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Depth Distribution of "Beaked" Redfish (*Sebastes mentella* Travin) on Flemish Cap Bank

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A long-term intensive fishing for "beaked" redfish on the Kopytov, Rozengarten, Anton Dorn and Flemish Cap banks did not affected the age-size composition of redfish (Sorokin, 1963; Surkova, 1957; Konstantinov, 1966). The age-size composition of the fishing part of the "beaked" redfish stock is stable even if the fall in the total catch, mean catch per trawling hour, reduction in the fishing period or a full cessation of the fishery is apparent. The papers by Surkova (1962) and Richter (1965) suggest a probable tendency in rejuvenation of the "beaked" redfish stock on the Flemish Cap Bank under the influence of fishery. But the decrease in the average age is rather attributed to dislocation of the fishing fleet to smaller depths or to change of the season and area of the fishery (Savvatimsky, 1965; Chekhova, 1964).

The question on distribution of "beaked" redfish according to depths on the continental slope of the North Newfoundland Bank was discussed earlier (Sidorenko, 1967). It was stated for the southern Flemish Cap Bank that in August the mean length of redfish males and females was decreasing (Savvatimsky, 1963) with depth.

The aim of the paper proposed is to show the peculiarities of differences in age-size composition of "beaked" redfish according to depths and seasons.

The yearly cycle of mature redfish breaks down into the periods:

1. Extrusion of larvae and beginning of the summer feeding - March-June.
2. Summer fattening and copulation - July-October.
3. Wintering and maturation of females - November-February.

#### March-June

Redfish males do not make any considerable migrations. The specimens of 33-35 cm in length at an age of 12-14 years predominate at all the depths from 201 to 700 m (Fig.1,2).

The changes are clearer expressed in the length composition of females. Large female specimens of 37-39 cm long prevail at a depth of 201-300 m. Though the main length group of 34-37 cm remains in the 301-700 m layer, there increases a proportion of female specimens of 37 cm long deeper than 501 m; as a consequence of this increases the average length along with the increase in depth from 501 m (Table 1). Changes in age composition according to depths are in agreement with those in length composition. The proportion of male specimens at an age of 13-14 years and female ones at an age of 14-15 years increases deeper than 501 m.

#### July-October

In the period of the summer fattening an even distribution of redfish according to depths from 301 to 600 m is observed (Table 1). The age-size composition is almost the same at all the depths, though elder female specimens of larger sizes keep to a depth of 201-300 m (Fig.1,2). The number of large redfishes of elder age increases deeper than 601 m.

In August, when a migration of redfish from large depths to smaller ones continued, there was worked a series of trawlings strictly keeping to depths of 201-300 m, 301-400 m, 401-500 m, 501-600 m. These trawlings showed that a predominating age and size of male and female specimens at a depth of 301-600 m was decreasing with depth.

Thus, July-October may be characterized on the whole as a period of a relative stability in the age-size composition

at all the depths down to 600 m (600 m inclusive). The migration of redfish and differentiation of the age-size composition is still possible in the beginning of the period, the fact we observed in August and that was noted by Savvatimsky (1963). The predominating length and age of redfish changes from the depth of 601 m: the deeper waters the larger redfish.

#### November-February

During this season the relationship between the redfish length, their age and depth is most clearly marked (Fig. 1, 2) and becomes apparent from a depth of 401 m.

When analysing the distribution of redfish in every season we made sure that a relationship between length, age and the depth of inhabiting of "beaked" redfish on the Flemish Cap Bank is distinctly marked throughout the year. In July-October it is apparent deeper than 601 m and in November-June deeper than 401 m.

It is evident from Table 1 that the greatest number of trawling hours was worked in March-June at a depth of 501-600 m, in July-October at a depth of 401-500 m, in November-February at a depth of 301-400 m. In November-February they fished for cod at a depth of 201-300 m, redfish were only met with in the by-catch. At all the depths mentioned redfish males with the mean length of 32.9-33.3 cm and female ones with the mean length of 34.7-34.9 cm were caught.

Thus, throughout the year redfish of 33-35 cm long were moving along the slope of the bank. The commercial fleet followed their seasonal movement changing the depth of trawling, and therefore for the space of the year the fleet fished for redfish of the same size. This explains to some extent why after some years of heavy exploitation of the fishing banks the redfish catches were reducing while the age-size composition was stable.

