

Soviet Investigations on Age and Length Composition of Cod  
in the Barents Sea in 1959 - 1962

by

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Data on age and length composition of cod were obtained by the research workers of the Polar Institute in the southern part and north-western areas of the Barents Sea from the R.V. "Tunetz" and "Persey II" and the scouting vessels.

In 1959-61 samples were taken from catches obtained with 100 mm mesh flaxen-hemper trawl and in 1962 with 110 mm mesh manila trawl. Samples have been collected throughout the year. Tables 1, 2, 3 and 4 show the age and length compositions of cod in different areas of the southern part of the Barents Sea.

During the period of investigation the cod of 40-60 cm length were met more frequently. Cod of larger size were observed in the western and coastal areas. The relative abundance of size-groups of young cod recruited to the stock can be traced on the basis of mass measurements of fish carried out in the central areas.

Tables 6, 7, 8, and 9 give the age compositions of cod for this period. When determining the age of cod in 1959, the 1954, 1953 and 1955 year-classes were dominant. In 1960, the 1956 year-class was abundant, and cod belonging to the 1955 and 1954 year-classes prevailed in the catches. Cod of the 1957 year-class occurred only as by-catch. The 1957 and 1956 year-classes constituted the main part of the catches taken in 1961. As before, the 1955 year-class was of great importance. Young cod of the 1958 year-class at the age of three years (3+) were rather abundant too. In 1962, the 1958 and 1957 year-classes of cod at the age of four (4+) and five (5+) <sup>years</sup> predominated in the catches obtained in the southern part of the Barents Sea. The 1958 year-class was the most numerous in the central areas. Cod of a larger size, the 1957 year-class being predominant, were caught in the western fishing areas. The 1956 and 1955 year-classes constituted a considerable part of the catch. The youngest age-group in the stock of cod in 1962 was the 1959 year-class at the age of three (3+); the oldest age-group of the stock belonged to the 1944 year-class at the age of eighteen (18+).

Table 5 shows the length composition of cod in the period under consideration in the north-western areas of the Barents Sea (the Banks of the Bear, Spitsbergen and Hope Islands). The analysis of length composition of cod shows that fishes, 45-65 cm long, are the most abundant.

Results of the age determination of cod in 1959-1962 are presented in Table 10. In 1959 the catches of cod consisted mainly of the 1954, 1955 and 1956 year-classes. The greatest part of cod taken in 1960 belonged to the 1956 and 1955 year-classes, those taken in 1961 to the 1957 and 1956 year-classes. In 1962 the cod belonged to the 1957 year-class, which continued to be of great importance in the north-western areas of the Barents Sea. Cod of the 1958 year-class were relatively poorly represented in the north-western areas compared with those in the southern part of the Barents Sea. As before, the rich 1956 year-class mostly occurred in the catches obtained in the north-western areas. Specimens at the age from 16 to 13 years (16+ and 13+) occurred in this period in the material of cod studied for age determination purposes.

Table 1. Size composition of cod in the southern part of the Barents Sea (‰)

Length (cm)	1959	1960	1961	1962
20-25	2	25	12	4
25-30	63	53	33	11
30-35	128	99	121	56
35-40	141	133	177	137
40-45	160	144	163	206
45-50	153	128	124	201
50-55	112	108	98	145
55-60	80	92	80	88
60-65	52	74	57	55
65-70	34	51	44	36
70-75	22	34	32	22
75-80	17	21	24	15
80-85	13	14	15	10
85-90	10	10	9	7
90-95	7	6	4	3
95-100	3	4	3	2
100	3	4	4	2
No. of fish measured	353305	129024	139578	201280

Table 2. Size composition of cod in the western areas of the Barents Sea (‰)

Length (cm)	1959	1960	1961	1962
20-25	1	12	4	9
25-30	54	39	20	23
30-35	127	101	102	61
35-40	143	147	181	139
40-45	169	166	171	217
45-50	163	142	148	195
50-55	116	114	118	129
55-60	80	93	88	82
60-65	52	69	55	52
65-70	33	43	40	32
70-75	20	27	26	23
75-80	15	16	20	16
80-85	11	11	11	12
85-90	8	8	7	5
90-95	4	5	4	3
95-100	2	3	2	1
100	2	4	3	1
No. of fish measured	276874	87650	50493	64973

Table 3. Size composition of cod near the Murman Coast (‰)

