploy 330 vessels. Also, each Japanese fisherman will be permitted to catch 10 kilograms of fish daily for his own food. As compensation, the Soviets will require each Japanese vessel to pay a fee of 12,000 yen (US$33 per year.

The fees demanded, about $11,000 a year are low compared with value of 1963 seaweed harvest estimated by Japanese at US$800,000. (No recent estimates are available.)

Norway

FISHING OUTLOOK IS PROMISING

The short-term outlook for Norway's fishing industry is promising. Total catches of cod and other groundfish in the major fishing districts (Sogn of Fjordane through Finnmark) reached 118,500 metric tons in first-quarter 1969--22% above same period 1968. High quality spawning cod and Finnmark young cod provided 82,500 tons, a remarkably high proportion of the catch. Continuing good market conditions for frozen fillets were reflected in the more than 40% increase in fish purchases (to 57,000 tons) by the frozen-fillet industry.

Stockfish

There were no prospects for early resumption of stockfish sales to Nigeria, traditional market for about 70% of Norway's stockfish. But raw fish supplies for hanging (stockfish) increased over 25% to 31,700 tons in first-quarter. This reflected both prices and demand for salted fish, mainly klippfish, and state purchases and guarantees for stockfish production.

Inventories

On Dec. 31, 1968, stocks on hand of frozen fillets and stockfish were 18,000 tons and 8,400 tons, respectively. Frozen-fillet stocks were about 20% above, and stockfish inventories about 10% below, normal levels.

rway (Contd.):

ports of Frozen Fillets to U.S.

Recorded shipments of frozen-fish fillets the U.S. in Jan.-Feb. 1969 corresponded to r 33,000 tons on annual basis. According Frionor's sales director, the U.S. frozen n market is growing at a 10-20% rate.

ustrial Fishery

Reduction plants received about 446,000 s of raw material during first quarter, htly more than year before. The com- e failure of the winter herring fisheries s offset by a good capelin fishery off Finn- rk. Prospects for the rest of 1969 will end on development of North Sea mackerel herring fisheries, the small and fat her- g fisheries, and a possible reappearance capelin.

mpetition for Fish Meal

Fish meal industry spokesmen have voiced cern over planned EEC subsidization of plus stocks of dehydrated skimmed milk. portedly, such stocks are well above com- ed Norwegian-Danish annual fish meal es in EEC area. It is believed that market- such quantities of dehydrated milk for mal food will result in a cutback in EEC nand for Norwegian fish meal.

The fish meal industry also is concerned ut the potential price-lowering effects ming from construction of central ware- ses in Europe by Peru. These warehouses be supplied by large bulkships. (U.S. assy, Oslo, Apr. 25.)

* * *

PORT TO FISHERIES RISING

A major aim of the General Agreement of e 3, 1964, signed by the Ministry of Fish- s and the Norwegian Fishermen's Union, to end state support to the fisheries in near future. The steadily increasing sub- es granted since then indicate no progress been made.

Total state support payments to the indus- r reached US$37.7 million in 1968. This uded $7.8 million for state purchases of k fish from producers/exporters. State ort to the fishermen was 20.4% of 1968 exvessel catch value, compared with 16.8% in 1967.

Norway Criticized

Although the support system includes no direct export subsidies, Norway has been criticized lately, notably by Britain, for keeping export prices artificially low through subsidies.

Norway's support system also makes Denmark's unsubsidized industry wary of the Norwegian demand for a free NORDEC market for fishery products. (U.S. Embassy, Oslo, Apr. 25.)

* * *

1968 FISH BODY OIL OUTPUT FELL

In 1968, raw material supplies for fish meal and oil-reduction plants were about 20% below 1967. Production of fish body oils shrank correspondingly to 240,000 metric tons; 1967 production was 327,000 tons. Production of fish-liver oils increased from 10,500 to 11,000 tons.

Production of Oils from Fish and Marine Animals

Commodity	1967	1968
	(Metric Tons)	
Fish-liver oils	10,500	11,000
Fish-body oils	327,000	240,000
Total fish oils	337,500	251,000
Sperm oil:		
Antarctic	4,523	429
Shore stations	181	9
Total sperm oil	4,704	438
Seal oil	2,300	1,500
Whale oil:		
Antarctic	13,661	5,396
Shore stations	192	468
Total whale oil	13,853	5,864

Pelagic Whaling Stops

Since Norway will no longer participate in Antarctic whaling, the fish off her coast will be the main source of marine oils. Only one Norwegian whaling expedition took part in the 1967/68 season, the last Norwegian pelagic-whaling season. Limited whaling is still carried on from 2 land stations in Norway.

Imports & Exports

Reflecting lowered fish oil production and dimished returns from whaling, fish oil imports increased from 23,022 tons in 1967 to 43,791 tons in 1968. More than one-half came

Norway (Contd.):

from Peru. Exports of fish oils dropped from 190,777 tons in 1967 to 115,726 tons in 1968--about same as 1966.

	1968	1967	1966
	(Metric Tons)		
United Kingdom	39,311	34,819	32,100
Sino-Soviet	22,834	23,161	48,438
Others	24,045	23,645	25,138
Total	86,190	81,625	105,676

Exports of hardened marine oils increased by about 5,000 tons to 86,190 tons as a result of larger shipments to Britain. (Sources: Directorate of Fisheries, Bergen, 'The Norwegian Whaling Gazette,' and Ministry of Fisheries, Oslo--U.S. Embassy, Copenhagen, Apr. 15.)

* * *

INTERNATIONAL CONSERVATION EFFORTS

Norway has not publicized any official policies regarding international efforts to conserve northeast Atlantic fish resources. Indications are, however, that she favors a national quota system for groundfish in the Barents Sea, regulatory measures for North Sea herring and mackerel fishing, and a ban on salmon fishing in international waters. All these issues were on the agenda of the May ICNEAF meeting in London.

Ban on Driftnets

The recently imposed ban on driftnets (gillnets) inside Norwegian fisheries limits reflects government recognition of the need to preserve the North Atlantic salmon stock. Minister of Fisheries Einar Moxnes has said that banning driftnets in domestic waters would give weight to Norway's support of a complete ban on salmon fishing in international waters.

Government's Efforts Backed

The government's salmon conservation efforts are fully supported by marine scientists and salmon fishing interests. Norwegian landowners have had exclusive salmon fishing rights in the rivers and along the seacoast for hundreds of years. Drift-netting dates back only to the beginning of the 1960s. (U.S. Embassy, Oslo, Apr. 25.)

Denmark

FISHERY EXPORTS IN 1968 SET RECORD

Danish exports of fishery products during 1968 were worth a record US$133 million. Compared with 1967, pond-trout exports increased almost 15% in quantity and 11% in value; exports of cod fillets and blocks rose 10% in quantity and 14% in value.

Foreign Markets

Common Market countries continued as the leading market, although Denmark's EFTA partners bought only slightly less. Exports to East Bloc countries increased 25%. Exports to the U.S. were up about 25% over 1967, primarily because of increased sales of cod fillets and blocks.

Faroese Exports

Total fishery exports from the Faroe Islands amounted to $19.2 million in 1968, a 17% decline from 1967. Reductions in sale of salt fish accounted for much of the decline. Exports of frozen fillets and blocks to the U.S. declined 25%, but the U.S. still was the largest buyer. (U.S. Embassy, Copenhagen, May 1.)

Iceland

WHITE FISH CATCHES INCREASE

In 1968, there was greater fishing effort for the more valuable white fish sector--cod for example. It produced a recovery in the white fish catch; it promises an even greater catch in 1969. This was due partly to fishing vessels and fishermen, previously lured to herring fishing during the boom years, returning to the white fish fishery.

Processing of fish has been directed increasingly to products commanding a higher export value--and to the best market prospects. More profitable use results in larger volume of processed frozen white fish for export, and more labor-intensive methods favorable to employment. The almost complete loss of Iceland's stockfish (air-dried cod) market in Nigeria in the past 2 years cut production and export. So better quality raw material is being shifted into freezing and salting.

land (Contd.):

69 Outlook

Outlook for herring will not be discernible
til early fall. This is because of changed
gratory behavior of herring and smaller
cks. White-fish production for 1969 is
ected at least at 1968 levels. Despite 6-
k strike by fishermen that began Jan.
9, the major cod-fishing season ending
ay was bringing catches above 1968. For
first 3 months of 1969, cod catches in-
eased 38% over 1968. The low-value
ing capelin catches were reaching rec-
s. By end of March 1969, catches had
re than doubled over 1968 period.

The value of export production is yet to be
rmined by price movements abroad.
se appear favorable. Supply conditions
ne U.S., particularly for frozen fish, may
determine trends. The U.S. is Iceland's
ing market, followed by Great Britain and
R in 1968. Salt-fish markets are shrink-
(U.S. Embassy, Reykjavik, May 8.)

