



Serial No. 2641
(D.b.70)

ICNAF Res.Doc. 71/135

Revised

ANNUAL MEETING - JUNE 1971

Status of Fisheries and Research
Carried out in Subarea 2 in 1970

by

W. Templeman
Fisheries Research Board of Canada
Biological Station, St. John's, Nfld., Can.

Reports on researches in Subarea 2 were submitted by the following countries:
Canada, Federal Republic of Germany, Poland, Portugal, Spain, USSR, UK, and USA.

1. Status of Fisheries

The total landings of all species were about 266 thousand metric tons (509 thousand tons in 1969). Landings by country in 1970 in metric tons (1969 in parentheses) were: Canada, 2659 (5,364); France, 15,824 (29,774); Germany, 50,520 (72,378); Poland, 40,691 (65,437); Portugal, 42,013 (66,082); Spain, 10,683 (33,152); USSR, 65,423 (154,437); UK, 2,602 (2,158); USA, 505 (391).

Nominal catches, in thousands of metric tons round fresh, of species whose yearly landings from the Subarea are more than one thousand tons are shown in the table below:

	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u> ^a	<u>1970</u> ^b
All species	367	328	482	509	266
Cod	338	298	449	465	231
Redfish	14	17	9	11	11
American plaice and Witch flounder	2	3	3	7 ^c	7 ^{cd}
Greenland halibut	2	5	8	16	11

^a Calculation for non-member countries included.

^b Calculation for non-member countries included.

^c Should be increased slightly for non-members. Information not available.

^d American plaice (2), witch flounder (5).

2. Work Carried Out

- (a) Canada: The standard section from off Seal Island in southern Labrador across Hamilton Inlet Bank was occupied on 2-3 August. The failure of the inshore Labrador fishery was investigated in August. Assessment work was carried out on cod of the area using "Virtual Population" methods. Aerial photographic survey was carried out for harp seals.
- (b) Federal Republic of Germany: Cod were measured, sexed and aged, and some work carried out in cod fecundity.
- (c) Poland: Cod, redfish and American plaice were measured and aged, and Greenland halibut measured.
- (d) Portugal: Cod from 2J were measured and aged.
- (e) Spain: Cod were measured, sexed and aged.
- (f) USSR: The standard section 8-A, extending over Hamilton Inlet Bank, was occupied in late October. Cod were measured and aged, and cod tagging was carried out in 2J. Total and natural mortality rates were calculated for cod.
- (g) UK: Over 3,400 miles were sampled by the Continuous Plankton Recorder.
- (h) USA: The US Coast Guard studied short-term variations in the Labrador Current using moored buoys from 15 July to 11 August.

3. Hydrography

In early August, temperatures and salinities in the colder more shoreward part of the Labrador Current off southern Labrador were below average, but, in the deep water of the Continental Slope in the part of the Labrador Current derived from the West Greenland Current, both temperatures and salinities were above average and often higher than the highest previously recorded. Below average temperatures in the upper 200 m were also found in late October. The decreasing temperatures and salinities recorded in 1970 in the deep water of the West Greenland Current presumably forecast lower temperatures and salinities in the deeper water on the

Continental Slope of the Labrador and Newfoundland shelves in 1972.

4. Plankton

The Plankton Recorder Survey indicated that the numbers of copepods were close to the long-term mean (1962-1969).

5. Cod

The Canadian inshore fishery was a failure due to lack of cod and decreased to only 2,038 tons, compared with 5,364 tons in 1969, 17,900 tons in 1968, and 27,700 tons in 1967. Inshore bottom water temperatures were low and there was rapid fouling of nets in the inshore region by "slub", mainly the diatom Chaetoceros socialis. Assessments by the "Virtual Populations" method showed that the numbers of older (7+) cod have declined in recent years and indicated that the quantities of younger fish have increased. Fishing mortality indices for cod increased from 0.06 in 1959 to 0.36 in 1961 and were at various levels between 0.28 and 0.57 for different years between 1962 and 1968. Cod in the area are 50% recruited at age 6 and are fully recruited at age 8 with insignificant numbers of 2- and 3-year-old fish being taken. The reduction in the inshore landings in recent years has not been due in any considerable degree to decreased effort and has been very much more severe than that in the offshore landings. The inshore fishery of Labrador has traditionally depended on mature fish which spawn in the offshore area and migrate to the coast for feeding, mainly in June and July. Immature fish were not a significant part of this inshore fishery even in the period when no offshore fishery existed. It is very likely that the reduction in the age and numbers of mature fish by the offshore fishery and the consequent great reduction in the total amount of food needed, have been largely responsible for the much smaller numbers of the cod migrating shoreward and the earlier depletion of the fishery in the inshore than in the offshore area.

