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Report on the Status of Fisheries and Researches in Subarea 3 during 1963

by W. Templeman

A. Status of the Fisheries

1. Cod

Total landings of 464 thousand tons were 75 thousand tons higher than in 1962 and were the third highest recorded, next to the 471 thousand tons of 1960 and the highest landings of 472 thousand tons in 1954. The greatest landings were from 3L (156 thousand tons) and from 3K (123 thousand tons).

Canada (Doc. 36) reported increasing use of nylon gillnets for cod fishing in Newfoundland coastal waters with about 13,000 91-m nylon gillnets in use in 1963, having mesh sizes of 15-19 cm. The cod caught by these gillnets are large with about 90% ranging from 60 to 100 cm and mainly of ages 7-14. At Trepassey in south-eastern Newfoundland, where the nylon gillnet fishery has been successful, the catch of cod per gillnet has declined from 350 kg in 1961 to 300 kg in 1962 and 230 kg in 1963.

A Canadian review of statistics of cod landings for 1954-61 (Doc.76) shows that cod landings by trawlers for 3K have increased substantially since 1958. During the same period the landings from the inshore fishery in 3K have declined.

Starting in 1959 a very productive spring fishery developed in 3K and this has resulted in an upward trend in landings per unit effort when the data are considered on an annual basis. However, when considered on a semi-annual basis, the trend in landings per unit effort has been slightly downward for the summer and autumn fishery by trawlers as the fishing effort has greatly increased. More pronounced decreases in landings per unit effort are indicated for the inshore fishery in 3K.

Length and age composition data show a tendency toward smaller and younger cod in the trawler catches and particularly in the landings of the Newfoundland inshore fishery. The greatly decreased abundance of older fish in the inshore fishery and the trend toward smaller fish in the offshore trawl fishery are attributed to the greatly increased effort by trawlers in recent years, particularly since 1958.

Spain reported that large cod were more abundant in the catches in 3L and 3N. Cod from 3K were also larger, on the average, than in 1962 (Doc.79).

The USSR reported (Doc.59) that the bulk of the catches of cod in 3M was composed of a rich 1957 year-class.

In catch/effort assessment for 1956-58 by the United Kingdom, using available published and unpublished data (Doc. 56) and subsequent extension of this study by the Assessment Subcommittee to 1962-63, it was concluded that cod of 3KL and 3P were fished during this period at an intensity equal to or below but not appreciably above that giving the maximum yield (Doc.56). In 3NO it is likely that the rate of fishing of cod during the period 1956-58 spanned that giving the maximum yield and was probably beyond it.

2. Haddock

Total landings of 14 thousand tons were 21 thousand tons lower than in 1962 and lower than in any year since 1946 when the fishery was in the earliest stage of its development. In contrast landings were highest in 1954 (104 thousand tons) and as recently as 1961 were 80 thousand tons (but in 1959 it was as low as 35 thousand tons) The greatest landings were from Division 3O(10 thousand tons).

Canadian otter trawling surveys by the A. T. Cameron and the Investigator II over the haddock areas of the southern half of the Grand Bank in May and July and on St. Pierre Bank in June (Doc.36) showed only small quantities of haddock. The largest catch per half-hour towing on the Grand Bank was 680 kg and on St. Pierre Bank 80 kg. Bottom temperatures were generally suitable for haddock. From the length and age frequencies of samples taken during the May survey of the Grand Bank, haddock of the 1955 and 1956 year-classes, which were dominant in the catches during the surveys of 1959-61, were out-numbered in 1963 by 1- and 2-year-old fish of the 1961 and 1962 year-classes. However, when it is considered that the research vessel catch per unit effort was considerably lower than those of previous years both in number and weight, the apparent abundance of these 1- and 2-year-old fish may be only in relation to the present reduced year-classes of earlier years. For example, the average number of haddock per half-hour tow was 70 in 1963 and 80 in 1962, while in 1960 it was 590.

Distribution of young and adult haddock was the main subject of USSR investigations in Subarea 3 (Doc.59). No large quantities of haddock of commercial size were found. Haddock of commercial size mainly belonged to the 1955, 1956 and 1958 year-classes and smaller haddock to the 1961 and 1962 year-classes. The new year-classes, 1961 and 1962 were considered to be of average abundance.