Table 1

Fishery and the mean length of *Sebastes mentella* Travin at different depths of the Flemish Cap Bank

Depth m	March-June			July-October			November-February					
	Number of trawling hours	Catch per trawling hour, centner	Mean length, in cm males females	Number of trawling hours	Catch per trawling hour, centner	Mean length, in cm males females	Number of trawling hours	Catch per trawling hour, centner	Mean length, in cm males females			
20I-300	6I	9	33,8	37,2	2668	8	32,9	36,4	4004	6	35,2	35,3
30I-400	70I	2I	33,8	35,8	5626	15	32,7	34,3	1258	II	33,3	34,9
40I-500	1843	22	32,9	34,9	1150I	18	33,1	34,7	879	I3	34,2	36,7
50I-600	3042	25	33,3	35,1	189	16	33,6	35,1	1052	II	35,2	37,7
60I-700	103	25	34,3	36,3	25	6	35,6	38,0	63	23	35,6	38,0
70I-800	-	-	-	-	-	-	38,7	38,8	-	-	40,4	40,4

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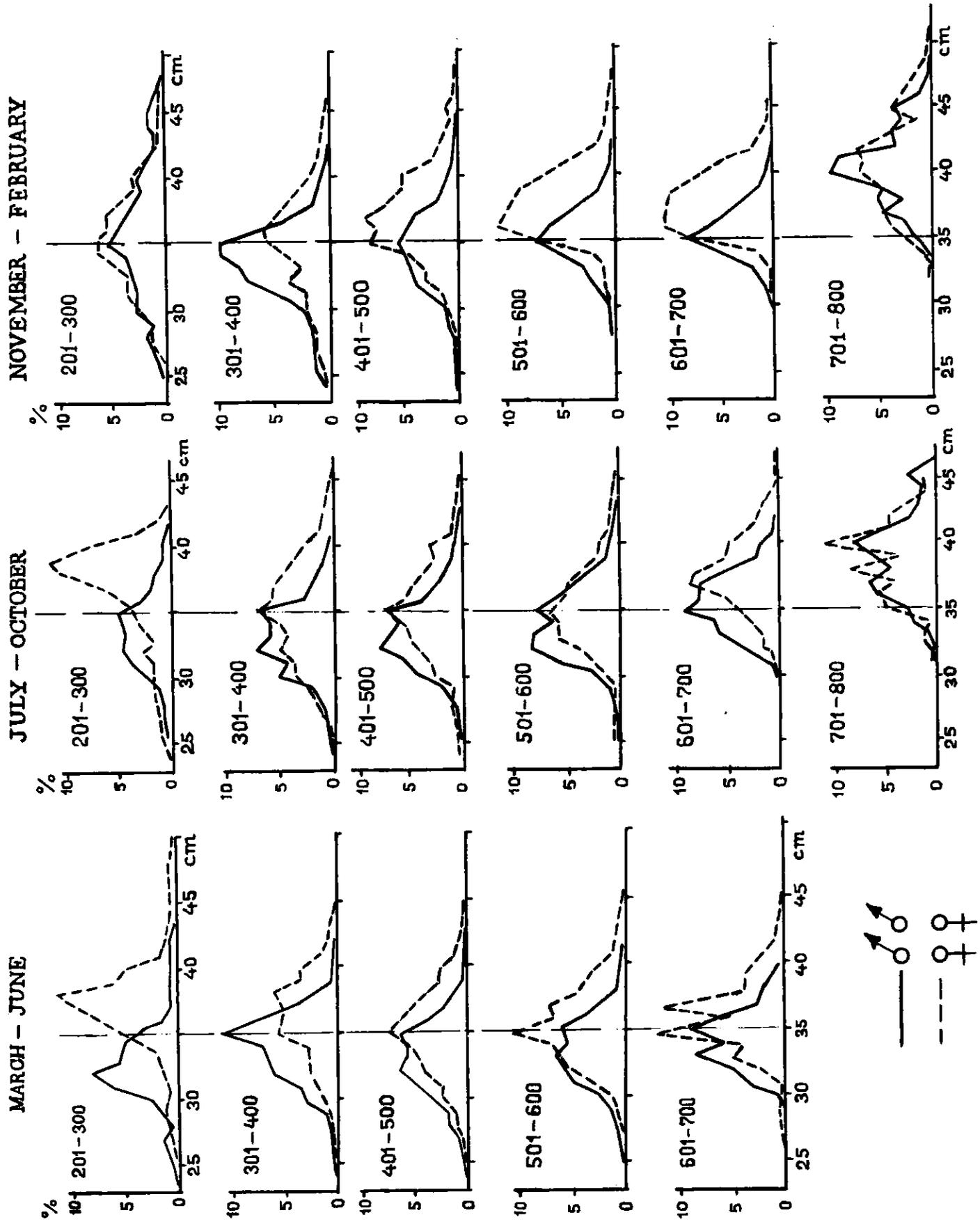


Fig. 1. Length composition of "beaked" redfish on Flemish Cap Bank in some periods.



