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Results of Soviet investigations on sand eel on Newfoundland Grand Bank and near West Greenland in 1971-1973

by

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Abstract

The paper discusses the distribution of the sand eels in the spring and summer of 1971-1973 and analyzes their length and age composition and feeding. Concentrations were scarce over a large area; they did not form commercial concentrations. Catches taken on the Grand Bank consisted mainly of fish aged 3-5 years and 19-25 cm in length; near West Greenland the fish were aged 5-6 years and 17-23 cm in length.

Introduction

Ammodytes dubuis Reinhardt and *A. hexapterus* Pallas (= *A. americanus* De Kay) of the Ammodytes genus are more numerous in the areas of northwest Atlantic. *A. hexapterus* inhabit coastal areas of the Canadian Archipelago and *A. dubius* are observed on banks (Winters, 1970; Scott, 1972).

Available literature on sand eels on the Newfoundland Grand Bank only gives information on their morphometric and meristic features. This paper reports on the distribution of sand eel and presents data on length-age composition and feeding. The paper is based on biological data collected on board the R/V *Perseus III* in May-June 1971-1973 and on board the R/V *Alaid* in April-August 1973 using bottom trawl with small-mesh cover.

Fish collected were measured from the top of the snout to the end of the rays of the caudal fin. Age was estimated from otoliths dipped in glycerin viewed in incident light.

Distribution

Data on catches indicate a wide distribution of sand eel in the shoal areas of the Newfoundland Grand Bank. In April-May 1971-1972, catches were made on St. Pierre and Green Banks and on the southwest and southeast slopes of the Grand Bank; in June-July catches were made on the southwest and southeast slopes of the Grand Bank (Fig. 1). In April-August 1973 catches were made over a wide area of the Grand Bank (Fig. 2) in temperatures of -1.1° and 0.7°. Regarding the distribution of sand eeel by months, in May concentrations were scarce on the southwest slope of the Grand Bank and on Green Bank. In June and July fish were taken on the southeastern, southwestern and northeastern slopes of the Grand Bank. However, in the spring and summer of 1971-73 no fishable concentrations were found on the Grand Bank and fish were scarce over the whole area.

Length Composition

Analysis of the length composition of sand eel showed some differences by months and regions. In May on the southeast slope of the Grand Bank, the fish were 9-26 cm in length; on the southwest slope they were 18-28 cm in length (Table 1). During the same May period on St. Pierre and Green Banks fish measured 20-27 cm in length (mainly 22-25 cm). In June on the southwest slope of Grand Bank lengths were 12-27 cm and comparable to those shown above for May. Larger fish were taken on St. Pierre and Green Banks in both May and June. In July on the northeast slope of Grand Bank sand eels were 13-26 cm in length.

Age Composition

Catches taken on the southwest slope of Grand Bank and on St. Pierre and Green Banks consisted of fish at age 3-6 years. Seven year old fish were only found on Green Banks (Table 2). Sand eels at West Greenland were slow growing. On Fiskenes Bank fish were 13-25 cm in length and age 3-8 years. Fish of 5 and 6 years were predominant.

Feeding

Sand eels were feeding mainly on Calanus and krill (Table 3). Scott (1973) reports that Copepodae made up 65% of the whole volume of food consumed (mainly *Calanus finmarchicus*). In May-June feeding was more intensive than in July.

References

Scott, J.S. 1972. Morphological and meristic variation in Northwest Atlantic sand lances (Ammodytes). J. Fish Res. Board of Canada, Vol. 29, No. 12.

Scott, J.S. 1973. Food and inferred feeding behaviour of northern sand lance (A. dubius). J. Fish. Res. Board of Canada, Vol. 30, No. 3.

Winters, G.H. 1970. Meristics and morphometrics of sand lance in the Newfoundland area. J. Fish. Res. Board of Canada, Vol. 27, No. 11.

Table 1. Length composition of sand eel in 1973 in percentage.