* * *

CAPELIN MEAL SELLING WELL

In 1965, when Icelanders started catching
elin on a large scale, exporters had trouble
ing capelin meal to certain countries.
e buyers did not know capelin. Capelin
l, being more fatty than herring and cod
ls, does not sell as well. Despite occa-
al sales difficulties, capelin meal usually
at fair prices in 1965-1968.

duction & Prices in 1969

he initial problems were largely over-
in 1969, and sales have been excellent.
have been helped by the recently favor-
market for fish meal. Iceland's 1969
lin meal production will be about 25,000
and average c.i.f. prices about IKr.
0 a ton.

Capelin Meal Exports & Average Prices

	Exports	Average f.o.b. Price
	Metric Tons	IKr./Metric Ton
	11,243	6,360
	15,756	6,070
	19,185	6,480
	6,480	6,620

IKr. 57.07 = US$1 in 1968, IKr. 43.06 = US$1 in 1967, and 1965.

Polish Purchases

The Poles have been large buyers of herring and cod meals in recent years. Efforts to get them to buy capelin meal were in vain until recently--when a Polish feed-blending specialist visited. Then Icelanders succeeded in selling Poland a 250-ton sample shipment of capelin meal at acceptable prices.

Largest Buyer Is Denmark

The Danes have purchased the lion's share of this year's capelin meal production, both for domestic use and for reexport. They have a more favorable sales position than the Icelanders. They do not have to pay a 10% import duty on fish and capelin meal in Britain because of Denmark's EFTA membership. (U.S. Embassy, Copenhagen, May.)

Sweden

AMERICAN CRAYFISH WILL BE PLANTED IN LAKES

The Swedish Fisheries Directorate has announced a US$40,000 appropriation to introduce American "signal" crayfish into 60 lakes. It is an attempt to replace Swedish stocks of the European river crayfish (Potamobius astacus). These stocks had been decimated by a virulent fungus disease that first struck in 1907.

Successfully Tested

The American "signal" crayfish, imported for testing from Lake Tahoe in Nevada and California, proved easily transplantable under Swedish conditions. It is said to be a thousand times more resistant to the fungus disease than the river crayfish. The "signal" crayfish is aggressive, reproduces rapidly, and may compete effectively enough to reduce river crayfish stocks even further. Therefore, introductions will be made under closely controlled conditions. The lakes selected for planting have at least 20 acres of surface area and had sustained good stocks of river crayfish before the disease struck.

A Delicacy in Northern Europe

The Swedes and other North Europeans relish fresh-water crayfish, eating them with

Sweden (Contd.):

aquavit (1 tiny glass with each claw and 2 with the tail). Taste tests, presumably under standard conditions for crayfish eating, have shown that American "signal" crayfish has a flavor equal to the native variety.

Market Opportunities

The commercial market for crayfish in Sweden and Denmark lasts only a short period. It exists primarily during August, when many people are on vacation. Many crayfish consumed in Sweden and Denmark are imported from Turkey and Bulgaria. The U.S. Embassy in Copenhagen has received occasional inquiries regarding U.S. suppliers of fresh live crayfish.

* * *

LICENSES SHRIMP IMPORTS

The Swedish Agricultural Marketing Board decided that all cooked-shrimp imports were subject to license approval, effective March 1, 1969. The decision was made to give the Board an opportunity to follow the level of imports and price development.

Requiring a license for imports does not mean automatic limitation. Imports will be readily licensed unless the level of imports and prices become problems. The license procedure will give the Board a chance to step in rapidly if import limitation is considered necessary.

Addition of coloring to shrimp imports also will be prohibited, effective July 1, 1969. (U.S. Embassy, Mar. 3.)

* * *

EXTENDS DEADLINE
ON COLORING SHRIMP

Sweden will permit coloring of shrimp until Jan. 1, 1970. Previous deadline was July 1, 1969.

After Jan. 1, 1970, coloring will be prohibited except for peeled and deep-frozen shrimp packed in closed original containers. The label must contain a statement that shrimp have been colored. (U.S. Embassy, Stockholm, Apr. 29.)

Spain

1968 WAS GOOD YEAR FOR
CANNED FISH INDUSTRY

Fish canning, one of the more importan sectors of Spain's food industry, has resume its growth. It had experienced a sharp reduc tion in output in 1966 after a peak in 196 The value of fish canning in 1968 surpasse 1965's high.

The industry produces primarily canne fish packed in oil, about 70% of output, an canned marinated fish, about 10%. Productio centers are in the 4 northwest provinces th form Galicia. The more important canner operate in and around Vigo in Pontevedr province.

World Market

Of equal significance is the canned fis industry's performance in the internationa market. Exports in 1968 grew to about US$ 1 million, a 27% increase over 1967. Canne sardine and anchovy sales are the larges share (about 64%) of exports. Tuna, bonit and albacore are next largest.

Resumed expansion in domestic and ex port markets points to possibility of increas ing opportunities for U.S. manufacturers processing and packaging equipment for do mestic producers. (U.S. Embassy, Madri May 7.)

United Kingdom

1968 FISH MEAL USE
ROSE 100,000 TONS

Fish meal consumption in the U.K. l year increased by more than 100,000 t over 1967 to a record 582,000 long t Domestic meal production, boosted by lar amounts of unsold fish in Hull and Grims rose 7,000 tons above 1967, to 87,000 ton

Imports

The rest of the supply--495,000 tons wo US$70.3 million--was imported ($54.7 m lion for 395,450 tons in 1967 and $50.8 mil for 308,500 tons in 1966). Total supply 1967 was 475,450 tons; in 1966, 394,500 to

ited Kingdom (Contd.):

sh Oil

In 1968, fish oil imports dropped from 1,900 tons worth $36 million in 1967 to 5,000 tons valued at $28.1 million. In 1966, imports of 177,800 cost $29 million.

On a yield basis of 4 to 5 tons of fish for a of meal, British imports represented a ch of over 2 million tons. ('Fishing News,' r. 7.)

st Germany

NDUCTS OCEANOGRAPHIC SEARCH IN BALTIC

Early in March 1969, East Germany's anographic research vessel 'Prof. Alcht Penck' sailed on the first of 4 Baltic search voyages scheduled for this year. is is part of the program for International ltic Sea Year 1969-70. It is being carried by the Institute of Oceanography of the st German Academy of Sciences. The rerch is financed in part by the East Gern High-Seas Fisheries Administration.

earch Procedures

Measurements and chemical-biological nples will be taken at 14 locations. The s temperature, salt content, water den-, and "production potential" will be measl. According to a 1968 agreement, the ticipants will exchange data to lay the ndwork for development of fishing in the ic.

easing Pollution

nother research objective is to develop hods of fighting pollution. Recent obvations by the East German Institute of anography at Rostock-Warnemuende have closed that pollution of the Baltic due to e organic matter has increased over the decade. This matter is soaking up dised oxygen and threatening marine life. S. Mission, Berlin, Mar. 18.)

Czechoslovakia

IMPROVES FISH-CULTURE TECHNIQUES

The Department of Fish Culture and Hydrobiology, University of Brno at Bano, has increased fingerling production from 200-500 kilos/hectare to about 1,000-1,200 kilos per hectare by improved culture techniques. Attempts are being made to increase production of table fish to 1,500 kilos/hectare by judicious fertilization of the ponds, and an optimum ratio of natural and artificial feeding. ('FAO Fish Culture Bulletin,' vol. 1, no. 2, Jan.)

Poland

FISH CULTURE IS GROWING

Salmonid culture is expanding in Poland, particularly the pond culture of rainbow trout, Salmo gairdneri. Atlantic salmon, Salmo salar, were introduced into rivers in April 1968. Eyed eggs of this species came from Canada.

Poland's annual harvest of common carp from ponds is about 12,300 metric tons. Total inland fishery production is 20,600 tons. Common carp is selected systematically for fast growth rate and delayed maturation.

Carp Culture

Monoculture of common carp is widely practiced, but other species--like tench and grass carp--are being stocked increasingly to achieve higher yields. Based on experiments conducted by the Inland Fisheries Institute at Zabieniec, commercial culture of grass carp, silver carp, and common carp is recommended. ('FAO Fish Culture Bulletin,' vol. 1 (2), Jan. 1969.)

* * *

Economic Returns to Polish Factory Trawlers in Northwest Atlantic

Bruno G. Noetzel

The Northwest Atlantic has the world's richest resources of food fish; it is also the most exploited part of the ocean. Fishing effort increases year after year. The pressure has accelerated with introduction of new fishing techniques--and transfer of fish-processing activities from land to fishing grounds via factory ships.

Large fleets of modern stern-ramp trawlers operate year round. The vessels are equipped with highly mechanized fish-processing facilities: freezing, fish meal, and fish oil plants, and refrigerated holds for frozen products. They are capable of converting the entire catch into final marketable products: frozen fillets in blocks, fish meal, and fish oil.

These huge fishing and processing vessels, built entirely with state funds, are representative of the direction of fishery development in most of the Eastern European countries in the past 10 years.

What the Vessels Look Like

On Oct. 22, 1960, the Gdansk Shipyard delivered the first in a series of these modern fishing vessels to Poland's state-owned fishing industry. By the end of 1965, twelve factory trawlers of the type described below were in operation, all managed by "Dalmor" Deep-Sea Fishing Enterprise in Gdynia.

