

U.S. Cooperates To Study Atlantic Fishery

Fisheries research vessels from the Soviet Union, Poland, West Germany, and France were engaged in joint surveys with the United States in international waters off the North American east coast during the past three months.

The first foreign vessel to arrive, the 230-foot *Belogorsk*, docked at Woods Hole, Mass., on August 23. The Soviet scientists worked with scientists of the Commerce Department's National Oceanic and Atmospheric Administration under terms of a U.S.-Soviet agreement for the Mid-Atlantic. NOAA's National Marine Fisheries Service maintains its Northeast Fisheries Center at Woods Hole, and the Center's famous research vessel, the 187-foot *Albatross IV*, also participated in the studies.

Dr. Robert L. Edwards, Director of the Fisheries Center, said the Soviet Union has cooperated with the United States for the past six years under the bilateral agreement on surveys of waters of the western Atlantic. Again this year, some 75,000 square miles of ocean between Nova Scotia and Cape Hatteras will be surveyed. The scientists will study the status of ground fish populations such as haddock, cod, flounder, hake (whiting), and redfish

(also known as ocean perch). They will also study changes in abundance and distribution of these commercially valuable stocks.

The joint U.S.-Soviet surveys held each spring and fall yield an index of the relative abundance of available fish and provide estimates of spawning success used to predict the quantities of young fish that should be available in subsequent years. On the whole, the surveys are regarded as among the most thorough, standardized, and comprehensive measures of the production of a particular ecological system. The *Belogorsk* and the *Albatross IV*, were slated to make four port calls at the Woods Hole Center before the mission ends in November.

Three other foreign vessels—the *Weiczno* (Poland), the *Cryos* (France), and the *Anton Dohrn* (West Germany)—were to share in additional cooperative research projects. Each, in addition to the *Belogorsk* and the *Albatross IV*, departed in turn for work on an individual two-week leg of a five-part project authorized by the 16-member nation International Commission for the Northwest Atlantic Fisheries (ICNAF). The projects will concentrate on surveys of larval her-

ring abundance between Cape Cod and Nova Scotia, taking samples of those early life stages of herring which float in surface waters. The Polish, French, and West German vessels were scheduled to arrive in late August, September, and October.

This is the third fall that ICNAF nations have cooperated to gather information on spawning populations of herring in the Northwest Atlantic. The *Cryos* was in Woods Hole in 1971 to participate in the first such survey, and both the *Weiczno* and the *Anton Dohrn* were in Woods Hole to participate in last fall's survey.

Billfish Tagging Awards Presented

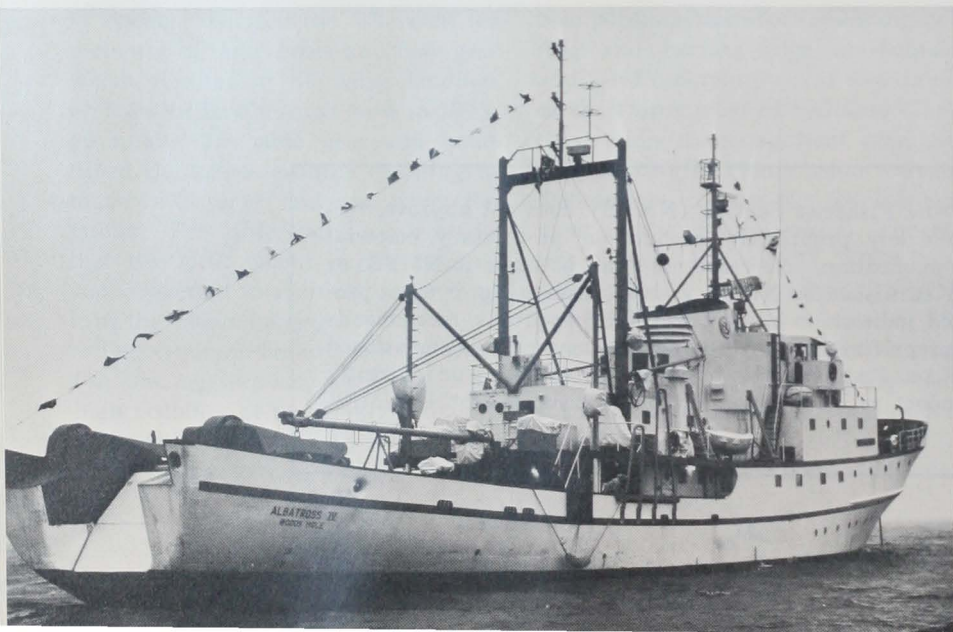
The third annual Gardiner Foundation Awards, established by the late Tom Gardiner, a prominent San Francisco sportfisherman, were awarded July 30 to the Mexican sportboat captains who tagged and released the most marlin and sailfish during the period June 1, 1972 to May 31, 1973. James Squire, fishery biologist at the National Marine Fisheries Service Laboratory in La Jolla who maintains the official records for the tagged fish made the presentations at the several fishing resorts located around the tip of Baja California.

