yielded much less than expected, indicating that this area is still recovering.

The anchovy size was reported good. Fish meal recovery was reported at 21.9 percent, producing thus far, an estimated 109,000 tons. Oil recovery is believed to be over 3 percent or 15,000 tons. Peruvian authorities (EPCHAP) were authorized to renew export of both fish meal and oil beginning 14 March.

Japanese Hatch Eels, Sea Urchins

A Hokkaido University professor is reported to have succeeded in hatching eels in a laboratory, notes the NMFS Statistics and Market News Division. A professor of the University's Fisheries Department extracted a hormone from the pituitary gland of a salmon and gave a weekly 35-milligram injection to grown female eels. After 11 injections, one of the eels laid eggs and after 40-50 hours the researcher applied eel milt to the eggs. Out of this, 100 fry 3.5 mm in length were hatched, but only half survived. The seawater temperature was maintained at 18°C before the spawning and was kept from 23 to 25°C afterwards. The 2-month-old eel fry were fed egg yolk and lobster eggs.

The Fukushima Marine Experiment Station, Kyushu Island, Japan, is also reported to have succeeded in its year-long attempt to breed sea urchins. Starting with some 300,000 eggs of the common green urchins in a seawater tank in November 1972, some 2,500 sea urchins over an inch across were hatched. Scientists induced the female urchins to ovulate with injections of potassium chloride.

Cuban Fishing Fleet Expands

The Astilleros Construcciones shipyard of Vigo, Spain, has started the construction of a series of 21 factory trawlers for the Cuban fishing fleet. The order was initially placed for only 10 trawlers of the *Tacsa-95* class, 3 of which have already been delivered. Since *Mar Del Plata,* one of the delivered trawlers, was destroyed in a fire, the Havana authorities decided to replace it and order 10 more vessels in addition to the ones already ordered, thus raising the total to 21 trawlers. Sixteen of the vessels will be built in the Astilleros shipyard and 5 in Hijos and Barreras shipyards. Delivery will start in 1975 and should be completed by 1977. The *Tacsa-95* trawlers were conceived by the firm Tecnaco, a subsidiary of Astilleros.

Characteristics of the trawlers are: 106.70 meters long (95 meters long between perpendiculars), 14.50 meters wide, powered by 4,000 hp Deutz engines (built under license by Barreras in Spain), planned speed 14 knots, and storage capacity 2,000 tons of frozen fish and 240 tons of fish meal. The vessels are equipped with Raader fish-processing machinery and with a Schlotterho fish meal plant utilizing leftovers and trashfish. They can fish with pelagic or bottom trawls.

Source: *France Pêche*, No. 186, December 1973-January 1974, pp. 145.

Fishery Notes

Canadian Pair Seining: Off-season Source of Income for New England Lobstermen?

Two Point Judith, R.I., lobstermen are trying a fishing method that may provide them with income during the off-season when their boats are not normally in use. If the Canadian pair seining technique proves successful, it could provide income for New England lobstermen with 35- to 55-foot vessels from January to June when lobster fishing is poor. Canadian lobstermen have used the seining technique successfully for several years on both coasts.

Bruce E. Kopf, skipper of the 55-foot steel vessel, *Spartan,* and Charles W. Carpenter, skipper of the 55-foot steel *Atlantic Queen* announced the trials in March at the annual Fishermen's Forum at Galilee, R.I. They said they had modified their vessels and had some success with Canadian pair seining on two days of trials.

Fishing on the second day with the new gear, the Rhode Island skippers caught 2,500 pounds of marketable fish, enough for a good economic return. But it would take at least another month of trials before the feasibility of the method could be fully tested for the Rhode Island coastal waters, according to Robert E. Taber, University of Rhode Island commercial fisheries specialist.

Mr. Taber, who is assisting with the project, said that sustained catches of 2,000 to 4,000 pounds per day are needed if the pair seining method is to be economical. Canadian pair seining is performed by two vessels pulling cable and a bottom net between them. The vessels drag thousands of feet of cable that is first strung out in a crescent shape along the ocean bottom and then pulled into a "V" shape to herd fish into the path of the net.

For two lobster boats to use the method, they must be modified at a cost of about $6,000, which includes all gear and nets, Mr. Taber said. The vessels may still be used for lobster fishing, he said. Nets and advice on their use have been provided for the trials by the Marine Advisory Service, part of the URI Sea Grant program, Mr. Taber said. The advisory service is also employing the services of Capt. George Thomson, an expert on Canadian pair seining from Lossiemouth, Scotland.