The all-welded, steel-hull vessels have these main characteristics: length overall 85.20 m, moulded breadth 13.80 m, depth to shelter deck 9.75 m, gross tonnage 2,800, net tonnage 1,160. A Sulzer-Zgoda model 8TD48 diesel engine developing 2,400 h.p. at 180 r.p.m., is coupled to a 4-bladed 3.10 m diameter Lips controllable pitch propeller to give a cruising speed of 11.5 knots.

Auxiliary machinery includes four 250 generators driven by Sulzer 6BAH22 dies each 375 h.p. at 500 r.p.m. The standard c is 94 men, but there are accommodations 102. The vessels can stay at sea 70 d without refueling.

The processing plant is equipped with leting machines for redfish (Baader 150) for cod (Baader 99, and on a few vessel Baader 38 also), heading machines (Baad 412), skinning machines (Baader 46 and 4 and washing machines (Baader 666). The are two filleting lines (on some vessels the is an additional line for small cod), and stands for filleting by hand (for larger fis The total capacity of the processing plant 50 m. tons of fish every 24 hours.

Fish fillets, dressed fish, and whole fi are quick frozen in 2 blast freezers with total capacity of 30 m. tons of products p 24 hours. The frozen fish blocks are stow in 3 refrigerated holds (total volume 1,4 cubic meters). The fish meal plant can hand 20-30 m. tons of offals and by-catch per hours. Fish meal packed in 50 kg. sacks stowed in a 285 cubic m. hold (the stora capacity is 600-650 kg./cu.m).

Up to one ton of liver oil can be produc daily from cod livers. Fish oil is also o tained as a by-product of fish meal produ tion. Four tanks with a total volume of cubic m. provide storage space for the o (approximately 53 m. tons of oil).

How They Are Operated

During the 5-year period 1961-1965, the vessels made 75 trips (a total of 27.75 ve sel-years were analyzed) to the Northwe Atlantic fishing grounds (International Co mission for the Northwest Atlantic Fisheri

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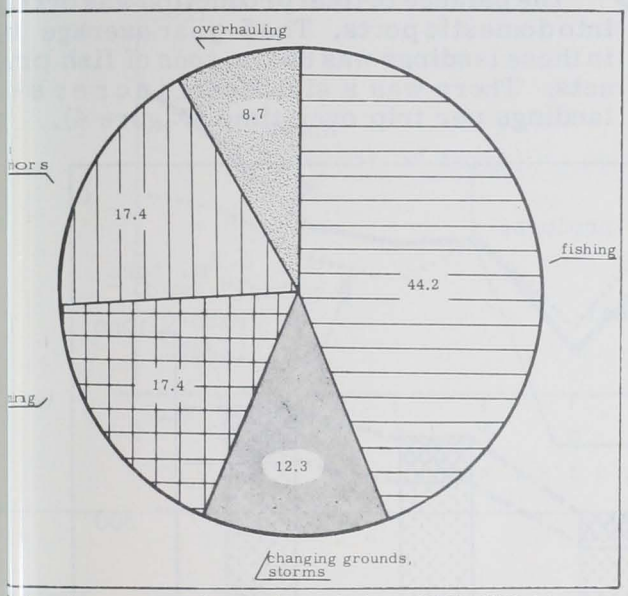
Note: Tables 1 and 2 and figure 6 are in the appendix in reprint (Sep. No. 842) of this article. For a free copy of the Separat write to Division of Publications, U.S. Department of the Interior, Fish and Wildlife Service, BCF, 1801 N. Moore St., Arlingto Va., 22209.

U.S. DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Sep. No. 842

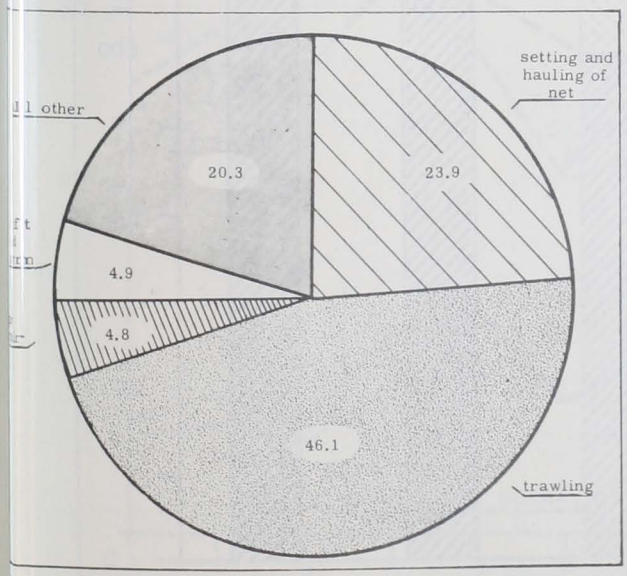
NAF) Convention Area) and only 2 explora- trips to the African shelf.

On the average, a vessel was at sea 270 s per year; the balance in ports and ship- ds. The vessels spent an average 16½ days omestic ports between trips.

Running to and from the fishing grounds re- ed 23.5% of time at sea, or 17.4% of a 's time (Figure 1). On the fishing grounds, t 75% of the time was used for fishing ac- y, including: setting and hauling of trawl, wling, and gear repairs (Figure 2).[1]



1 - Average use of annual vessel time, 1961-1965 (in per- t of a year's time).



2 - Breakdown of time spent on fishing grounds (in percent, ear averages).

Because of the long distance between home ports and grounds fished, the vessels were able to complete an average of only 2.77 trips a year. The average fishing activity per trip was 58 days (one day = 24 hours of fishing activity). The vessels averaged 496 hauls and 860 hours of trawling during the 58 days.

On 2 trips to the African grounds, 4,355.3 m. tons of fish were caught (or 2,178 m. tons per trip). The average catch from 75 trips to the ICNAF area was 1,676.5 m. tons.

The production of these factory trawlers may be looked at from 2 viewpoints: What is this production relative to total landings by the entire Polish fishing fleet? What are the effects of this additional fishing pressure on the resources in the ICNAF Convention Area?

In 1965, the Polish fleet represented 11 vessel-years of operations--10 vessels were operated all year, and 2 joined fleet during year. This fleet caught 52.2 thousand m. tons of fish in the ICNAF area. It accounted for 18.6% of total landings by entire Polish fishing industry. This quantity is a significant portion of Polish landings, but it is only 1.6% of 1965 landings by all countries in ICNAF area.

Over the 1961-1965 period, the catch by Polish factory trawlers from ICNAF area (125.7 thousand m. tons) was 0.9% of all landings.

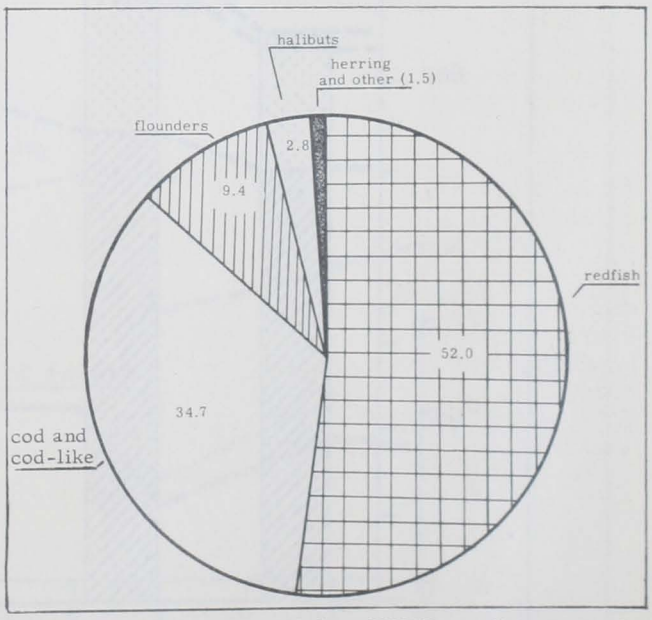


Fig. 3 - Composition of catch from ICNAF area (in percent of total).

[1] "All other" in Figure 2 includes: changing grounds, short calls to foreign ports (without time for unloading or repairs), running to and from these ports (mainly St. John's, Newfoundland).

The composition of catch from ICNAF area is shown in Figure 3. The total catch of 130,095 m. tons (5 years' production, Africa and ICNAF area combined) was processed aboard vessels into 68,959 m. tons of fish products. From ICNAF area alone, 66,402 m. tons of fish products were landed in these forms:

	Percent of Total by Weight		
Frozen redfish fillets	23.46		
frozen cod fillets	15.55		
Total frozen fillets		39.01	
Frozen fish, dressed		34.13	
Frozen fish, gutted		0.05	
Frozen fish, whole		1.99	
Other frozen products		0.15	
Total frozen products			75.33
Fish meal			20.03
Fish oils			4.64
Total landings			100.00

About 10% of total production was landed in foreign ports. These landings consisted of:

6,066.1 m. tons of frozen products
550.1 m. tons of fish meal
11.1 m. tons of fish oils

Out of these quantities 1,618.7 m. tons of frozen products were landed in Africa, the remainder in Canada.