Month, Div. / Length, (cm)	May			Jun			Jul		Aug
	3N	3O	3P	3N	3O	3P	3L	3N	1D
9	0.2	-	-	-	-	-	-	-	-
10	0.6	-	-	3.5	-	-	-	-	-
11	1.1	-	-	8.1	-	-	-	-	-
12	1.1	-	-	14.0	0.1	-	-	+	-
13	0.9	-	-	16.3	0.3	-	+	-	0.3
14	1.9	0.4	-	8.1	0.1	-	0.2	-	3.9
15	1.9	-	-	5.8	0.2	-	0.4	0.1	5.1
16	5.3	-	-	2.3	0.5	-	1.0	0.1	5.9
17	9.0	-	-	15.1	0.8	-	2.6	0.2	7.7
18	5.3	0.4	-	5.8	1.8	0.1	7.9	0.5	8.9
19	9.2	1.5	-	5.8	3.9	0.4	19.3	3.6	13.0
20	11.1	0.4	0.7	3.5	9.7	3.3	25.0	9.4	16.5
21	16.0	2.7	5.1	5.8	20.0	17.0	19.8	24.2	16.2
22	16.6	10.7	16.6	4.7	24.9	25.2	15.4	26.3	13.2
23	10.4	25.4	30.2	-	17.5	23.7	6.1	18.5	6.9
24	5.8	26.5	30.2	1.2	14.3	32.2	1.7	11.2	2.0
25	3.2	24.2	13.2	-	4.8	5.6	0.5	4.9	0.4
26	0.4	6.2	3.5	-	0.8	1.1	0.1	1.0	-
27	-	0.8	0.5	-	0.3	0.4	-	-	-
28	-	0.8	-	-	-	-	-	+	-
No. of spec.	469	260	547	86	1523	793	2837	2723	779
M	20.90	23.77	23.45	15.41	22.53	22.73	20.34	22.07	19.51

Table 2. Age composition of sand eel in 1973 in percentage.

Month, Div.	Age 1	2	3	4	5	6	7	8	n
May									
3N	-	5.1	32.6	42.9	16.3	3.1	-	-	98
3O	-	-	26.0	49.0	21.0	4.0	-	-	100
3P	-	-	14.0	49.0	25.0	11.0	1.0	-	100
Jun									
3O	1.0	2.0	10.0	61.0	22.0	4.0	-	-	100
3P	-	-	21.5	59.2	17.2	2.1	-	-	93
Jul									
3L	-	4.0	34.9	42.9	15.7	2.5	-	-	198
Aug									
1D	-	-	2.0	14.0	56.0	20.0	6.0	2.0	100

Table 3. Composition of food of sand eel on the Grand Bank in 1973 in percentage.

Food organisms	Frequency of occurence of food organisms (%) May	Jun	Jul
Calanus	62.0	29.3	100.0
Krill	27.0	2.4	-
Sagitta	11.8	-	-
Comb-jelly	0.4	-	1.1
Sea worms	0.4	-	-
Polychaeta	0.4	-	-
Young capelin	0.4	-	-
Food digested	32.7	75.5	-
Average index of stomach fullness	2.05	2.18	1.97
Number of stomachs	320	100	100