LOWER CATCH SEEN FOR CHESAPEAKE BAY CRABS

Chesapeake Bay landings of blue crabs are expected to remain near 50 million pounds a year for the next

two years, according to the head of Virginia Institute of Marine Science Department of Crustaceology. The department head, who is well known for his accurate predictions of blue crab abundance and production, based his figure on estimates of the present abundance of juvenile and adult crabs.

The researcher explained that although some blue crabs in the Chesapeake Bay spawn in late April and some in early October, intensive spawning begins in June and ends in late August. In a year of normal temperature and rainfall, large numbers of crabs reach maturity by early September, 14 months after hatching.

Between September (when maturity is attained) and the following August, most adult crabs die from natural causes or are removed by fishing. "Thus, we can expect that in the Bay the commercial fishery exploits a new crop every 12 months, between September and the following August," the researcher said.

"Catch since September 1973 has been only two-thirds of the long-term average, and there should be a temporary high catch from May through August, derived from a later-than-normal hatch of crabs in 1973. This increase is expected to be short-lived, however, and catch from September 1974 through August 1975 should be about 50 million pounds," the researcher stated.

Alaska King Crab Catch Rises in 1973

The Alaska king crab harvest in 1973 totaled 76 million pounds and brought fishermen more than $40 million, the Alaska Department of Fish and Game reports. The harvest is the largest since 1968 and totals two million pounds more than the 1972 catch. Major king crab fisheries in the Bering Sea, Kodiak, Alaska Peninsula and Unalaska areas were highly successful. Quotas were quickly attained through improved efficiency and increased effort in all registration areas.

In the Bering Sea, 67 vessels harvested the 23 million-pound quota in 86 days. In comparison, 21 million pounds were harvested over a 10 month period in 1972.

The Kodiak area opened on Aug. 15 with 125 vessels participating. The season was closed 10 days later after 10.3 million pounds were taken from a 13 million-pound quota in the Southern district. This district was reopened during October for eight days and an additional two million pounds were harvested. In the Northeast and Shelikof districts of the Kodiak area, the harvest was 1.6 million and 800,000 pounds, respectively. The Kodiak area king crab catch totaled 14.7 million pounds.

The South Peninsula king crab season opened in mid-August and closed Sept. 28 in the Unimak Bight district, Oct. 17 in the Central district and Jan. 15 in the West Chignik district. The total king crab catch for the South Peninsula area reached 4.5 million pounds, slightly above that of the previous year.

In the Unalaska area the 24 day king crab season produced good fishing in all districts, with the Egg Island district showing excellent catches. The total harvest for all districts was 13.5 million pounds by 55 vessels. The Adak, or Area R, season opened on Nov. 1 and was closed by the department by emergency order on Dec. 6 when it became evident to biologists monitoring the fishery that the king crab stocks in the area were at low level of abundance. The eight million pound harvest from this major production area had fallen far short of the anticipated level and the closure was necessary to conserve the resource. Subsequently, a portion of the southern and western Aleutians king crab areas were reopened on Feb. 1 on the basis of exploring the availability of stocks in areas unfished during the initial open season. Catches through the Feb. 26 closing date in these areas were estimated to be slightly in excess of one million pounds.

Publications

New York Bight User Services Publication

A new catalog describing available products and services associated with the New York Bight, a marine area of critical economic and environmental importance, has been issued by the Environmental Data Service—a part of the Commerce Department's National Oceanic and Atmospheric Administration.

Entitled **NOAA Products and Services Pertaining to the New York Bight,** the publication is a by-product of the Marine Ecosystems Analysis (MESA) Program under the Office of Coastal Environment—a project initiated by NOAA in 1973 to study the waters extending from Montauk Point, L.I., to Cape May, N.J., and from the coastline to the edge of the Continental Shelf. This is perhaps the most complex and heavily impacted coastal marine area in the United States.

The catalog is divided into six service sections. Subjects covered are environmental prediction and warning services, environmental satellite information, marine resources, marine description, mapping and charting, marine data services, and library and information services. The four appendixes contain a listing of addresses to help the user identify the sources offering the various products and services, a listing of general catalog-type publications that inform the user about products in special interest areas, a glossary of acronyms, and a subject index in alphabetical order.

Copies of the publication may be obtained from the Project Manager, MESA New York Bight Project, Marine Sciences Research Center, Bldg. J, State University of New York, Stony Brook, NY 11790.