The balance of total production was brought into domestic ports. The 5-year average load in those landings was 853 m. tons of fish products. There was a significant increase in landings per trip over time (Figure 4).

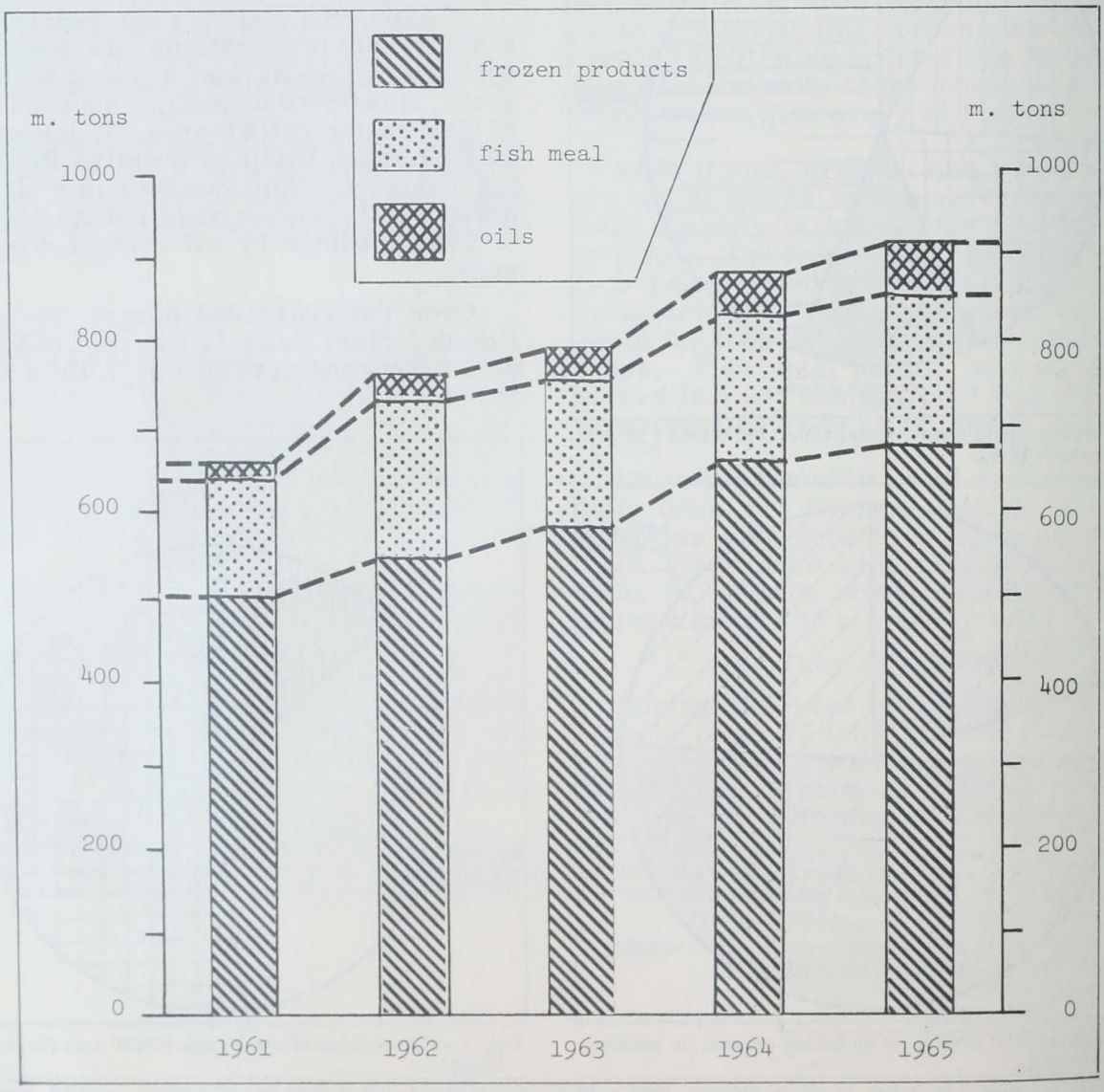


Fig. 4 - Per-trip landings in domestic ports, 1961-1965.

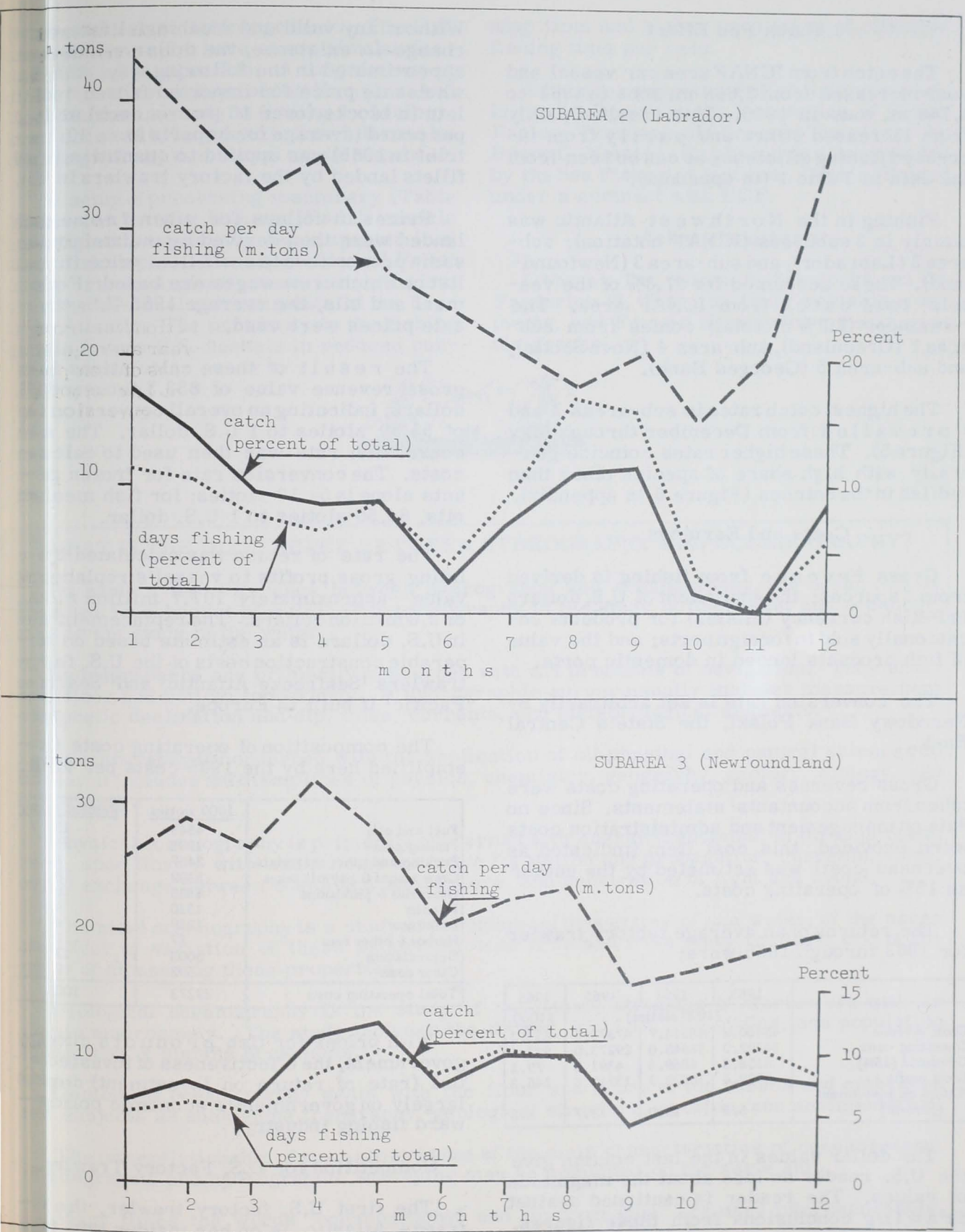


Fig. 5 - Monthly distribution of effort and catch in two ICNAF subareas.

Catch Per Effort

The catch from ICNAF area per vessel and year increased from 2,669 m. tons in 1961 to 4,748 m. tons in 1965. This resulted partly from increased effort and partly from increased fishing efficiency as can be seen from the data in Table 1 (in appendix).

Fishing in the Northwest Atlantic was mainly in 2 subareas (ICNAF notation): sub-area 2 (Labrador), and sub-area 3 (Newfoundland). These accounted for 97.3% of the vessels' total catch from ICNAF area. The remainder (2.7% of total) comes from sub-area 1 (Greenland), sub-area 4 (Nova Scotia), and sub-area 5 (Georges Bank).

The highest catch rates in sub-areas 2 and 3 prevailed from December through May (Figure 5). These higher rates coincide generally with high share of species other than redfish in the catches (Figure 6 in appendix).

Costs and Earnings

Gross revenue from fishing is derived from 2 sources: the equivalent of U.S. dollars in Polish currency (zloties) for products occasionally sold in foreign ports; and the value of fish products landed in domestic ports.

The conversion rate is set arbitrarily by Narodowy Bank Polski, the State's Central Bank.