The top cash awards of \$100 went to Jesus Araiza Ruiz of the Rancho Buena Vista, who tagged 60 marlin and 17 sailfish in the eastern contest area, and Pablo Cesena Aripez of the Hotel Cabo San Lucas, who tagged 21 marlin and 10 sailfish in the southern contest area.

Engraved plaques also went to the first three place winners in both contest areas and to Hotel Cabo San Lucas in the southern area and to the Rancho Buena Vista in the eastern area for their efforts in encouraging the captains to tag and release billfish.

The Gardiner Awards were instituted to encourage the fishing boat skippers to participate in the cooperative Marine

Commissioned in December 1972, the *Albatross IV* operates out of Woods Hole, Mass.



Game Fish Tagging Program off the tip of Baja California where each year many of the world's most enthusiastic sportfishermen come to try their luck at catching billfish. In addition to the National Marine Fisheries Service, an agency in the US. Department of

Commerce, National Oceanic and Atmospheric Administration, the program is also sponsored by the Woods Hole Oceanographic Institution, the International Gamefish Association and the Mexican Department of Fisheries.

Astronauts, Sport Fishermen, Scientists Coordinate Ocean Study Operations

A turnout of more than 550 anglers fishing for sport and science aboard 138 boats in the northeastern Gulf of Mexico during a recent big-game tournament made the event one of the two or three biggest in the history of such tournaments. At the finish of the two-day contest, fishermen had boated a total of 33 potential trophy fish consisting of billfish, dolphin, and wahoo.

It was an historic "first" in marine scientific circles as well—combining, as it did, the extensive data-collecting capabilities of sea-surface platforms, sensor-equipped aircraft, and two satellites. The scientific aspects of the investigation were under the joint sponsorship of the Commerce Department's National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration. Coordinating the volunteer fishing program were six fishing clubs and charterboat associations headquartered in Alabama, Florida, and Louisiana.

The scientific and sporting event began in the early morning hours of Saturday, August 4. The sport-fishing fleet cast off from (and virtually emptied the docks of) three Florida Gulf Coast ports—Destin, Panama City, and Pensacola—to await the Skylab overpass and to take part in the two-day fishing tournament, which ended officially at 3 p.m., August 5.

The big moment came shortly before noon of August 5, as Skylab orbited on its Track 62, when Astronaut Alan Bean said to companion Jack Lousma: "Let's see what we can do to help the fishermen down there." "Check," said Lousma, and the advanced sensors of

Skylab's Earth Resources Experiments Package were concentrated on the earthbound force of anglers and oceanographers. The objective was to relate stocks of sport fish to ocean features detectable by sensors carried aboard satellites and specially equipped aircraft.

The bluewater fishermen operated from 20- to 57-foot craft scattered over a 3,600-square-mile triangle, in a site set to match the orbiting pattern of Skylab. Accompanying the fishing fleet were nine oceanographic research vessels. Two NASA aircraft made repeated sweeps over segments of the study area. A U.S. Navy plane also flew over the flotilla at some 2,000 feet above the water and took oceanographic readings at the sea surface.

