

other round of telephone calls to non-responders after a specific period of time. Thereafter, a mail-and-telephone-call sequence will be repeated every two months to collect the desired data over a full calendar year.

Plans call for a continued data collecting on the same general basis through 1976, after which geographic coverage will alternate between the eastern and western halves of the United States from one year to the next.

Accurate and current statistics surrounding how much of an effort is made to catch what amount of fish are prerequisites for the production of assessments of all kinds of fish populations. Such assessments, in turn, are vital to fisheries biologists and conservationists as they work toward sound management of marine resources.

The Marine Sport Fish Statistics Program has been preceded by other less extensive surveys of national sport fishing habits, conducted at 5 year intervals since 1955 by the Bureau of the Census. The NMFS program was designed to allow for complete, up-to-date information on the national harvest of fish products heretofore routinely collected for the commercial catch, but available only on an incomplete, non-timely basis for the sport catch. The new survey method, among other things, will permit NMFS fisheries statisticians to add the annual sport catch to the yearly commercial catch to reach an aggregate—and thus more accurate—annual total.

Texas Has Poor Brown Shrimp Catch in 1973

Although final figures are not yet available, the brown shrimp (*Penaeus aztecus*) catch from the Texas offshore shrimping grounds was approximately 25,000,000 pounds (heads-off) in 1973. According to K. N. Baxter, Supervisory Fishery Biologist, NMFS Galveston Laboratory, this was the poorest annual harvest of brown shrimp from these grounds in the past 7 years, with the exception of 1969. Taking into account Baxter's estimate of availability of brown shrimp biomass, 1973 was likely the lowest for the Texas coast in 12 years.

Brown shrimp year-class strength,

predicted by monitoring abundance of postlarval and juvenile shrimp in the Galveston Bay area, indicated that the 1973 harvest would fall below the annual catch of any of the previous six years. However, unusually high concentrations of juvenile brown shrimp in central and lower Texas estuaries kept the 1973 catch above that of 1969 and above the extremely low offshore harvest of 1961 and 1962. Greater fishing pressure also may have helped to produce the larger than expected catch. For example, there were 600 steel-hulled "supertrawlers" fishing Texas brown shrimp in 1973 that were not in the fishery in 1969, according to information supplied by NMFS Division of Statistics.

In 1973, Texas offshore fishing between Galveston Bay and Matagorda Bay on the upper coast, historically the best brown shrimp fishing grounds off Texas, produced the lowest catch ever recorded for that area, but the lower coast grounds between Aransas Pass and Brownsville produced the highest brown shrimp catches recorded to date for that area. In fact, the ports of Brownsville and Port Isabel alone accounted for a record 4,000,000 pounds (heads-off) of Texas brown shrimp caught in July, an occurrence never before enjoyed by those two ports.

Environmental conditions, especially in bay systems on the upper Texas coast, probably contributed to the lowered catch off Texas. Heavy rainfall and runoff into the eastern portion of the Galveston Bay system and accompanying lowered salinities apparently rendered a rather large part of the nursery uninhabitable for young brown shrimp. The inferior brown shrimp year class also could have been caused by reduced spawning or by poor survival of early life stages offshore or both. Only one group of young brown shrimp, first distinguishable as postlarvae entering the Galveston Bay area and later as juveniles inside the estuaries on the upper Texas coast, was detected in 1973. In most years, three and sometimes four different groups are recognizable in the nursery areas during a growing season.

Other shrimp species also may have been affected by prevailing environmental conditions in 1973. For ex-

ample unprecedented catches of seabobs, *Xiphopeneus kroyeri*, occurred off the San Bernard River area near Freeport, Tex. late in 1973 and early in 1974 (NMFS Division of Statistics). Normally this species is not available in commercial quantities west of the Sabine River (Texas-Louisiana). Increased catches of this species also may have been partly due to diversion of fishing effort from brown shrimp to other more available species.

Foreign Fishery Developments

Fish Sausage Plant Slated for Russia

The Soviet Ministry of Fisheries and the Taiyo Fisheries Company have "agreed in principle" that a fish sausage plant will be built by the Japanese company in the Soviet Far East. The plant, which reportedly will have a daily output of 100,000 sausages, will cost the equivalent of \$3.5 million.¹ The Soviets will make a 20 percent down payment and pay the remainder over the next 5 years at an interest rate of 6.5 percent, according to a report in the *Nikon Keizai Shimbum*.

According to the NMFS International Fisheries Analysis Division, the building of a fish sausage plant by the Japanese in the USSR was first discussed in 1964 by the Taiyo Company and the Soviet Machinery Import Corporation (Prodintorg). Taiyo, at that time, presented two proposals: the first was for a plant with a capacity of 200,000 sausages per day, costing 1.6 billion yen (US\$4,440,000)², the second for a plant with half that capacity, costing 1.0 billion yen (US \$2,722,000)². Despite Soviet interest, no contract was concluded.