Gross revenues and operating costs were taken from accountants' statements. Since no data on management and administration costs were provided, this cost item (indicated as overhead cost) was estimated by the author as 15% of operating costs.

The returns of an average factory trawler for 1963 through 1965 were:

	1963	1964	1965	1965
	. . . . (1000 zloties)			$1000
Gross revenue	45480.2	48344.7	47376.6	853.3
Operating costs	34392.0	32645.0	29273.0	527.4
Overhead (15%)	5158.8	4869.8	4391.0	79.1
Gross profit	5929.4	10829.9	13712.6	246.8
Return on investment (percent)	5.5	10.0	12.7	8.8

The dollar values in the last column give the U.S. reader an idea about the magnitude of values. The reader is cautioned against drawing conclusions from these figures.

Without any valid and meaningful rate of ex change in existence, the dollar values wer approximated in the following way: the U.S wholesale price for imported frozen cod fi lets in blocks (over 10 pounds each) at 24.4 per pound (average for imports from 12 cou tries in 1965) was applied to quantities of c fillets landed by the factory trawlers in 196

Prices in dollars for other frozen fi landed were then derived by maintaining t same proportions to cod fillets price in pri list on which crew wages are based. For fi meal and oils, the average 1965 U.S. whol sale prices were used.

The result of these calculations is t gross revenue value of 853.3 thousand U. dollars, indicating an overall conversion ra of 55.50 zloties to 1 U.S. dollar. The sam conversion rate was then used to calcula costs. The conversion rate for frozen pro ucts alone is 54.10 zloties; for fish meal an oils, 64.50 zloties to 1 U.S. dollar.

The rate of return was calculated by re lating gross profits to vessel's replaceme value--approximately 107.7 million zlotie or 2.8 million dollars. The replacement val in U.S. dollars is an estimate based on com parable construction costs of the U.S. facto trawlers 'Seafreeze Atlantic' and 'Seafree Pacific' if built in Europe.

The composition of operating costs is ex emplified here by the 1965 costs per vess

	1000 zloties	Percent of T
Fuel and oils	4543	15.52
Fishing gear	3908	13.35
Packing and other materials	2467	8.43
Crew wages & payroll taxes	8309	28.38
Groceries & provisions	1835	6.27
Repairs	1310	4.48
Insurance	1219	4.16
Harbor & other fees	87	0.30
Depreciation	5003	17.09
Other costs	592	2.02
Total operating costs	29273	100.00

With prices for fish products fixed government, the effectiveness of invested c ital (rate of return on investment) depen largely on government's economic policy t ward fishing industry.

Competition for U.S. Factory Trawler

The first U.S. factory trawler, the Se freeze Atlantic, is on her maiden trip to

Northwest Atlantic fishing grounds. The U.S. and Polish vessels have many similar features (Table 2 in appendix). A long time span dilutes the first trials of the European and U.S. fishermen in modern fishing technology. Experience has to be gained before full results of fishing with the new vessel can be expected.

The setup of processing machinery (Table 2) indicates that the U.S. and Polish vessels are designed to exploit the same species (cod and redfish stocks). The experience of Polish factory trawlers gives cause for optimism about the eventual achievements of the Seafarer Atlantic. The proximity to the fishing grounds favors U.S. vessels in reduced running time and higher proportion of effective fishing time per year.

A broader report on Polish fishing vessels is in: "A Report on the Economics of Polish Factory Trawlers and Freezer Trawlers," by Bruno G. Noetzel. It is based on data provided by the Sea Fisheries Institute, Gdynia, Poland, under a contract with BCF.

Acknowledgments

I thank Dr. Adam A. Sokoloski and Dr. Frederick W. Bell for their valuable comments, and Frank Murray for preparing the graphs.

WHAT IS THE DIFFERENCE BETWEEN HYDROGRAPHY AND OCEANOGRAPHY?

To explain the difference between hydrography and oceanography, the ocean can be compared to a bucket of water; then hydrography is the study of the bucket and oceanography is the study of the water.

Hydrographers are primarily concerned with the problems of navigation. They chart coast lines and bottom topography. A hydrographic survey usually includes measurement of magnetic declination and dip, tides, currents, and meteorological elements.

Oceanography is concerned with the application of all physical and natural sciences to the sea. It includes the disciplines of physics, chemistry, geography, geology, biology, and meteorology.

Physical oceanography is primarily concerned with energy transmission through ocean water, specifically with such items as wave formation and propagation, currents, tides, energy exchange between ocean and atmosphere, and penetration of light and sound.

Chemical oceanography is a study of the chemical properties of sea water, of the cause and effect of variation of these properties with time and from place to place, and of the methods of measuring these properties.

Biological oceanography is the study of the interrelationship of marine life with its organic environment. The study includes the distribution, life cycles, and population fluctuations of marine organisms.

Geological oceanography deals with the floor and shore of the oceans and embraces such subjects as submarine topography, geological structure, erosion, and sedimentation.

The interrelationship of specialties is one of the main characteristics of oceanography. Oceanographic and hydrographic surveying may be combined on the same ship.

Many times the words "oceanography" and "hydrography" are used interchangeably. (Questions About the Oceans," U.S. Naval Oceanographic Office.)

LATIN AMERICA

Peru

ANCHOVY SEASON CATCH LIMITS AND CLOSURE ANNOUNCED

In mid-April, Peru announced a 9.5 million-metric-ton limit on anchovy catch for the 1968/69 season. The season began Sept. 1, 1968. This is the same limit as in the 1967/68 season; it is 1.3 million tons more than the 8.2 million ton provisional catch announced in January.

Closure Dates

On May 13, the Minister of Agriculture announced that the 1968/69 season would close May 31. By then, the 9.5 million quota was expected to be reached. Fishing will remain closed for 90 days, except for southern ports of Ilo and Mollendo. The 1967/68 season had closed at the same time and for the same period.

Previous Suspensions

The 1967/68 season did not begin until October 1967. A strike had prevented fishing in September. Fishing was suspended Feb. 17-Mar. 17, 1968, and again during Feb. 1969.

Production and Exports

This season's fish meal production through February was 1,113,196 tons; it was 1,211,114 tons for same period 1967/68. March production was apparently the highest of any month in the history of the fishery. Expor continued high compared to previous year but stocks on hand were below previous level On April 24, prices for fish meal c. & f. Ham burg had reached US$159 a metric ton (d liveries through Dec. 1969).

Fish Meal Production and Exports, First Quarter, 1967-1969

	1969	1968	1967
	(Metric Tons)		
Production:			
Jan.	240,495	284,021	287,466
Feb.	17,357	191,575	109,644
Mar.	325,549	155,233	163,512
Total	583,401	630,829	560,622
Exports:			
Jan.	140,283	192,056	100,281
Feb.	185,938	188,222	115,673
Mar.	188,225	170,107	117,282
Total	514,446	550,385	333,236
Stocks on hand Mar. 31	449,652	671,323	596,275

Although production is somewhat unpr dictable, April will be a record for that mo if the catch of the first two weeks is an in cator. Whether the 9.5 million ton limit w be observed or increased is uncertain. (U Embassy, Lima; 'Sociedad Nacional de Pe queria,' Apr. 21 & 22.)

Cuba

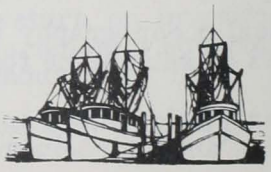
RECEIVES SHRIMP TRAWLERS FROM EUROPE

Cuba has received 74 shrimp trawlers the 90 ordered from Spain. The remaining should be delivered during the coming mont The vessels are being built by a consorti of 6 Spanish shipyards, most at Vigo.

The steel-hulled 107-gross-ton trawl are 23 meters (77 feet) long overall, can tra 10 knots, and carry a crew of 11. Their f tanks hold 40 metric tons and the water ta hold 15. The nonrefrigerated holds are ab 80-cubic-meter capacity each.

30 Ordered from France

Cuba has ordered thirty 25-meter- (82 ft.) refrigerated vessels from Fra They will have a 50-ton frozen storage cap ity and brine tanks to preserve 4,000 pou of shrimp. Cuba may pay with spiny lob s sales. During the last quarter of 1968, Fra imported 540 metric tons of Cuban cru s ceans, mostly spiny lobster, worth US$1 million.



Third Asian Tuna Conference Held

The third Asian tuna conference was held in Seoul, S. Korea, April 22-23, 1969. It was attended by representatives from Japan, S. Korea, Taiwan, and Okinawa.

The conference covered problems in tuna production, sales and marketing, labor, and administration. The discussions showed growing interest in resource problems. The participants talked less about national interests and more about achieving common goals. Ways were sought to insure stable management and fishery growth.

Agreements Reached

Agreement was reached on the following:

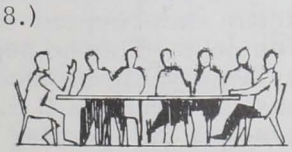
1) The delegates affirmed the need to give due consideration to the tuna resource problem. The delegates will urge their governments to arrange a meeting of fishery scientists--and to promote national participation in International Convention for the Conservation of Atlantic Tunas and other international tuna organizations.