In catch/effort assessment for 1956-58 by the United Kingdom, using available published and unpublished data, it was concluded that haddock of 3NO were fished during this period at an intensity equal to or below, but not appreciably above, that giving the maximum yield (Doc.56).

3. Redfish

Redfish landings of 69 thousand tons were 7 thousand tons higher than in 1962 but well below the highest landings of 246 thousand tons in 1959. The highest landings were from 3K (18 thousand tons), 3N (13 thousand tons) and 3Ps (10 thousand tons).

Icelandic landings of redfish from Subarea 3 (3K, Doc.34) were about double those of 1962 but this effect was produced by a similar increase in fishing effort.

The USSR redfish landings for 3L increased 8 times while those for 3K decreased three-fold because of unfavourable ice conditions (Doc.59). Soviet catches of mentella redfish per trawling hour by BMRT type trawlers on Flemish Cap (3M) have declined gradually from 2.5 and 2.3 tons in 1957 and 1958 to 1.5 and 0.9 tons in 1960 and 1961 (Doc.89).

United States landings of redfish in 1963 (Doc.18) dropped nearly 15% but this was probably due to decreased effort, since the catch per day has held steady over the past few years at about 15 to 16 metric tons.

Reports of redfish statistics of the Subarea by depth zones have been provided by France (St. Pierre and Miquelon, Doc.16), Poland (Doc.71) and the United States (Doc.69 and 87).

The assessments presented at the 1963 meeting (Redbook, Part 1, p.37) still represent the best available estimates. They show an immediate loss for any mesh above 3 inches (considerable above four-four and a half inches).

4. Halibut

Halibut landings of 1.3 thousand tons were lower than the 1.8 thousand tons landed in 1962, and even more below the highest recent landings of 2.8 thousand tons in 1960. Highest landings were from 30 (0.5 thousand tons) from 3Ps (0.2 thousand tons) and from 3L and 3N (0.1 thousand tons in each case).

5. Flounder

Flounder landings of 34 thousand tons were 7000 tons higher than in 1962 and 4000 tons higher than in 1961. The greatest landings were from 3L (18,000 tons), 3N (8,000 tons) and 3O (4,000 tons).

B. Special Research Studies

I. Environmental Studies

1. Hydrographic

The usual 5 monitoring sections across the Labrador Current and continental shelf from Bonavista to the southern Grand Bank were taken by Canada (Doc.36) between July 27 and August 22. Temperatures in these sections were on the whole not greatly different from those in 1962 being slightly higher in some depths and locations and slightly lower in others. A much greater volume of low temperature water was, however, noted in 1963 in the Avalon Channel and northern Grand Bank section along the 47°N line.

The International Ice Patrol operated by the U.S. Coast Guard carried out its usual work, operating 4 network surveys on the Grand Bank area (Doc.18). Less than the normal amount of sea ice and ice-bergs occurred along the east coast of Newfoundland. Labrador Current volume along the eastern slope of the Grand Bank was slightly below normal for the entire season and was on the average warmer and saltier than usual but with lower minimum temperatures.

II. Plankton

Continuous Plankton Recorder studies were carried out by the United Kingdom in all months except January (Doc. 14).

II. Biological Studies of Fish by Species

I. Cod

Canada carried out the usual sampling of commercial inshore and offshore catches for length, sex, maturity, age and grow studies (Doc.36). There is a progressive decline in average size at age proceeding from south to north. The numbers of 0-group cod caught in the Canadian beach seining from September 19 to October 31 on the east coast of Newfoundland suggest only moderate survival of the 1963 year-class to the settlement stage. Length frequencies in research cruises to the Northeast Newfoundland Shelf indicate the presence of significant numbers of 3- to 5-year-old cod. Over 13,400 cod were tagged in 17 inshore and 5 offshore localities. In Canadian researches on the southern Grand Bank (3N and 30) the polymodal frequency curves and the progression of dominant year-classes provided evidence of the validity of otolith ages. The most successful year-classes of cod in 3N and 30 in recent years occurred in 1946, 1949, 1953, 1955, 1958 and 1959. The first 4 of these years, and possibly 1958 to a lesser degree, were also years with successful year-classes of haddock in this area (Doc. 45). Canadian workers have come to the conclusion that stratified sampling using lesser numbers of otoliths at peak sizes than in random samples, can be used with profit to study age and growth of cod in the Newfoundland inshore fishery (Doc. 46).