On completion, the NOAA Principal Investigator for the mission, William H. Stevenson, declared that it had been a "near-perfect" exercise. He said that every detail of the program was "in place and on schedule, 'doing its thing,' including the fish.

"This NOAA-NASA investigation was a most impressive demonstration of many diverse groups working cooperatively toward a common scientific goal," Mr. Stevenson said. "It gives us a data base upon which to test the relationship between game fish and their environment; it also enables us to ascertain which environmental characteristics of the ocean can be observed from remote sensing aircraft and satellite platforms."

Mr. Stevenson, chief of NOAA's National Marine Fisheries Service Engineering Laboratory headquartered at the Mississippi Test Facility (Bay St.

Louis) was involved in a series of earlier studies designed to relate satellite-acquired information to that gained in traditional oceanographic investigations, leading to the ambitious sea-surface-to-space experiment.

The Fisheries Service directed and coordinated the work of the anglers, who kept careful records of all fish sighted, hooked, and caught. The NOAA research vessel *Oregon II* stood at anchor on the fishing grounds, operating as mothership and floating laboratory for the fleet; NOAA's R/V *George M. Bowers* and R/V *Kingfish II* collected oceanographic data in company with the five chartered research boats. The environmental satellite NOAA-2 scanned the region twice daily from an altitude of 900 miles.

NASA directed the activities of the Skylab astronauts. NASA's Johnson Space Center, through its Earth Resources Laboratory, operated the two aircraft—a C-130 and Beechcraft—which employed an array of cameras and other sensors much like those carried by Skylab to monitor the site from the relatively close ranges of 10,000 and 20,000 feet overhead. The ERL also directed the activities of its surface research vessel, *The ERL*, which functioned as the "hub boat" and maintained radio contact with all members of the fishing and research fleet. The Marshall Space Flight Center provided extensive laboratory and field-site support. The NASA units involved also operate from the Mississippi Test Facility, Bay St. Louis.

Fishing tournament officials restricted competition for trophies to seven offshore species: blue marlin, white marlin, sailfish, wahoo, dolphin, bluefin tuna, and yellowfin tuna. Minimum weights were set for wahoo, dolphin, and the tunas. To be eligible for prizes, catches had to be taken in the daytime between 9 and 3 o'clock, and weighed and measured at one of the three official port stations at Destin, Panama City, and Pensacola.

Trophy fish catches consisted of 25 white marlin, 5 sailfish, 2 dolphin, and

one wahoo. First prize for white marlin (71 pounds) was taken by Ed Chadbourne, aboard the *Caroline* of Pensacola; first prize for sailfish (52 pounds) went to Bob Bechtold, aboard the *Wahoo* of Destin; first prize for dolphin (34½ pounds) was awarded

to Ted Jones, aboard the *Striker* of Shalimar, Florida; and first prize for wahoo (38¼ pounds) went to Bob Radcliffe, aboard the *Blusky Doodle* of Pensacola. First prize for a boat catch went to Captain Sonny Incho (224½ points, based on points per

pound for trophy fish), aboard the *See Spray* of Birmingham, Alabama.

First, second, and third place winners received their awards at a banquet held by the Pensacola Big Game Fishing Club on September 15.

What To Do About Military Explosives

Fishermen operating otter trawls, scallop dredges, and other forms of bottom tending gear, are warned that both explosive and nonexplosive ordnance may be present on fishing grounds adjacent to the U.S. coast. Records indicate that snagging of explosives in fishing gear is occurring with increasing frequency.

Military authorities have provided the following instructions for handling explosive ordnance, or any object not readily identified as a non-explosive item, that may be snagged or netted in fishing gear.

1. Any object not readily identified must be treated as an explosive. Do not attempt to bring it on board or alongside. Release it and notify the nearest Coast Guard station, giving your position and description of the object.

2. If unable to release the object, stream it aft as far as possible. Keep crew at forward end of vessel away from stern. Maintain steerage as necessary to stay in area until instructions are received, and standby for assistance.