2) Despite rising costs of fishing vessels, labor, interest rates, and worldwide decline in catch rate, world tuna prices remain low. This poses a serious management problem. Tuna producers must cooperate to assure recovery of production costs and reasonable profits. They must see that a rational price determination is made.

3) Unilateral extension of territorial waters or fishery jurisdiction over vast areas must be firmly opposed.

4) A permanent organization, unanimously approved at this year's meeting, will be established.

The next conference will be held on Okinawa in late Feb. 1970. ('Katsuo-maguro Tsushin,' Apr. 28.)



Japan

REGULATES EASTERN PACIFIC YELLOWFIN TUNA FISHERY

The Japanese Fisheries Agency, in accordance with the Inter-American Tropical Tuna Commission's closure of the eastern Pacific yellowfin tuna fishery on Apr. 16, 1969, issued the following instructions:

1) For 1969 only, longliners under 430 gross tons (carrying capacity 300 tons) and purse seiners will be able to fish freely for yellowfin on and after April 16 until combined yellowfin catch after closure reaches the 4,000 short tons allowed Japan. After 4,000 tons, vessels will limit yellowfin catch to 15% of total catch of such vessels.

2) Tuna longliners over 430 gross tons fishing in the regulatory area on or after April 16 would limit yellowfin catch to 15% of total catch of such vessels. ('Katsuo-maguro Tsushin,' Apr. 15.)

* * *

1969 SALMON QUOTA IS 105,000 TONS

The 14th annual meeting of the Japan-USSR Fisheries Commission in Tokyo, April 2-29, set the 1969 Japanese salmon catch quota in Convention waters at 105,000 metric tons. This is 3,000 tons less than in 1967, the previous good year for Asian pink salmon runs; it is the lowest for a good pink salmon year. Of total, 49,750 tons were allocated for Area A (north of 45° N. latitude) and 55,250 tons for Area B (south of 45° N. latitude).

The Soviet coastal quota was set at 80,000 tons.

Much Talk About Herring

At first, the Soviet negotiators sought entry of Soviet patrol boats into Area B and establishment of a "no-fishing zone" between Areas A and B as in 1968. They withdrew demand after strong opposition from Japanese.

The subject of herring fishing was most troublesome; it took up 70% of talks. Both parties agreed to designate "no-fishing zones" in certain areas of Karagin Bay and

Japan (Contd.):

Gizhiga Bay on the eastern and western sides of Kamchatka Peninsula. Japan also agreed to reduce herring fleet to 98 boats (about $\frac{1}{3}$ 1968 fleet) off Karaginski Island, east of Kamchatka Peninsula. ('Suisan Keizai Shimbun,' May 1; 'Nihon Suisan Shimbun,' May 2.)

* * *

REPORT ON DISTANT-WATER TUNA FISHING

In early April 1969, the Japanese tuna fisheries in all oceans, other than eastern Pacific, were generally poor. Catch rates were down for albacore, yellowfin, and bluefin. Up to early April, light catches had caused frozen-tuna prices to rise an average $10-15 a ton on export market. Frozen round albacore exports to the U.S. were around c. & f. US$535 a short ton for direct shipment, and c. & f. US$492 a ton for Atlantic transshipment. Gilled-and-gutted yellowfin exports to the U.S. were quoted at around c. & f. $435.

Pacific Ocean

In the regulatory area of the eastern tropical Pacific, Japanese longliners had been making very good catches of big-eyed marlin and tunas early in March. Catches had averaged 3 tons a day per vessel. Some vessels landed as much as 4 tons per operation.

In the South Pacific, around 10°-15° S. latitude, near American Samoa, yellowfin fishing was good in March. South Korean longliners were catching around 2 tons per vessel, and Japanese vessels close to 3 tons per vessel per day.

In the Tasman Sea, off southeast Australia, modern Japanese vessels concentrated on Australian bluefin fishing. But catches were poor, averaging under 1 ton a day per vessel. There seem to be definite indications of overfishing in the area.

Indian Ocean

Off Fremantle, Australia, fishing had slowed; only a few vessels were there. Longliners had begun converging off the Sunda Islands, Indonesia, to fish yellowfin, big-eyed, and Indian bluefin. Fishing was poor; vessels averaged 1-$1\frac{1}{2}$ tons.

In the Arabian Sea, good yellowfin catch of 3-4 tons a day were being made until mi March. Fleet operations increased later a landings were cut sharply.

In the western Indian Ocean, north Madagascar, yellowfin fishing was very slo The albacore fishery south of the island h not developed fully. Japanese vessels fish albacore were hoping for a good season sta ing in late May. However, because of wid spread reports of possible current change the Indian Ocean, the predominant view w that the fishery does not look promising t year. Most vessels fishing there were cat ing less than 1 ton a day.

Atlantic Ocean

Around Bermuda, some vessels were fis ing with fair success, catching $2\frac{1}{2}$-3 tons tuna (mostly albacore) per day. West of t Azores, some vessels were catching 2-$2\frac{1}{2}$ to of albacore per day.

In the Guinea Gulf, the yellowfin seas was under way, but fishing was slow. Ma vessels were landing under 2 tons per s Off Angola, longliners were taking 1-$1\frac{1}{2}$ to of albacore per vessel per day, but fish qu ity was far poorer than last year. ('Suis Tsushin,' Apr. 9.)

* * *

TUNA SEINERS DOING POORLY IN E. PACIFIC

The 4 Japanese purse seiners fishin the eastern Pacific yellowfin tuna regulat area for over 2 months are doing poo Their catch as of April 10 was only about tons. In view of the good performance of seiners, Japanese opinion is that there is reason why their fishermen cannot take m fish. Some observers attribute the poor fi ing to extremely slow detection of schoo

Better Communications Needed

Until last year, Japanese longliners in eastern Pacific intercepted messages tween U.S. seiners. This helped produce b ter catches. This year, interception has come impossible because U.S. seiners h changed messages in reporting fishing co tions due to Japanese entry into regula area. Therefore, even longliners are

Japan (Contd.):

ing good yellowfin catches. For long-
liners and seiners to improve fishing effi-
ency, they must establish better communi-
ations. ('Minato Shimbun,' Apr. 24.)

* * *

NEW BOAT-CARRYING TUNA
MOTHERSHIP IS IN EASTERN PACIFIC

The new portable-boat-carrying tuna
mothership 'Zenko Maru No. 18' (965 gross
tons), owned by Ozu Fish Products Co.,
Misaki, Japan, departed Misaki April 28 for
the eastern Pacific.

The vessel has overhead hanger-type re-
frigerated holds. Equipped with labor-saving
devices, it requires only 48 men, compared
with over 60 in a similar-sized vessel now
operating.

May Indicate Trend

The Zenko Maru is designed to operate
off Japan or an overseas base, depending
on where catch would bring higher price. Its
construction for longline fishing indicates a
possible direction industry may take in the
future. For that reason, its performance will
be closely watched in Japan until it returns
in November. ('Suisan Keizai Shimbun,' May
22.)

* * *

SUMMER ALBACORE TUNA
FISHING PICKS UP

The pole-and-line summer albacore fish-
ery was showing signs of improvement.
Landings at Yaizu have increased. Until Apr.
20, 6 vessels were bringing back only 50
metric tons of pole-caught albacore a day; on
April 21 and 22, over 200 tons were unloaded.
The fishing grounds are within 12 to 13 hours
of port.

The pole-and-line vessels are mostly 39-
gross-ton craft. Exvessel price for pole-
caught albacore was around US$479 a short
ton. ('Suisan Keizai,' Apr. 25.)

* * *

SOUTHERN BLUEFIN TUNA CATCH DROPS

Japanese longliners began fishing for southern bluefin tuna off Australia about 2½ years ago. They harvested 30,000-40,000 tons annually until late 1968. Since then, landings have fallen off sharply. In March 1969, catch per vessel was down to around 0.7 ton a day, compared with 3 tons before.

Restrictions Urged

The Far Seas Fisheries Research Laboratory, Japanese Fisheries Agency, attributes the fall-off to fishing egg-bearing adults during spawning season. Spawning occurs off southern and western Australia from Oct. through Feb. The laboratory explained the bluefin grounds can be sufficiently rehabilitated if fishing is diverted to another area. Therefore, the Agency is urging fishermen to carry out voluntary catch restrictions as soon as possible. ('Shin Suisan Shimbun Sokuho,' Mar. 8.)

* * *

FROZEN TUNA EXPORTS
TO U.S. ARE SLOW

In early Mar. 1969, direct exports of frozen tuna to the U.S. were slow because of good yellowfin fishing by California fishermen. Some Japanese trading firms were shipping limited quantities of frozen gilled-and-gutted yellowfin to U.S. west coast packers priced around US$420 c.i.f. a short ton. Prices for frozen round albacore exports to the west coast, unchanged for several months, were quoted at $515 a short ton. ('Katsuo-maguro Tsushin,' Mar. 5.)

* * *

BRAND PROMOTION PUSHED IN
ADVERTISING CANNED TUNA IN U.S.

The Japan External Trade Organization's (JETRO) Fishery and Agriculture Division senior analyst has returned to Japan after 5 years in New York. He has advised Japanese firms to combine brand promotion in their joint canned tuna advertising in the U.S.