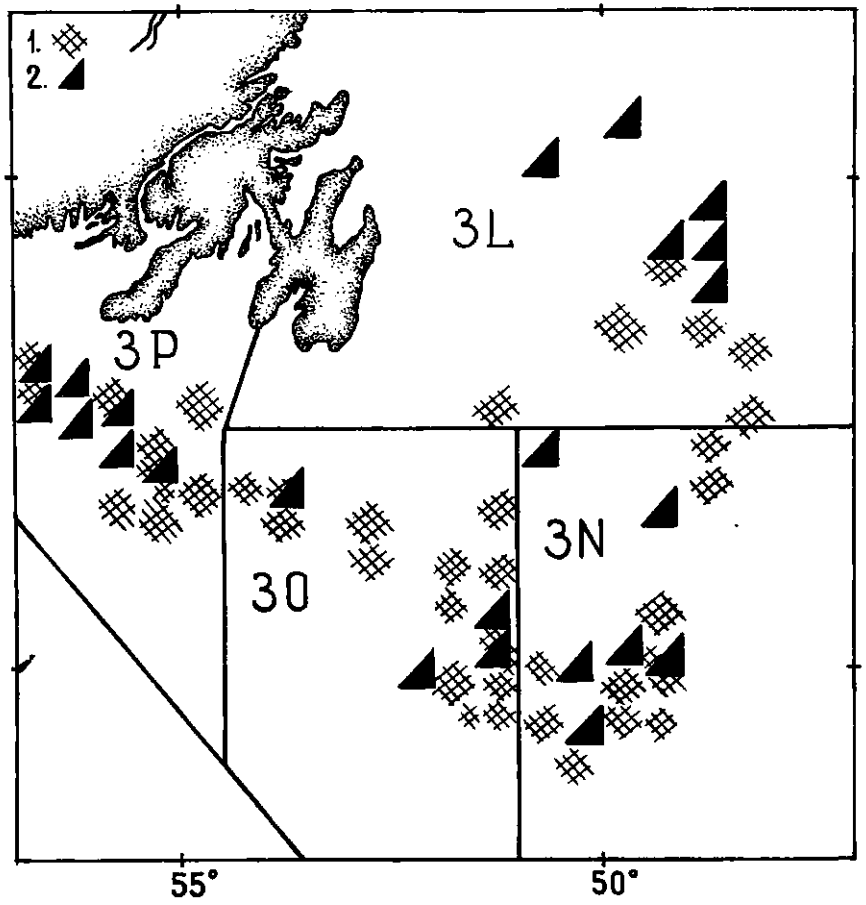

Fig. 1. Distribution of sand eel in 1971-1972.
1 - 1971; 2 - 1972.

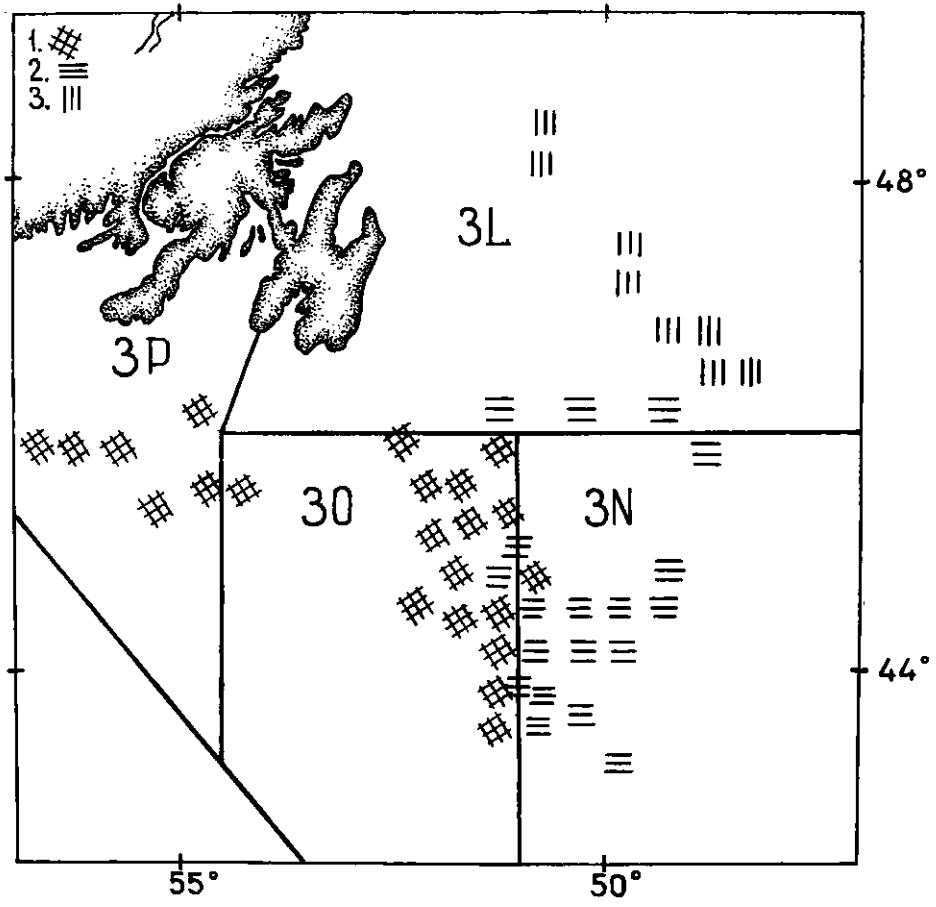

Fig. 2. Distribution of sand eel in 1973.
1 - May; 2 - June; 3 - July.