

International Commission for



the Northwest Atlantic Fisheries

Serial No. 3560  
(D.c. 3)

ICNAF Res.Doc. 75/84

ANNUAL MEETING - JUNE 1975Soviet investigations of Newfoundland capelin in 1974

by

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**Abstract**

Distribution of capelin according to seasons and areas of Grand Bank and South Labrador is characterized in this paper. The size-age composition of capelin for 1974 is presented.

Investigations, carried out in 1974, were aimed at studying the area and routes of migrations of the Newfoundland capelin. The search of concentrations was made in March-June in the Grand Bank area and in July-December in the North Newfoundland Bank and South Labrador areas.

Observations showed, that capelin distributed over a wide area. In March shoals of mature capelin were registered in Division 3L. At the end of March and in April accumulations of capelin could be observed in the southern Grand Bank area and its concentrations were registered by fishdetecting devices in Divisions 3O, 3L and in Division 3P (Fig.1). The main concentrations of mature capelin migrated southwards in May. The first concentrations of mature capelin appeared in the area of spawning grounds (Division 3N) at the end of May. In June and July mature capelin distributed in shallows of Division 3N, where their spawning took place. The beginning of spawning in 1974 was registered on 18-20 June. Intensive spawning took place on 25-27 June.

The first concentrations of feeding fish were discovered in late July in Division 3K. During this period migrations of fish were observed in northerly direction to places of feeding. In August-September concentrations of feeding capelin distributed over a wide area in Division 3K and 2J. In these areas capelin could be seen in October, too. In the second part of October there were migrations of capelin to the area of wintering. In November-December wintering concentrations could be observed in Division 3K and in adjoining squares of Division 3L.

It should be noted, that in 1974 the feeding of capelin took place over a wide area, that accounted for 12-15 thousand square miles. During the same period in 1972-1973, fattening concentrations of capelin were registered by fish detecting devices over the area of 6-7 thousand square miles.

In summer-autumn period of 1974 there were favourable conditions for capelin feeding. In August 1974 fattness of capelin accounted for 24-29% and by September it made up 32%. Maximum fattness of capelin in 1973 was in the middle of October and it made up 30%.

The analysis of hydrological conditions, formed in 1974, that were discussed in detail in V.V. Burmakin's report, presented at the 25th ICNAF session, showed, that in the summer warming up of the surface layer was going on considerably slower, than in 1972 and 1973.

In August on the South Labrador shelf the surface waters were warmed up to 6°8', and in 1973 their temperature was 11°5'. Less intensive warming up is responsible for a decreased heat content of waters of the 0-50m layer, especially in the coastal branch of the Labrador Current.

In August 1974 isotherm 0° went at a depth of 50m at some stations of the Labrador Current, in August 1973 it was at a depth of 100m. Lower boundary of the cold Labrador waters with the temperature below 0° went at the depth of 200m in August 1974, in 1973 and 1972 it was at the depth of 50-70m.

The peculiarities of the temperature regime of waters in 1974 had a great influence on distribution and beginning of formation of

the feeding concentrations of capelin. The favourable environmental conditions, that formed in the period of feeding in the Labrador and North Newfoundland Bank areas, caused a more earlier ending of capelin feeding; fattening of capelin occurred further south, compare with the same period of 1973.

In 1974 capelin was most intensively feeding in the spring months (March-May) and in the fattening period (June-October). In October the intensity of feeding decreased and in December capelin didn't feed. Calanus, euphausiidae, amphipoda were the main food objects.

The concentrations of capelin, distributed over the Grand Bank and Labrador areas were represented by specimens from 10 to 19 cm long (Tabl.1). Fishes at the age of 3 and 4 years made up the bulk of the fishing stock. (Tabl.2).

#### Conclusions

During the spring-summer period fishing concentrations of capelin distributed over a wide area of the Grand Bank. The first approaches of capelin were registered in late May.

An intensive spawning took place at the end of June.

The formation of feeding concentrations of the Newfoundland capelin was registered in July.