Promotion in U.S. Changes

He noted that the concept of Japanese canned tuna promotion in the U.S. has changed.

Japan (Contd.):

Now it involves few political problems. U.S. demand for canned tuna is strengthening and the market increasing. Quality and price differences between major U.S. brands and Japanese product are narrowing. It is necessary, therefore, to concentrate on brand promotion. ('Kanzume Nippo,' Apr. 26.)

* * *

CANNED-TUNA PROMOTION WILL BE INCREASED

The Japan Export Tuna Packers Assoc. will increase the budget for canned-tuna promotion in the U.S. and Europe. In the U.S., it is now about US$91,667, contributed equally by government and industry.

Because U.S. domestic packs and other imports compete strongly with the Japanese product, the Association feels a need to review promotion and to develop a combined plan for the U.S. and Europe. The Association is thinking of doubling the present budget. It would allocate about 10% of it to study supply conditions in overseas tuna bases as part of the raw material procurement plan for Japanese packers. ('Kanzume Nippo,' Apr. 21.)

* * *

SLUMP IN CANNED MACKEREL EXPORT PRICE TO PHILIPPINES

Prices for Japanese canned mackerel exports to the Philippines have been dropping in recent months. In mid-April, they slumped to US$4.50 a case, c. & f. Manila, for No. 1 small 100's in tomato sauce ($5.50-5.60 per case in 1968), and to c. & f. $5.30 case for 1-lb. tall 48's natural pack (c. & f. $6.15 a case in summer 1968).

The sharp price reduction was attributed to heavy accumulation of unsold stocks by Japanese trading firms. This put Philippine buyers, who had only limited funds available to set up letters of credit, in a good position to force down prices. ('Suisan Tsushin,' Apr. 19.)

* * *

FISH PASTE ('KAMABOKO') SHIPPED TO U.S.

On April 16, Odome Kamaboko (boile
paste) Manufacturing Co. in Nagato, sh
1,000 pieces of vacuum-packed high-q
'Kamaboko' valued at US$550 to the U.
was the first large shipment of 'kamabo
the U.S.

The firm plans to actively promo
product on the U.S. west coast and in Ha
Many Japanese-Americans live in t
areas. It is made from lizardfish and
shelf life of about a month. ('Minato S
bun,' Apr. 17.)

* * *

NEW GILL-NET LONGLINER FISHING IN BERING SEA

The new gill-net longliner 'Tenyu
No. 37' (499 gross tons) departed Onah
April 15 on her maiden voyage to the eas
Bering Sea. She was scheduled to ope
around St. George Island, east of 175°
longitude, for about 2 months fishing prin
ily for Alaska pollock, sablefish, and herr

Fishing Area Changed

Tenyu Maru had attracted consider
attention from fishermen in northern J
because her owners previously had annou
plans to send her to the eastern Pacific to
saury off the U.S. west coast.

Equipment

The vessel, equipped with modern n
gational devices, is designed to operate u
all weather conditions. With the bridge
cated amidships, she can operate longline
drift-gill-net gear simultaneously. Owne
Ogata Gyogyo Fishing Co., she was built
cost of about US$722,000 and carries a c
of 27. ('Suisan Keizai Shimbun,' Apr. 15

* * *

NEW FISH-FINDER DEVELOPED

Japan's Koden Electronics Co. has de
oped a fish-finder with a totally new kin
electronic recording system. There ar
models--a bottom-spread system for bot
trawling, and a range-spread system for m
water trawling and tuna longlining.

Ja (Contd.):

N Principle

e present fish-finders operate the re- co g pen mechanically. Koden's device co letely eliminates mechanical movement of pen. It uses an electronic scanning and re ding system to control 320 special re- co g pens, called "multi-pens," lined up in a like the teeth in a comb. Free control of tronic sweeper circuits connected to the dividual pens permits recording to be do y moving the printing paper at proper s s. With this instrument, various obser- va s previously considered impossible to re d can be registered very simply and ac- cu ely.

P ts and Prices

den has applied for patents in Japan, the S., and leading European countries. The pr ct was scheduled to go on sale in May 19 Prices range from US$1,944 to 5,000. ('I an Tsushin,' Apr. 16.)

* * *

SU EY TEAM RETURNS FROM SURINAM

e 5-man, Japanese government-industry fi y team sent to Surinam for 3-week sur- v f shrimp and other coastal fishery re- so es returned to Japan on April 26. The su y was conducted in response to a re- qu by the Surinam Fisheries Director for a ance in developing fishery resources, p rily shrimp, and in constructing shore fa ies.

AA ant Resources

e Japanese team found an abundance of sh p, croaker, skipjack tuna, and other va ies off Surinam. Its members stated the e trip was very meaningful. They will co lt with the Fisheries Agency to decide wh form of assistance Japan can give. ('A ato Shimbun,' Apr. 29.)

* * *

CO TRUCTION OF 859 FISHING VESSELS AU ORIZED IN FY 1968

ring fiscal year (FY) 1968 (April 1968- Ma h 1969), the Japanese Government au- th ed construction of 859 fishing vessels (102,094 gross tons): 569 steel vessels (91,714 tons) and 290 wood (10,380 tons).

Kind of Vessel	No. of Vessels		Gross Tons	
	Steel	Wooden	Steel	Wooden
Distant-water trawlers	19	-	7,257	-
Isei (East China Sea) trawlers	92	-	12,146	-
Offshore trawlers	71	35	4,622	1,199
Tuna vessels	175	76	41,949	4,378
Purse seiners	59	22	5,724	599
Purse-seine auxiliary vessels	29	8	2,310	165
Salmon drift gill-netters	100	32	8,442	1,407
Miscellaneous long-liners	5	47	1,436	1,307
Carriers	2	9	5,000	241
Government vessels	14	4	2,781	140
Others	3	57	47	944
Total	569	290	91,714	10,380

Of steel vessels, 175 (about 30%) were tuna vessels (41,949 gross tons).

Sixty-nine of the steel tuna vessels were 200-300 tons; 41 between 300 & 400 tons; 39 under 100 tons; and 26 between 100-200 tons.

The 290 wooden hulls included 76 tuna vessels (4,378 gross tons). ('Suisan Keizai Shimbun,' May 2.)

日本

South Korea

FISHERY EXPORTS TO INCREASE IN 1969

South Korea has set the 1969 export target for fishery products at US$68 million. This is 9.7% of total export target of $700 million. It is an increase of 33% over 1968's fishery exports of nearly $51 million.

Planned Exports

Among the planned increases for 1969 are: live fish $10 million (up $3 million from 1968), frozen fish $7 million (up $2.4 million), and tuna $21 million (up $4.5 million). Laver at $15 million will be a drop of $2 million. Fishery products are second to manufactured products in the total 1969 commodity export plan. (U.S. Embassy, Seoul, Apr. 4.)

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PLANS TO DEVELOP AQUACULTURE

South Korea has an ambitious aquaculture development plan extending into 1971. It calls for investment of 4,145 million won (about US$15.2 million). It includes cultivation of

South Korea (Contd.):

finfish, shellfish, turtle, and seaweed in inland waters for both domestic and foreign consumption. ('FAO Fish Culture Bulletin,' vol. 1 (2), Jan.)

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ATLANTIC TUNA COMPANY ESTABLISHED

A new fishery company has been set up in Seoul, S. Korea, by the International Basic Economy Corporation (IBEC). It is a joint venture of Transoceanic Fishing Corporation (TFC), a division of IBEC, and TFC's former Seoul manager who is president of the new company. The contract allocates 75% of the shares to TFC. The president gets 25% and an option to buy up to 50% of total shares over the next 10 years.

To Catch Atlantic Tuna

Company assets include two 300-gross-ton tuna vessels. The vessels will catch tuna in the Atlantic and deliver catches to Cape Verde Islands for transshipment to IBEC cannery in Puerto Rico. TFC has operated 3 Korean-crewed tuna vessels under the Panamanian flag for the past 2 years. This operation will be continued jointly with the new company. (U.S. Embassy, Seoul, Feb. 17.)

South Vietnam

POSTWAR FISHERIES EXPANSION PLANNED

Rehabilitation and modernization of the fishing industry will play a prominent role in South Vietnam's 10-year postwar reconstruction programs, according to South Vietnam's Minister of State for Postwar Planning. The statement was made in a press interview in Bangkok, Thailand. Stressing the need for expanding high-seas fisheries, the Minister said that more technicians and modern equipment would be required.

FAO Assistance

With FAO assistance, South Vietnam recently began a high-seas fisheries development and training program. Its fisheries technicians are trained aboard trawlers co tributed by Japan and the Netherlands. T first training cruise started in early 19 other cruises are expected later in the ye

U.S. Aid

The U.S. is contributing aid to reconstr the Saigon fish market, build cold stor facilities in and around Saigon, rebuild La fishing harbor, and develop fresh-water fi eries.