The Japanese exporters, however, continued to nurture Soviet trade contacts. The Hayashikane Company demonstrated fish sausage and surimi (minced fish) machinery at the Nakhodka Marine Fair in 1968. Soviet fisheries experts displayed much interest in both the processing equipment and the finished products. The

¹ At the current exchange rate of US\$1.00 = 280.00 yen.

² At the 1964 exchange rate of US\$1.00 = 360.00 yen.

Japanese news media were speculating that since the then-current 5-Year-Plan (1966-1970) was emphasizing catch increases, the next 5-Year-Plan (1971-1975) would place more emphasis on upgrading catch processing, and that the prospects for the sale of sausage and surimi equipment should improve after 1971.

In 1972, the Taiyo Company announced that agreement had been reached between the Company's president, Kenkichi Nakabe, and the Soviet Minister of Fisheries, Aleksandr Ishkov, to construct a fish sausage plant in the city of Moscow with machinery supplied by the Japanese. Toward the end of that year, Mikhail Stepanov, Chief of the Pacific Section of the Soviet Fisheries Ministry's Department of Foreign Affairs, journeyed to Japan for fisheries negotiations and used the occasion to confer with Mr. Nakabe on the construction of the sausage and surimi plants. Nakabe visited the Soviet Union in May of 1973 "to finalize a plan" to build the fish sausage plant. This "finalization" took over one year.

The location of the fish sausage plant will now be somewhere in the Soviet Far East and not in Moscow as planned previously. There are several reasons for this: one may be the politico-strategic consideration of developing the Soviet Far Eastern industry (and thus the area's population). Another reason could be the Soviet use of Pacific Alaska pollock as the raw material for the manufacture of fish sausage. It is also possible that the Soviet Union may export the finished product from this plant back to Japan and thus pay, in part or in full, the cost of the purchase. When the plant will be actually built is not yet known, but the phrasing "agreed in principle" could indicate additional delays.

Japan's Fish Take near Foreign Nations Is about 45 Percent

Data compiled by the Japanese Fisheries Agency show that Japanese fish catches within 200 miles offshore of foreign nations in 1972 came to 4,478,000 metric tons valued at 340.9

Japanese fish catch within 200 miles of foreign countries, 1972.

Area	Catch		No. vessels	No. crew
	Quantity	Value		
Bering Sea & Adjacent Waters ²	1,000 tons	(US\$1,000) ¹		
	2,296.5	282,954	1,228	32,374
Okhotsk Sea, North	390.3	74,773	389	5,254
Okhotsk Sea, South	676.7	97,240	3,900	30,356
Japan Sea, North	261.5	58,442	1,960	24,803
Japan Sea, South	16.9	9,351	272	3,264
East China Sea & Yellow Sea	305.7	188,312	1,338	17,553
Atlantic, North	37.1	17,857	7	315
Atlantic, Central	128.4	67,630	1,296	29,116
Atlantic, South	101.4	55,682	17	180
Pacific, Central	140.5	128,019	265	9,170
Pacific, South	94.7	89,578	5	225
Indian Ocean	28.0	37,013	3	135
Total	4,477.7	1,106,851	10,680	152,745

¹Based on 308 yen=US\$1.

²Includes Gulf of Alaska.

billion yen (US\$1,106.8 million at 308 yen-US\$1). In quantity, this was approximately 45 percent of the nation's total fish catch (9.4 million tons). Fishing within 200 miles off foreign coasts involved 10,680 vessels (including motherships) and 152,745 crew members. By area, the catches in the Bering Sea (which includes the Gulf of Alaska in this data) were the largest, accounting for 2,296,500 tons

or about one-half of the total catch taken within the 200-mile zone.

Mothership-type bottom trawlers took 1,294,000 metric tons (worth \$100.9 million), "Hokuten" trawlers (up to 350 GRT in size) took 844,000 tons (\$120.8 million) and tuna vessels (including longliners, baitboats, and purse seiners) accounted for 227,000 tons (253.6 million).

Source: Suisan Tsushin.

Panama Serves Notice to Foreign Vessels

On 10 and 11 May Panama City newspapers published a notice to foreign flag vessels that Panamanian maritime laws will be respected, reports the NMFS International Fisheries Analysis Division. The official notice is as follows:

"The Consular and Marine Administration of the Ministry of Finance and Treasury, concerned about the present situation, where some foreign vessels do not comply with the national laws, as in the recent case of the North American flag vessel, Raffaello, which broke provisions of our maritime laws, and which paid the fines imposed by this administration, since it did not carry the required navigation permit, and by the Ministry of Commerce and Industry, for failure to have the pertinent fishing license; desires to request interested parties and companies which represent these vessels that they inform them duly about the matter and proceed in accordance with our existing legislation, since it is not our intention to perse-

cute or fine foreign ships but only to make them respect the present laws and accompanying measures.

"Therefore, it is requested that any activity in national waters be made known to the port captains or post inspectors in the corresponding areas, or to this administration, in sufficient time so that the necessary instructions or required information may be imparted. These measures must be carried out especially by fishing vessels concerning which specific laws exist and which must also obtain the regulatory license from the Ministry of Commerce and Industries, which will avoid the occurrences noted above.