Concentrations, fished for, were represented generally, by fishes from 10 to 19 cm long.

Fishes at the age of 3 and 4 years made up the bulk of the fishing stock.

Table 1

Length composition of capelin in catches, taken by research vessels in 1974.

Length cm	Month									
	March	April	May	June	July	August	Septem- ber	Octo- ber	Novem- ber	Decem- ber
6					-					
7	-				+					
8	0,3	0,2			0,3					
9	1,3	0,2		-	-					
10	2,0	1,8		+	0,5					
11	0,3	0,7	+	-	-			+		
12	4,4	4,1	1,5	0,3	1,1	0,7	0,1	+	0,2	-
13	9,4	5,2	5,1	1,1	5,5	6,7	0,8	2,1	2,7	2,8
14	13,7	10,5	12,3	4,8	17,4	12,0	3,6	8,0	6,7	7,5
15	16,4	15,8	18,2	12,8	23,6	18,0	10,3	16,0	13,2	16,8
16	21,7	13,6	18,8	23,5	17,1	14,3	15,9	15,1	16,1	19,9
17	3,6	7,1	7,7	14,3	9,0	7,1	17,2	9,8	13,6	7,7
18	0,1	1,9	0,7	1,8	1,3	1,5	8,9	2,8	5,1	1,1
19	-	0,2	+	+	0,1	0,2	0,9	0,1	0,3	0,3
20		0,2	+	+		0,1		+	0,1	
Measured		+	-	-		+		+	-	
	8347	12703	24996	20213	5396	10461	1389	10571	4092	362
	35,0	36,1	36,2	41,4	22,5	39,5	42,4	45,7	41,4	43,3
	25,0	63,9	63,8	58,6	77,5	60,5	57,6	54,3	58,6	50,1

Note: in numerator - males, in denominator - females.

Table 2  
Age composition of capelin in catches, taken by research vessels  
in 1974.

Month	Age						Measu- red	%
	1	2	3	4	5	6		
March			<u>14,0</u> 28,0	<u>12,0</u> 14,0	<u>13,0</u> 19,0		100	<u>39,0</u> 61,0
April		- 3,1	<u>15,8</u> 21,6	<u>13,9</u> 16,9	<u>7,7</u> 17,9	- 3,1	195	<u>37,4</u> 62,6
May		<u>0,1</u> 0,6	<u>12,2</u> 15,6	<u>20,0</u> 16,1	<u>14,8</u> 18,9	<u>0,3</u> 1,4	679	<u>47,4</u> 52,6
June			<u>19,0</u> 12,0	<u>23,2</u> 12,4	<u>13,6</u> 17,7	<u>0,2</u> 1,9	491	<u>56,0</u> 44,0
July	- 4,7	- 2,1	<u>7,3</u> 37,8	<u>7,7</u> 21,8	<u>6,7</u> 8,3	- 3,6	193	<u>14,7</u> 85,3
August		<u>4,7</u> 4,7	<u>22,8</u> 31,4	<u>11,2</u> 12,4	<u>4,5</u> 7,9	- 0,4	445	<u>43,2</u> 56,8
September		<u>9,6</u> 4,2	<u>21,3</u> 26,6	<u>4,2</u> 12,8	<u>1,1</u> 19,1	- 2,1	94	<u>36,2</u> 64,8
October	- 0,3	<u>16,0</u> 11,4	<u>17,9</u> 27,6	<u>1,0</u> 11,7	<u>0,3</u> 12,8	- 1,0	290	<u>35,5</u> 64,5
November		<u>11,6</u> 12,7	<u>27,1</u> 22,2	<u>1,3</u> 8,3	<u>0,8</u> 14,2	<u>0,3</u> 1,5	387	<u>41,1</u> 58,9
December		<u>24,0</u> 10,0	<u>27,0</u> 18,0	<u>3,0</u> 10,0	- 8,0	-	100	<u>54,0</u> 46,0

Note: in numerator-males, in denominator-females.