These are the instructions provided, with some illustrations (right), on the National Marine Fisheries Service's new safety information placard, "Safe Handling of Explosives Caught in Fishing Gear," now available from NMFS Regional Offices, or from the NMFS Extension Division, Washington, D.C. 20235. The placard is the third in a series of safety placards initiated by the Extension Program. The first two placards describe "Medical Assistance Available to Vessels," and "Helicopter Evacuation."

NATIONAL MARINE FISHERIES SERVICE EXTENSION DIVISION BULLETIN

EMERSON AVE. GLOUCESTER, MA. 01930



SAFE HANDLING OF EXPLOSIVES CAUGHT IN FISHING GEAR

FISHERMEN OPERATING OTTER TRAWLS, SCALLOP DREDGES AND OTHER FORMS OF BOTTOM TENDING GEAR ARE WARNED THAT BOTH EXPLOSIVE AND NON-EXPLOSIVE ORDNANCE MAY BE PRESENT ON FISHING GROUNDS ADJACENT TO THE U. S. COAST. RECORDS INDICATE THAT SNAGGING OF EXPLOSIVES IN FISHING GEAR IS OCCURRING WITH INCREASING FREQUENCY. MILITARY AUTHORITIES HAVE PROVIDED THE FOLLOWING INSTRUCTIONS FOR HANDLING EXPLOSIVE ORDNANCE OR ANY OBJECT NOT READILY IDENTIFIED AS A NON-EXPLOSIVE ITEM THAT MAY BE SNAGGED OR NETTED IN FISHING GEAR.

1. ANY OBJECT NOT READILY IDENTIFIED MUST BE TREATED AS AN EXPLOSIVE. DO NOT ATTEMPT TO BRING IT ON BOARD OR ALONGSIDE. RELEASE IT AND NOTIFY THE NEAREST COAST GUARD STATION GIVING YOUR POSITION AND DESCRIPTION OF THE OBJECT.
2. IF UNABLE TO RELEASE THE OBJECT STREAM IT AFT AS FAR AS POSSIBLE. KEEP CREW AT FORWARD END OF VESSEL AWAY FROM THE STERN. MAINTAIN STEERAGEWAY AS NECESSARY TO STAY IN AREA UNTIL INSTRUCTIONS ARE RECEIVED AND STANDBY FOR ASSISTANCE.

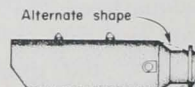
THE FOLLOWING ILLUSTRATIONS DEPICT THE EXPLOSIVES MOST LIKELY TO BE ENCOUNTERED.



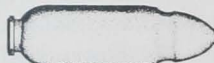
DIAMETER - 34"
WEIGHT - 480-510 #



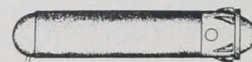
DIAMETER - 18"
LENGTH - 28"
WEIGHT - 250 #



DIAMETER - 18"-23"
LENGTH - 5'-7"
WEIGHT - 1000-2000 #

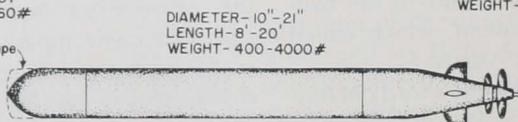


DIAMETER - 13"
LENGTH - 37"
WEIGHT - 60 #



DIAMETER - 21"-23"
LENGTH - 9'-10"
WEIGHT - 2000 #

Alternate shape



DIAMETER - 10"-21"
LENGTH - 8'-20"
WEIGHT - 400-4000 #

NMFS safety information placard on the handling of military explosives.

Columbia Coho Show High Dollar Return

Coho salmon production in the Columbia River Fisheries Program returns seven dollars in benefits to the economy for each dollar spent, according to an analysis by the Commerce Department's National Oceanic and Atmospheric Administration. NOAA's National Marine Fisheries Service administers funds for 21 Columbia River fish hatcheries operated by the States of Washington and Oregon and the Bureau of Sport Fisheries and Wildlife in the Department of the Interior.

To find out what the taxpayer is getting for the nearly \$40 million spent on Columbia River salmon and steelhead hatcheries over the past 22 years (presently \$2.5 million annually) the Fisheries Service analyzed data gathered by marking a known proportion of hatchery fish with a finclip or combination of finclips. The number of marked fish caught was then used to determine the hatchery contribution to each fishery. Values of the fish released by the hatchery were compared with the cost of rearing fish to determine the benefit-cost ratio.