"The observation is also made, with respect to ships arriving in national waters of the Republic, and in accordance with international regulations, that they must hoist, in addition to the flag of the country of registry, the flag of Panama, a custom which is followed by all the countries of the world.

"The cooperation of each and every

one of the shipping agents in the Republic is expected, informing ships' handlers in general of the facts and above all the owners of ships involved in international fishing.

"Extending beforehand the appreciation of the director for the attention and interest paid to that set forth here, I take this opportunity to reiterate the assurances of my distinguished consideration. Signed: Pana Angel Kourluklis, Director, Consular and Maritime Administration."

Source: U.S. Embassy, Panama.

Canada Fills Fishery Information Positions

R. Nix Wadden, 43, of Ottawa, has been appointed Chief of Information for Environment Canada's Fisheries and Marine Service. The appointment, following a Public Service Commission competition, was announced by K. C. Lucas, Senior Assistant Deputy Minister, Fisheries and Marine. Charles Friend, 43, of Aylmer, Que., has been appointed to serve as Chief of Fisheries and Marine Information during the next 12 months while Mr. Wadden undertakes French language training to fulfill the language requirements of the position.

Born in St. John's, Newfoundland, Mr. Wadden is a graduate (B.A.) of St. Francis Xavier University, Antigonish, N.S. He was a news reporter and editor with radio and television stations in Newfoundland before joining the Information staff of the former Department of Fisheries at Ottawa in 1966. He has been Acting Chief of Information with the Fisheries and Marine Service since September 1973.

A native of New Zealand, Mr. Friend has had extensive experience in news writing and reporting, and has been, since February 1973, Chief of Editorial Services with the Office of Tourism, Department of Industry, Trade and Commerce. His journalistic career covered reporting and editing assignments with the Daily Commercial News, Canadian Press, CBC National TV News, Star Weekly and CBC International Service. He was for 3 years with Expo 67, serving as head of the Production Section of the Public Relations Department. In

1972 he joined the Department of Industry, Trade and Commerce as Assistant Manager, News Service.

KUWAIT, JAPAN FORM JOINT SHRIMP VENTURE

The Japanese trading firm Nissho Iwai is scheduled to form a joint shrimp fishing and processing venture in Kuwait around June 1974 with a local firm identified as United Fishery of Kuwait. The joint company, to be named "Kuwait Overseas Maritime Fishery Company," will be established with an authorized capital of US\$3 million and will be owned 70 percent by the Kuwait firm and 30 percent by the Japanese. Japan has been purchasing around 2,000 tons of frozen shrimp annually from Kuwait, but this is the first time the Japanese are entering into a joint shrimp venture in that country.

Source: Suisan Keizai Shimbun.

Fishery Notes

Narragansett Bay Flounder Decline

Two University of Rhode Island scientists have reported that a slight natural temperature change in Narragansett Bay may be causing a decline of winter flounder there as well as offshore.

Basing their estimates on an eight-year survey of winter flounder in Narragansett Bay, Dr. H. Perry Jeffries, professor of oceanography, and a graduate student, William G. Johnston, said that a water temperature increase of less than one degree over that period may be causing the winter flounder decline. The scientists reported their findings in the latest issue of *Maritimes*, a quarterly magazine published by the Graduate School of Oceanography at URI.

After a slow increase in abundance from a low in 1966, there was a continuing decrease by about 78 percent from 1968 to 1972, Dr. Jeffries said,

and by 1973 the flounder levels had fallen below those of 1966. "We looked for a reason for this," he said, "and found that a comparison of temperatures with fish counts showed a surprising relationship. As temperature increased flounder abundance declined."

The decline of flounder in the bay was a forerunner, by about 30 months, of declining catches offshore, the researchers said. Normally, flounder spawn in Narragansett Bay in winter and the tiny larvae swim above the bottom until March. But the temperature change may be causing the larvae forms to change to flounder earlier each year, and as a result they may be encountering different predators, Dr. Jeffries said. "Because laboratory studies have such limited significance for long-range trends in nature, we should make a detailed survey of bottom organisms and what they are eating to test this hypothetical change in predator-prey relationship," he stated.

A continuing warming trend would not necessarily cause a further decline in bay flounder, Dr. Jeffries said. "It is possible," he added, "that complex interrelationships might influence such factors as prey, predator, food and timing so that the population would eventually adapt and increase in warmer waters."

Dr. Jeffries said the results seem also to show that the effects of power plants on the bay's environment cannot be predicted from laboratory experiments on a single species. "Short-term laboratory experiments have limited significance for long-term changes in nature," he said. "We need to develop better methods for studying the long-range processes of the estuary."

California Moves To Restore Abalones

Two thousand juvenile abalones were successfully seeded in a kelp bed off California's Palos Verdes Peninsula on 12 June 1974 as the first phase of a project to re-establish this once prolific resident in that area by the California Department of Fish and Game. The project also will help biologists determine the feasibility of