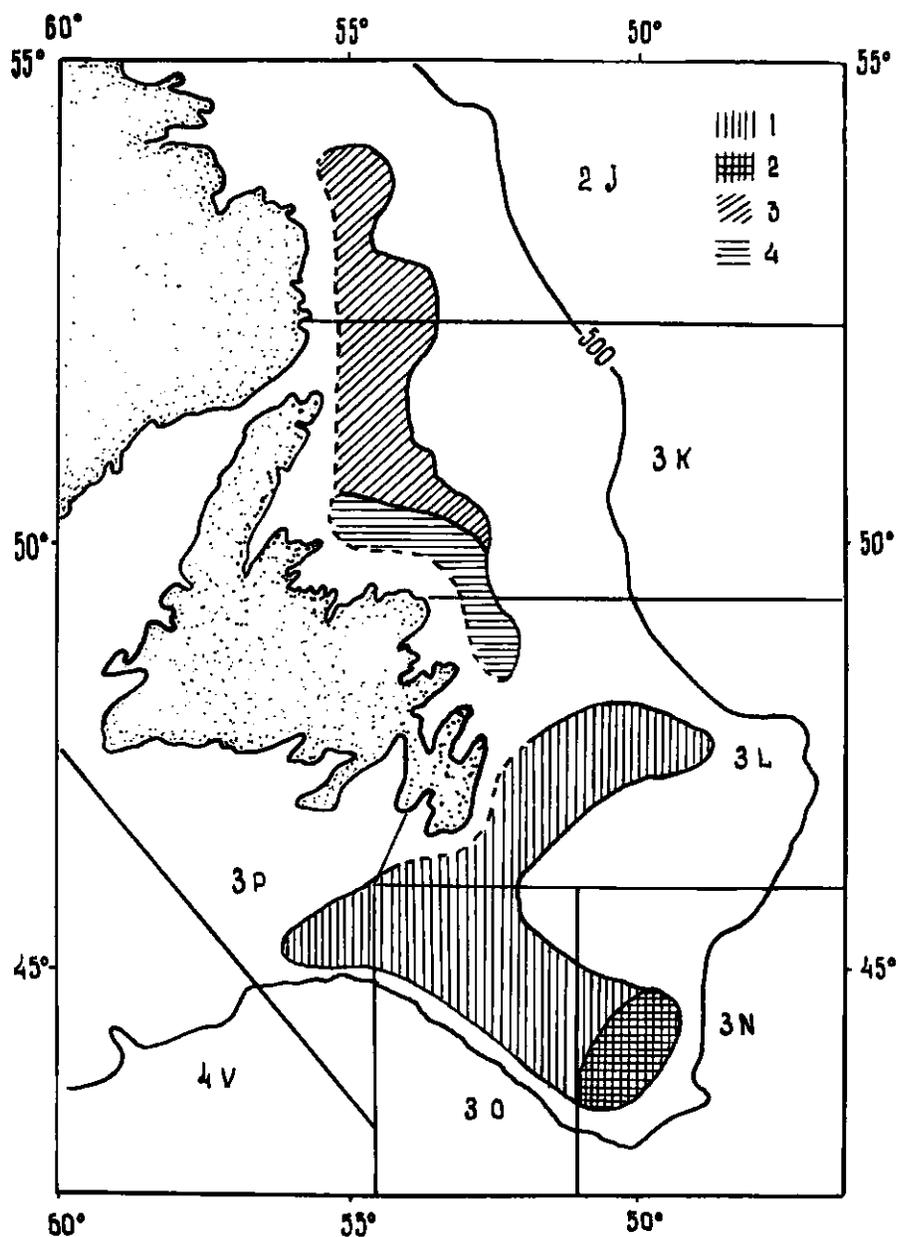


Fig. 1. Distribution of capelin concentrations in the Newfoundland and Labrador areas in 1974:

- 1 - Prespawning concentrations (March-May)
- 2 - Spawning (June-July)
- 3 - Feeding (July-October)
- 4 - Wintering (November-December)