The total catch (97% cod) of the Federal Republic of Germany in Subarea 2 decreased by 32% from that of 1969. This decline was mainly due to a reduction of 25% in fishing effort. Ice conditions interfered with the fishery more than in 1969 and the area of optimum bottom temperature was more expanded than in 1969. Eighty-nine percent of the total catch was taken between February and April. The predominant length groups were 40-60 cm and the predominant year-classes 1962-1965.

The reduction in effort when the German fleet was driven from 2J by ice in March was compensated for by a corresponding shift in effort to the same stock of cod in the most northern part of 3K from March to May. But even the combined German catches in Subareas 2 and 3 show a decline of 19% against 1969, although the total effort was almost the same.

Polish daily yields, mainly of cod, from Subarea 2 in January-April, decreased from 35.5 tons to 32.1 tons per day fished. (However, in ICNAF Res.Doc. 71/104 the Polish catch/of cod in the first half of the year decreased from that of 1969 by 35% in 2H and 24% in 2J.) Fishing effort decreased by 33%. Most of the cod landed were 24-59 cm in length and 3 to 7 years of age. The most abundant year-classes were those of 1961-1963 and 1965-1967.

Spanish researchers found the most numerous age-group to be 5 years old (1965 year-class); the average length of cod measured was 47.8 cm (53.3 cm in 1969) and the average age 5.3 (5.7 in 1969).

In the Portuguese cod sampling the most numerous year-classes were of 1963 and 1964 (7 and 6 years old).

The main part of the USSR cod catch was 48-62 cm in length, belonging to the 1961, 1962 and 1963 year-classes, all of which were indicated by young cod surveys in preceding years to be slightly above the average level. Young fish survey data indicate that the 1966 and 1967 year-classes are highly abundant. The total mortality index of 2J cod was 0.67 (48.8% annual mortality). The calculated natural mortality rate lay between 0.080 and 0.343 with a mid-point of 0.22.

6. Redfish

Polish measurements of redfish (Sebastes mentella) in 2H ranged from 19-52 cm (mainly 28-45 cm). Ages ranged from 4 to 31 years and the mean age was 13.7 years. In 2J redfish measured were 19-48 cm long (mean length 32.4 cm). The range of ages was 5-23 and the mean age 12-14 years.

7. American Plaice

American plaice measured by Poland from 2J were 24-49 cm long and 4-16 years old.

8. Greenland Halibut

Greenland halibut measured by Poland from 2H were 37-105 cm long and had a mean length of 68.7 cm.

9. Atlantic Salmon

Of 27 Atlantic salmon tagged by Canada in the Labrador Sea in April, three recaptures were made on the Canadian mainland. In coastal salmon of the Pack's Harbour area of Labrador, 85% of the salmon stomachs were empty. The main food consisted of pteropods, lance, baby cod and capelin. In the Labrador Sea the main food was Paralepis coregonoides borealis, arctic squid and fish remains. Biochemical studies of 25 salmon caught in the southern part of the Labrador Sea, close to the Labrador and Northeast Newfoundland shelves, in the spring of 1970 indicated 52% of European origin. This percentage is most unexpected and is similar to the 51% of European origin obtained for 204 Atlantic salmon taken off West Greenland and in the Labrador Sea in the autumn of 1970.

10. Mackerel

Canada reported mackerel to be relatively abundant in southern Labrador coastal waters in August-September and they were reported at Cape Harrison, further north than their most northerly recorded extension in previous years to Black Island (53°46'N).