Poland (Doc.28) investigated size, age and growth, sex, sexual maturity, feeding and yield of cod in 3K at the seaward edge of the Northeast Newfoundland Shelf (February 2-26), on the northeast slope of the Grand Bank in 3L (January 20-March 5) and the southeastern slope of Flemish Cap in 3M (March 6-19). Yields were slightly higher during the day. On Flemish Cap cod were numerous even at 500 m whereas on the other grounds they were not present in quantity deeper than 350-400 m. The most important sizes and year-classes in 3K were namely 42-62 cm (5, 6 and 7 years; 77%); in 3L mainly 30-50 cm (4, 5 years; 67%) and in 3M mainly 48-65 cm (5, 6, 7, 8 and 9 years; 61% 5 and 6 years old). Flemish Cap had the highest growth rate, except possibly for the largest fish. Judging from the maturity stages of females, cod spawning had not begun in 3K in February or in 3L in January-early March (although in the latter area most of the females examined were of immature size) and 6% were spent at Flemish Cap in March 6-19.

Portugal has studied length, sex, age and growth and maturity of cod in 3KL. Almost all the fish caught were between the ages 4-10 (Doc.57).

The USSR carried out length, sex, age and growth studies of cod in 3KMN (Doc.59).

2. Redfish

Canadian exploratory fishing with the A. T. Cameron on Funk Island Bank at the seaward edge of the Northeast Newfoundland Shelf in the general vicinity of 51°24'N to 51°28'N (Doc.36) showed in half-hour tows with a No. 41 trawl on May 8-9, 750 kg of marinus at 230 m and 4300 kg of mentella at 275 m and on May 28-30, 2050 and 2270 kg of mentella at 550 and 640 m. The latter 2 sets consisted of large mentella averaging 1.0 and 1.3 kg with the females immature even at the largest sizes. It is indicated that from the Funk Island area to the northern Grand Bank approximately two-thirds of the mentella spawning (larval extrusion) occurs between mid-April and the end of May and most of the remainder in early June with a small amount in early April. Spawning is delayed slightly in the more coastal areas(off the Grey Islands and St. Anthony) where temperatures are lower. Spawning in marinus on the slopes of Funk Island Bank was almost over by the end of May.

The Polish factory trawler Dalmor fished for redfish on the Northeast Newfoundland Shelf in 3K in July-August and in October-early November (Doc.32). Sebastes mentella dominated the catches from 200 to 780 m but Sebastes marinus were sometimes numerous (up to 40% of the catches) from 200 to 400 m. For mentella, females predominated at all depths from 200 to 600 but declined gradually from 76% at 200-400 m to 52% at 500-600 m. Average sizes of mentella at different depths ranged from 37.5 to 39.4 cm for males and 39.6 cm at 200-400 m with a gradual decline to 39.3 cm at 500-600 m for females. Average sizes of marinus were larger, 43.8 cm for males and 47 cm for females.

The USSR researches on Sebastes mentella of Flemish Cap (3M) lead to the conclusion that in analyzing size and age composition for these redfish the location of the slope area and the depth and season should be considered (Doc.89).

3. Other Fish

Polish exloratory fishing at the seaward edge of the Northeast Newfoundland Shelf in 3K found Greenland halibut in greatest quantities at 500-600 m, and quantities of Macrurids, 375-750 kg per hour, between 400 and 600 m.

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p. 3, para. 4, line 2, after"p. 37)" insert "for 3NO"

p. 4, line 2, after "(Doc. 14" insert ", 42)"

p. 4, I. Cod, para. 2, line 9, for "namely" read "mainly"

p. 5, 3. Other Fish, line 1, for "exloratory" read "exploratory"

" " " " " line 4, after 600 m add "Doc. 32)"