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Report on Researches Carried Out and the Status of the Fisheries in Subarea 2

by W. Templeman

Reports on researches in 1962 were submitted by the following member countries: Canada (Doc. No. 13), Germany (Doc. No. 7), Spain (Doc. No. 39, 40, 42), United Kingdom (Doc. No. 19, 20, 30) and USSR (Doc. No. 54, 56, 59, 60, 61, 64).

1. Work Carried Out

(a) Canada: "A.T. Cameron" and other research vessels. Hydrographic section from Seal Island across Hamilton Inlet Bank to continental slope, Aug. 1-2. Cod tagging. Survey of cod abundance, size and age in relation to depth and temperature in August on Hamilton Inlet Bank. Sampling of research vessel catches and of the inshore fishery.

(b) Spain: Sampling of catches of cod on board commercial trawlers in 2J - length, age and maturity studies.

(c) United Kingdom: "Ernest Holt" visited Division 2J in November, worked the hydrographic section from Seal Islands across Hamilton Inlet Bank on November 26-27, surveyed the grounds for cod, took samples, and tagged cod. Continuous Plankton Recorder surveys. Sampling of commercial catches.

(d) USSR: Research and exploratory vessels. Hydrography and exploratory fishing. Distribution of pelagic eggs and larvae of commercial fishes. Quantitative distribution and seasonal population dynamics of zooplankton. Distribution of redfish by season and depth. Surveys on abundance of young cod and redfish. Results of cod tagging in 1960-62.

2. Hydrography

Canadian R.V. "Investigator II" worked the Seal Island - Hamilton Inlet Bank section at the usual time, Aug. 1-2. Surface temperatures, although higher than in 1961, were still lower than usual. Temperatures of the water on Hamilton Inlet Bank (0.1 to 1.0°C) were lower than in 1961, and the cold intermediate layer contained more water with temperatures below -1°C. In the deep water at the continental slope temperatures were about the same as in 1961 (3.5 to 3.8°C).

The UK vessel "Ernest Holt" worked the Seal Island - Hamilton Inlet Bank section on November 26-27. From the coast seaward layers of water of salinity 32.5-34.5‰ lay over the continental shelf with a homogeneous mass (34.5 - 34.9‰) over the continental slope. Compared with the temperature section in August by Canada, there was no water below 0°C, and temperatures generally increased with depth to just over 3°C on Hamilton Inlet Bank, and 3.5-4.0°C along the bottom on the continental slope.

Hydrological investigations by USSR show that in the first half

of the year there was less water of polar origin than usual, and temperatures of the 0-50 m. layer were similar to those of the warm year of 1958. In the second half of the year, the cold Labrador current intensified with the result that the sea off Labrador was colder than in 1961.

3. Plankton

The USSR reported on studies of the quantitative distribution and seasonal population dynamics of zooplankton carried out in 1958-61. Boreal fauna zooplankton, especially Calanus finmarchicus, are the basic source of fish food in the area. The zooplankton biomass in summer is considerably higher than in spring and autumn. Phytoplankton blooms, followed by increases in zooplankton biomass, begin on the southern Grand Bank in March-April and gradually occur northward until reaching the Labrador area by August.

Continuous Plankton Recorder surveys were carried out by the United Kingdom.

4. Fish Eggs and Larvae

The USSR reported on surveys of eggs and larvae of cod, redfish and American plaice carried out off Labrador in 1959-61. Eggs and pre-larvae of cod and eggs of American plaice were taken in June-July. In July-August redfish larvae were found mainly over the continental slope. Also reported were eggs of the lemon sole, Microstomus microcephalus. This species had not previously been reported from the Northwest Atlantic.

The United Kingdom gave information on redfish larvae obtained from the Continuous Plankton Recorder surveys.