A similar analysis of the data from hatchery contributions of fall chinook is nearly complete. Preliminary estimates indicate that for every dollar spent rearing fall chinook in Columbia River hatcheries, the Pacific coast economy gained at least three dollars. The benefit-cost ratios for the two species are not directly comparable because of different time periods and methods used to determine value, but the ratios provide fisheries personnel with solid indications of the value of the hatchery program to the Pacific coast.

The NMFS is now conducting a marking study to determine the contribution of Columbia River spring chinook salmon to the fisheries. Little is known about the hatchery contribution of this species to the marine and freshwater sport and commercial

fisheries. This study is important as spring chinook represents about 20 percent of the 2.6 million pounds of

smolts (young fish) released annually from NMFS-financed Columbia River hatcheries.

Foreign Fishery Developments

Troubled Icelandic Fisheries Produce

Despite territorial waters disputes and a volcanic eruption that closed several of its best fish processing facilities, Iceland's 1972 fish catch, 739,000 metric tons, was the highest since 1967 (Table 1), and the value of exports, \$141 million (Table 2), marked a new high, according to Salvatore Di Palma, Regional Fisheries Attache for Europe, U.S. Embassy, Copenhagen, Denmark.

A 52 percent increase in the catch of low-value capelin, however, accounted for most of the 1972 increase and landings of the higher-valued cod were again down to 1968 levels. Most of the cod was taken in Icelandic waters;

some was taken off East Greenland and the set-net fishery of March and April accounts for a major part of the landings.

Of Iceland's \$141 million exports, the U.S. took 40 percent by value, primarily frozen cod fillets and blocks, and the nine members of the European Economic Community (EC) took 25 percent (Table 3). In quantity, exports were up three percent to 281,944 metric tons. A doubling of frozen scallops exports, mostly to the United States, indicates a high level of interest in expanding this previously unutilized fishery resource. High U.S. prices triggered Icelandic interest in scallops.

Table 1.—Icelandic catch of fish and shellfish, 1969-1972¹.

| Species | 1969 | 1970 | 1971 | 1972 | Jan-Dec '71 | Jan-Oct '72 |
|---|-------|-------|-------|-------|-------------|-------------|
| --- 1,000 metric tons --- --- US\$1,000 --- | | | | | | |
| Demersal | | | | | | |
| Cod | 287 | 308 | 255 | 232 | 28,354 | 30,132 |
| Haddock | 35 | 32 | 32 | 29 | 5,128 | 4,411 |
| Saithe | 54 | 64 | 60 | 60 | 5,676 | 5,280 |
| Ocean perch | 29 | 25 | 32 | 33 | 3,694 | 3,914 |
| Ling | 9 | 8 | 9 | 2 | 857 | 614 |
| Plaice | 11 | 8 | 7 | 2 | 1,310 | 691 |
| Greenland halibut | 6 | 7 | 5 | 2 | 757 | 691 |
| Other demersal | 20 | 22 | 21 | 45 | 1,891 | 2,140 |
| Total demersal | 451 | 474 | 421 | 399 | 47,667 | 47,873 |
| Pelagic | | | | | | |
| Herring | 47 | 41 | 61 | 43 | 9,520 | 5,498 |
| Capelin | 171 | 192 | 183 | 278 | 3,256 | 4,386 |
| Shellfish | | | | | | |
| Lobster (Nephrops) | 3.5 | 4.0 | 4.7 | 4.3 | 2,421 | 3,296 |
| Shrimp | 3.3 | 4.5 | 6.5 | 5.0 | 1,477 | 1,071 |
| Scallop | 0.4 | 2.4 | 3.7 | 6.5 | 387 | 885 |
| Other | 3 | 6 | 4 | 3 | 818 | 141 |
| Total | 688.2 | 733.9 | 683.9 | 738.8 | 65,546 | 63,150 |

¹ Source: AEGIR, Nr. 17-18, October 1972.

² Included in "Other demersal."