North Vietnam

TO REORGANIZE AND EXPAND FISHERIES

North Vietnam will push fishery expans in 1969, according to an editorial in the Co munist Party organ 'Nhan Dan.' There a reasons for the plan: food shortages ar need for foreign currency. Another stir lus is the striking contrast in the last 5 ye between progress in fishery developmen South and North Vietnam.

Compared with South Vietnam

According to FAO data, North Vietna catches increased at about the same rat South Vietnam's until 1962. Then North Vi nam landed 288,000 metric tons--30% m fish than in 1961--and surpassed South Vi nam's 222,000. After 1962, statistics available only for South Vietnam, whose catch reached 410,000 tons. Estimated N Vietnamese catch in 1967 was only a 200,000 tons; it has been going down ste since 1963. To stop this decline, the Ce Committee of the Communist Party has rected a new approach to fishery developm North Vietnam will attempt to increas catch to about 250,000 tons "in the imme year."

1969 A Turning Point

North Vietnam's fisheries never have really developed; 1969 will be the "tu point." Administratively, as in the USSR, state-owned and cooperative-owned fish will be set up. The cooperatives, diso ized now, will be "guided" by the state-o fisheries. Poor economic management outdated equipment are the principal

North Vietnam (Contd.):

...s." Gear and vessels will have to be mechanized. Shore bases employing local people will be established.

The editorial states that the potential annual yield available to North Vietnam's fishing industry is about 1 million metric tons. ('Nhan Dan,' Mar. 15.)

Taiwan

ASIAN BANK LOANS US$10 MILLION TO BUILD TUNA LONGLINERS

The Asian Development Bank has approved a $10 million loan to the Republic of China (Taiwan) to build and outfit forty 250-ton tuna longliners. The cost, including interest and working capital, has been estimated at US$16.7 million.

The loan, with an interest rate of 6.9% per year, will be amortized over 13 years, including 3-year grace period. The proceeds of the loan will be reloaned to approved fishing companies through the Cooperative Bank of Taiwan.

What Project Will Do

The project will contribute significantly to Taiwan's 5-year program to accelerate fisheries development. It will enable Taiwan to increase foreign trade and overseas earnings--and to provide jobs for students graduating from maritime colleges and fishing schools. It also will provide better use of shipbuilding and related shore facilities.

Fisheries Bureau's Role

Taiwan's Fisheries Bureau will prepare the technical design of the vessels. The Bureau also will provide technical advice to operating companies, supervise operations, and ensure proper vessel maintenance. Taiwan has the shipbuilding facilities and managerial and technical capabilities to produce 200 tuna longliners.

The Vessels

The vessels will be about 43 meters long (141 ft.) overall, 7.5 meters broad (24.6 ft.), and 3.35 meters deep (11 ft.). They will have 700 horsepower main diesel engines and 10.5-knot service speed. The vessels will carry 25 officers and crew, and be able to operate efficiently in all deep-sea areas. Technical equipment will include a complete radio communication system, modern navigation apparatus with radar, fish-finder, and deck machinery. A 50-cubic-meter quick-freezing room will be large enough to handle daily catches; it will freeze fish to -35° C. (-31° F.). Cold-storage rooms will hold about 300 cubic meters of fish at -20° C. (-4° F.).

The vessels will be capable of year-round operation from overseas bases in the Indian or Atlantic Oceans or other fishing grounds. The new deep-sea fishing harbor nearing completion at Kaohsiung will be home base. It will be necessary to return to Taiwan for major overhaul about once every 2 years.

For Export

Ninety-five percent of their annual catch will be exported. Foreign exchange earnings of the 40 vessels may reach about US$5.5 million a year. (U.S. Embassy, Manila, Apr. 1.)

Also, the loan will finance construction of twelve 160-ton high-seas tuna fishing vessels, two 1,500-ton fish carriers, one large purse seiner, several high-seas fishing vessels totaling 8,500 tons, and coastal fishing vessels totaling 3,500 tons. These vessels are scheduled to be built in 1970. ('Suisan Keizai,' Mar. 5.)

Thailand

EXPANSION OF DEEP-SEA FISHERIES PLANNED

The Thai Fisheries Department is urging expansion of deep-sea fisheries. It will loan fishermen 50 million baht (US$2.4 million) to build large trawlers. The money will be advanced by the Asian Development Bank.

Thai Fishing Fleet

At present, Thailand has about one hundred 80-100-ton trawlers suitable for deep-sea fishing. It has about 39,000 fishing vessels in all, including 6,000 trawlers. In 1968, Thailand processed about 139,101 tons of fish for fish sauce.

Thailand (Contd.):

Research and Training

Thailand will cooperate with Denmark to establish a Marine Fishery Research Center at Phuket Island. It should be operational by late June 1970.

In late March 1969, the Southeast Asian Fisheries Development Center approved US$60,000 for a Marine Fisheries Training Department in Bangkok. (U.S. Embassy, Bangkok, Apr. 11.)

Mauritius

SOVIET RESEARCH VESSEL VISITS PORT LOUIS

A 3-ship Soviet naval flotilla had just sailed out of Port Louis harbor and off the front pages of the Mauritian press when another Soviet vessel sailed in with a gift of frozen fish. The fishery research vessel 'Aelita' was returning from 4 months (Nov. 11 to Mar. 15) in the Antarctic. She unloaded 11,000 pounds of fish (mostly Notothenia and Macrophthalma) for hospital patients. A penguin was given to Pokunlall Ramlall, director of the People's College, and president of the Mauritius-USSR Friendship Society.

Chief Scientist Interviewed

The daily 'L'Express' interviewed the ch scientist, Valerii Tod. He said the ves had been on a mission for a Soviet Fisher and Oceanography Institute. He warned t commercial fishing around Mauritius by J anese and Taiwanese boats would eventu kill off big game fishing. He recommen that Mauritius establish territorial limit 20 miles, at least to protect itself against Japanese.

Offers Soviet Aid

The scientist stated: "The USSR ass numerous countries in the fishing field at request of their governments. I don't see Mauritius doesn't make a similar requ The Soviet Government would never refus help such friendly and hospitable people the Mauritians. The USSR could send search vessels, technicians, and fishing v sels. Mauritians could be given intens training in new fishing methods. Everyth depends on the needs of Mauritius. We even prepared to take Mauritians fishin the Antarctic. The USSR has advanced te niques and is thinking of canning tuna Mauritius for local consumption and for port. One day, perhaps, Mauritians could at special low prices Soviet-made ult modern fishing boats."

HOW THICK IS THE ICE IN THE ARCTIC OCEAN?

The average thickness of the Arctic ice pack is about 9 to 10 feet, although in some areas it is as thick as 65 feet, with pressure ridges extending downward into the ocean as much as 125 feet.

The atomic submarine NAUTILUS passing beneath the North Pole on August 3, 1968, measured a pressure ridge extending 25 feet down. The depth of the ocean at the North Pole was recorded as 13,410 feet; depths as great as 13,776 feet have been recorded near the Pole.

Ice floes ranging from 7 to 13 feet in thickness have been reported in the Arctic. Icebergs, which are pieces of glacial ice floating in the sea, are many times thicker than sea floes. ("Questions About the Oceans," U.S. Naval Oceanographic Office.)

SOUTH PACIFIC

Australia

NORTHERN TERRITORY HAS POOR SHRIMP SEASON

The Northern Territory's first large-scale shrimp season has been a major disappointment. Catches failed to meet more than a third of the cost of operating the 20 trawlers in the fishery. Catches represent only a fraction of expected levels.

The season began early in March. Despite poor returns, companies with millions of dollars invested in trawlers, processing plants, and associated facilities were optimistic that catches would improve later.

Previous Increases

For the six months ending Dec. 1968, shrimp exports increased 52% in weight and 75% in value over 1967 period.

Australian Frozen-Shrimp Exports

Destination:	Six Months Ended December			
	1967	1968	1967	1968
	Quantity (1,000 Lbs.)		Value (A$1,000)	
Japan	1,703	1,222	1,710	1,361
South Africa	184	218	240	313
United States	170	1,486	165	1,755
United Kingdom	164	448	142	525
Other	209	309	186	317
Total	2,430	3,683	2,443	4,271

Note: A$0.89 = $US1.00.

American Samoa

MAY 1969 TUNA PRICES SET

Japanese suppliers and U.S. packers in American Samoa agreed on prices for May 1969 tuna deliveries. Prices per short ton were the same as April's--albacore: frozen US$420, iced $405; gilled-and-gutted yellowfin: frozen $337.50, iced $317.50. The Japanese originally had asked a $15-a-ton price increase for both species. ('Suisan Tsushin,' May 18.)

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NEW MINIMUM WAGES SET FOR FISHERY WORKERS

New minimum wage rates for fishery workers (among others) in American Samoa have been announced by the U.S. Department of Labor. The rates apply to about 2,500 workers in private industry, schools, and hospitals; most of the rates are slated for another increase in one year.

The rates were recommended by an Industry Committee of employers, employes, and public. The committee was authorized to recommend minimum wage rates required by the Fair Labor Standards Act.

The New Rates

Minimum wage rates for the Fish Canning and Processing and Can Manufacturing Industry are: $1.15 beginning June 5, 1969, and $1.20 beginning June 5, 1970.