Length (cm)	1959	1960	1961	1962
20-25	5	19	12	3
25-30	46	37	26	7
30-35	99	63	96	34
35-40	116	88	156	95
40-45	135	97	147	181
45-50	151	118	102	218
50-55	118	120	98	165
55-60	87	121	103	99
60-65	65	113	85	64
65-70	50	81	65	46
70-75	39	61	46	34
75-80	31	35	32	25
80-85	25	21	17	14
85-90	17	13	9	9
90-95	10	7	3	4
95-100	4	3	1	2
100	2	2	2	-
No. of fish measured	36270	16814	24997	25952

Table 4. Size composition of cod in the central areas of the Barents Sea (‰)

Length (cm)	1959	1960	1961	1962
20-25	3	59	18	4
25-30	134	93	46	15
30-35	166	116	144	82
35-40	155	111	181	193
40-45	114	102	164	253
45-50	91	86	110	187
50-55	87	74	83	110
55-60	73	73	64	61
60-65	47	70	48	37
65-70	31	63	39	23
70-75	23	49	32	13
75-80	18	37	25	9
80-85	17	24	17	5
85-90	15	17	11	3
90-95	12	11	5	2
95-100	8	8	4	1
100	6	7	4	2
No. of fish measured	36647	20085	63558	109391

Table 5. Size composition in the north-western areas of the Barents Sea (%)

Length (cm)	1959	1960	1961	1962
20-25	5	8	4	5
25-30	38	33	9	12
30-35	72	81	38	34
35-40	105	139	89	70
40-45	152	175	164	115
45-50	191	175	181	143
50-55	182	145	167	151
55-60	131	104	138	136
60-65	59	63	92	111
65-70	22	34	53	84
70-75	11	18	31	56
75-80	9	7	18	39
80-85	8	3	8	21
85-90	7	3	4	12
90-95	4	3	2	5
95-100	2	3	1	2
100	2	6	1	4
No. of fish measured	293927	128536	49849	168986

Table 6. Age composition of cod in the southern part of the Barents Sea (%)

Age	1959	1960	1961	1962
2	6	33	2	5
3	94	148	160	123
4	213	323	334	397
5	343	193	242	313
6	203	182	125	116
7	64	73	77	29
8	36	28	42	12
9	24	10	10	4
10	12	6	5	1
11	4	3	1	
12	1	1	1	
13	+		1	
14	+			
15	+			
16				
No. of otoliths studied	7988	6316	5996	8198

Table 7. Age composition of cod in the western areas of the Barents Sea (%)

Age	1959	1960	1961	1962
2	4	22	1	-
3	95	86	150	20
4	225	311	364	261
5	372	226	260	401
6	200	220	109	219
7	58	85	66	59
8	27	26	32	29
9	12	10	9	10
10	5	7	5	1
11	2	5	1	-
12		1	1	
13		1	1	
14			1	
No. of otoliths studied	6389	4347	3006	2088

Table 8. Age composition of cod near the Murman Coast of the Barents Sea (%)

Age	1959	1960	1961	1962
2	-	13	-	-
3	36	103	109	3
4	139	187	264	155
5	256	167	312	402
6	268	230	159	319
7	103	167	100	93
8	85	100	43	19
9	77	23	10	7
10	24	7	3	1
11	9	3		
12	3			1
No. of otoliths studied	985	300	599	1742

Table 9. Age composition of cod in the central areas of the Barents Sea (%)

Age	1959	1960	1961	1962
2	34	65	3	8
3	166	316	185	160
4	215	377	315	459
5	187	113	200	268
6	135	71	137	75
7	60	26	86	20
8	51	20	55	6
9	65	5	12	3
10	60	4	5	5
11	16	5	4	-
12	7	2	1	5
13			1	
14	2		4	
15	2			
No. of otoliths studied	614	1669	2391	4368

Table 10. Age composition of cod in the north-western areas of the Barents Sea (%)

Age	1959	1960	1961	1962
2	27	20	14	2
3	153	150	123	44
4	280	374	359	254
5	450	216	301	345
6	53	185	108	216
7	14	22	66	72
8	13	7	17	52
9	5	4	3	8
10	2	7	2	3
11	1	6	-	2
12	1	6	-	1
13	1	1	-	1
14	1			
15	+			
16	1			
No. of otoliths studied	7517	6891	4830	5385