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Abundance and Biomass of Cod on the Flemish Cap

by

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Abstract

The results of two surveys on cod stock assessment on the Flemish Cap Bank in 1981 are presented in the report. The first trawl survey was carried out in June, the second in December. The results of the two surveys differ insignificantly. These differences may be explained only by different character of cod distribution in summer (June) and in winter (December) periods. Data on size-age composition of the Flemish Cap cod stock were collected and analyzed.

Material and methods

The present paper is based on the data of two trawl surveys which were carried out on the Flemish Cap Bank in 1981; 1st - by R/V "N.Kononov" from 1 to 7 June, the second - by R/V "Persey III" from 4 to 10 December. Like in previous years the total trawl survey of cod stock was carried out by a 1625 bottom trawl with fine-mesh netting (mesh size 8 mm) incerted in trawl sack. A hauling lasted 1 hour, speed of towing - 3.5-3.6 knots. All the cod taken were measured and counted. The method of processing of results of trawlings was the same as in previous years (Chekhova V.A., Chumakov A.K., Postolaky A.I., 1978. Chumakov A.K., Serebrov L.I., 1978).

During the surveys haulings were carried out at depths up to 500 m.

Results of investigations

Size composition of cod in accordance with the data of fish-counting trawlings are given in Table 1. From these data it is evident that in June fish of 45-56 cm length (51.6%) dominated in catches, the peak of size distribution was on 51-53 cm. Individuals of 15-17 cm were dominating among small cod. Fish of three size groupings were dominant in December: 8-14 cm (15.6%), 24-32 cm (26.1%) and 45-59 cm (39.7%).

Fish of 1976 (42.0%), 1977 (15.5%) and 1975 (16.1%) year-classes were dominant in catches in June. In December fish of 1977 (26.3%), 1979 (21.7%) and 1981 (14.6%) were dominant in catches (Table 2). Age samples were evaluated for size composition of cod

taken by fish-counting trawls.

Differences in cod size and age composition in June and December 1981 may be explained by peculiarities of fish distribution in summer and winter periods. It is known that in summer the Flemish Cap cod kept to smaller depths (up to 500 m); at the same time in winter large mature cod kept in depths 500-700 m. As fish-counting trawlings cover only areas with depths up to 500 m a part of the stock (mature) was incompletely counted.

Table 3 presents data on mean length of cod of different age. It may be seen from the Table that cod fingerlings reached 10 cm in December and yearlings reached 25.5 cm (i.e. increase of length from June to December was about 7 cm).

Relative indices of abundance (specimens per hour of trawling) and biomass (kilograms per hour trawling) (Table 4) allow us to consider that in 1981 the total stock of cod on the Flemish Cap Bank will increase compared with that in 1980.

Table 5 presents data on abundance and biomass of cod on the Flemish Cap Bank in 1979-1981 according to the results of trawl survey with regard of horizontal opening of fish-counting trawl and coefficient of catchability.

From Table 5 it may be seen that cod trawl survey on the Flemish Cap Bank was carried out in different months during the last 3 years. We can, apparently, assess the cod stock in 1981 having taken the mean result from June and December surveys (28.6×10^6 spec. and 62.4×10^6 spec.).

REFERENCES

- Chekhova V.A., Chumakov A.K., Postolaky A.I., 1978. Preliminary assessment of abundance and biomass of cod on Flemish Cap based on data from trawl surveys in 1972-1977. ICNAF Res. Doc. 78/VI/27, Serial No.5188.
- Chumakov A.K., Serebrov L.I., 1978. Determination of catchability coefficient of bottom trawl for cod and Greenland halibut. ICNAF Res. Doc. 78/VI/24, Serial No.5185.

Table 1 Size composition of cod according to the data of fish-counting trawlings in June and December 1981

Size, cm	June	December
6 - 8	-	1,3
9 - 11	-	11,6
12 - 14	-	2,7
15 - 17	-	-
18 - 20	0,6	-
21 - 23	2,6	0,1
24 - 26	0,8	11,0
27 - 29	-	4,2
30 - 32	0,1	13,0
33 - 35	0,4	8,9
36 - 38	0,4	11,3
39 - 41	1,6	1,7
42 - 44	6,5	0,4
45 - 47	7,9	1,4
48 - 50	9,9	1,1
51 - 53	13,5	12,1
54 - 56	16,8	8,9
57 - 59	11,4	5,4
60 - 62	6,1	5,2
63 - 65	3,9	4,8
66 - 68	3,7	2,4
69 - 71	2,3	1,0
72 - 74	2,3	0,8
75 - 77	1,8	0,8
78 - 80	1,1	0,5
81 - 83	1,3	0,4
84 - 86	0,5	0,8
87 - 89	0,6	0,3
90 - 92	1,2	2,2
93 - 95	0,6	0,6
96 - 98	1,0	0,4
99 - 101	0,6	0,3
102 - 104	0,3	0,2
105 - 107	0,1	0,1
108 - 110	0,1	-
111 - 113	0,1	-
Mean length	53,04	40,83
Amount of fish	1532	1162

Table 2 Age composition of cod on the Flemish Cap Bank in research vessels catches in 1979-1981

Year, month	Age, years										Number of specimens	
	0	1	2	3	4	5	6	7	8	9		
1979, March	-	0,6	11,3	20,6	8,2	13,4	26,3	15,1	3,7	0,4	0,4	2188
1980, May	-	0,5	5,8	25,1	44,1	6,1	3,1	6,9	4,9	1,9	1,6	956
1981, June	-	2,9	1,2	3,2	15,5	42,0	16,1	8,7	5,5	0,8	4,1	1532
1981, December	14,6	5,3	21,7	6,2	26,3	14,5	5,9	1,4	2,7	1,4	-	1140

Table 3 Average length of cod of different age in 1981 on the Flemish Cap Bank

Month	Age, years									
	0	1	2	3	4	5	6	7	8	
June	-	18,6	20,3	38,3	42,4	50,6	57,0	67,7	72,4	
December	10,3	25,5	29,1	40,0	49,4	54,0	59,1	72,2	82,6	

Table 4 Average catch of cod (in specimens and kilograms per hour trawling) on the Flemish Cap Bank according to data of the trawl survey in 1979-1981

Year	Specimens	kg
1979	122	108
1980	34	42
1981*	53	91

* June data

Table 5 Abundance and biomass of cod on the Flemish Cap Bank in 1979-1981

Indices	Year and month			
	1979 March	1980 May	1981 June	1981 December
Abundance, specimens x 10 ⁶	67,4	32,2	36,9	21,4
Biomass, thou. of tons	67,2	48,4	92,6	32,2
Average mass of 1 specimen of cod, kg	0,997	1,503	2,509	1,505