5. Cod

Canada continued its sampling of the inshore Labrador cod fishery during July and August, samples having been taken from the trap fishery in 2J, the jigger fishery in 2H and by jigger in 2G where there is no commercial fishery. Examination of the length and age data revealed that there has been no significant contribution to the inshore fishery by new year-classes since that of 1953. Samples taken during a trawling survey on Hamilton Inlet Bank in August, on the other hand, consisted almost entirely of small fish of ages 3-6. These younger ages found in quantity offshore were apparently not available to the inshore fishery, and, conversely, the older age-groups which were most abundant inshore were scarce on Hamilton Inlet Bank. Cod tagging was resumed by Canada in 1962 mainly to study the inter-relationships of inshore and offshore populations. Cod were tagged on Hamilton Inlet Bank and at inshore localities of Labrador.

Germany reported a recapture on the northern slope of the Grand Bank (3L) in August 1961 from 141 cod tagged in November 1960 in 2J.

Spain sampled cod from commercial catches in 2J during May, August, September and October. The most frequent lengths caught were from 48 to 70 cm., but more small fish were prevalent in May than in the later months. The most numerous age groups were 4-6, but ages up to 14 were frequent and there was no real dominance of any particular year-class. The growth rate is shown to be considerably slower in 2J than in the southern divisions. Spain reported a further recapture in 2J of a cod tagged by Denmark in Subarea 1. Two similar recaptures had previously been reported.

The United Kingdom survey in November found that most of the cod were between 40 and 55 cm. Most of the cod stomachs were well filled with crustacea, mainly Themisto but also Pandelus and Chionoecetes. 372 cod were tagged.

From extensive USSR exploratory fishing dense shoals of post-spawning cod were found in mid-April at 400-500 m. in 2G. Cod of 53-68 cm. (ages 7-10) prevailed in the catches. In the autumn cod were widely dispersed and smaller than in the spring. In May dense schools were found in 2H where the catches were dominated 56-62 cm. fish of ages 9-12 years. In autumn the very small catches were dominated by ages 6-8 years. In 2J both pre-spawning and post-spawning concentrations were prevalent in April-May. Most important in the catches were cod of 43-63 cm and 1955-57 year-classes. Investigations were made to determine the abundance of young cod (up to 35 cm) in the subarea. Trawlings made in 2G and 2H by research vessels with small-mesh trawl showed that cod were dispersed over the whole area, averaging 25 specimens per 1-hour trawling. Proceeding southward, the catches of young cod steadily increased to a peak of 300 fish per hour trawling at 150-200 m on Hamilton Inlet Bank. Within the size range considered cod of 30-35 cm prevailed. Cod below 25 cm were scarce. The USSR tagged 1662 cod in 1960-62 in 2H and 2J. The 47 returns to end of 1962 show that cod migrate in summer from the offshore banks toward the coastal areas of southern Labrador and north and northeast Newfoundland.

6. Redfish

In 2H the USSR redfish catches were dominated by fish of 30-40 cm in April-May. In 2J the January-May catches on pre-spawning and spawning concentrations were represented mainly by males of 34-38 cm and females of 43-48 cm. In November concentrations were found on the northeast slope of Hamilton Inlet Bank, the dominant lengths being 32 cm for females and 35 cm for males. The distribution of young redfish below 15 cm was investigated, but no concentrations of young were found.

7. Status of the Fisheries

Cod landings of just over 250 thousand tons represent a slight decrease from the peak landing of 264 thousand tons in 1961. Of the total cod landings from the subarea in 1962 over 225 thousand tons were taken by trawlers. The development of this offshore fishery by trawlers was very rapid between 1958 and 1961, the annual average during 1955-58 being only 30 thousand tons. Between 1936 and 1959 cod landings exceeded 100 thousand tons in only one year (1953) when 111 thousand tons were landed. The recent great increases in the landings is the result of substantially increased effort on great new deep-water concentrations in winter and spring. Correspondingly the effort for redfish decreased.

Redfish landings of about 8 thousand tons represent a decline from the 1961 landings of 25 thousand tons, which was also substantially lower than the 83 thousand tons in 1960. This fishery began in 1958 with an initial annual landing of 71 thousand tons of redfish by USSR and Iceland.