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Results of the Ichthyoplankton Survey on Flemish Cap in April-May, 1986

by

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ABSTRACT

The results of the ichthyoplankton survey performed on the Flemish Cap in April/May 1986 are given. Eggs and larvae from the samples are presented quantitatively and qualitatively, and the distribution patterns for the red-fish larvae, cod and American plaice eggs are defined.

INTRODUCTION

The ichthyoplankton survey was carried out by the RV "Boguslav" from 22 April to 1 May 1986 within the scope of the Flemish Cap Project realized since 1977 in conformity with the Soviet/Canadian Agreement.

MATERIAL AND METHODS

Eggs and larvae were sampled at 56 complex ichthyoplankton and hydrological stations on the Flemish Cap and, additionally, in the Flemish Pass (Fig. 1) by means of the IKS-80 net. The gear was towed vertically from the bottom to the surface or, in case the depth was more than 500 m, from 500 to 0 m with the speed 0.8-1.0 m/sec. Horizontal tows were carried out in the surface layer during the ship's turning at the lowest speed (2.0-2.5 knots) for 10 minutes.

The samples stored in 3-5% formalin were analysed in the laboratory following the keys to eggs and larvae (Serebryakov, 1980; Fahay, 1983 etc.). In order to define the pattern of ichthyoplankton distribution the results of the vertical tows were converted to the numbers of eggs

and larvae per 1 m². The total lengths (TL) of larvae were measured.

RESULTS

Species composition of ichthyoplankton. Seven species of eggs, larvae and young fish in the samples were identified except two species of eggs (Table 1). The qualitative composition of ichthyoplankton seems to be poorer compared with the two previous surveys (Table 2).

The redfish larvae were of the highest abundance in the samples.

The Gadidae family were represented by four species of which only cod and tusk eggs were numerous.

During the survey great numbers of the American plaice (Hippoglossoides platessoides) eggs were observed.

It should be noted that the IKS-80 net also took small mesopelagic fishes among which single adult specimens of myctophid fish were found. Benthosema glaciale and Notoscopelus kroeyerii were captured at the northern and western stations over the depths more than 1000 m. Young Cyclothone braueri (fam. Gonostomatidae) were taken in the south of the Bank over the 800-1000 m depths.

Redfish larvae. The redfish larvae were not divided by species, that is why Fig. 2 demonstrates a general distribution of larval Sebastes spp.

The spawning of the Flemish Cap redfish begins on the south-western slope in March spreading over nearly the whole area of the Bank at the 200 m depth by mid-April and reaching its peak in the second half of April (Serebryakov et al., 1984). In April-May 1986 the redfish larvae were found over the whole area. The highest numbers of larvae were observed on the north-western slope of the Bank (934 spec./m²) over the 800 - 1000 m depths as well as on its eastern slope over the 600 m depth (614 spec./m²) (Fig. 2). The lengths of larvae varied from 5.20 to 9.80 mm averaging 7.39 mm. The length frequency of larvae is shown in Fig. 3.

Cod eggs. The cod eggs at Stages I and II were the most numerous at the extreme western stations over the depths more than 1000 m (Fig. 4). Being of low abundance in the surveyed area, the eggs were found occasionally in the north-eastern, western and central parts of the Bank. Such distribution of eggs may be explained by an earlier spawning of cod on the Flemish Cap, and the eggs found below the 1000m isobath could have been transported from the Grand Bank of Newfoundland.

American plaice eggs. The data from literature state that passive migrations of eggs and larvae of Hippoglossoides platessoides are observed in the gyres where the velocities are low thus permitting eggs and larvae to keep within a relatively limited area (Serebryakov, 1978). According to our data, in April-May 1986 the highest numbers of eggs of Hippoglossoides platessoides were found in the central part of the bank over the 100-200 m depths (Fig. 5).

Tusk eggs. A total of 250 eggs of Brosme brosme at Stages I, II, III were found on the Flemish Cap. All the eggs were captured during the surface tows that is why their distribution is given in numbers of specimens (Fig. 6). The eggs were distributed over the whole area except its shallowest parts.

Our observations confirm the possibility of tusk spawning on the Flemish Cap (Serebryakov et al., 1984).

CONCLUSIONS

Proceeding from the 1986 survey results the species composition of ichthyoplankton on the Flemish Cap was poorer compared to the two previous surveys.

The redfish larvae were found over the whole area with their maximum concentrations on the north-western and eastern slopes of the Flemish Cap.

The number of cod eggs was insignificant.

The American plaice eggs were concentrated in the central part of the Flemish Cap, their total number being much higher than during the 1984-1985 surveys.

Numerous tusk eggs in the samples suggest the spawning of this species on the Flemish Cap.

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Table 1. Species of eggs, larvae and juveniles captured on the Flemish Cap in April-May 1986 (spec.)

Taxon	Eggs	Larvae	Juv.	Station
Gonostomatidae				
Cyclothone braueri Jespersen and Taning			2	51, 53
Gadidae				
Gadus morhua morhua Linné	232	2		1, 3, 4, 8, 10, 11, 15-18, 22, 23, 29-34, 37, 45, 48-50
Brosme brosme (Ascanius)	250			6, 9, 10, 12, 21-25, 27-30, 34-36, 40, 44, 51-53, 55, 56
Urophycis chuss (Walbaum)	3			4, 23, 24
Molva molva (Linné)	2			24
Scorpaenidae				
Sebastes spp.		1407		2-7, 9-15, 17, 18, 21-27, 29- 36, 38-48, 50- 56
Pleuronectidae				
Hippoglossoides platessoides platessoides (Fabricius)	622			17, 21, 28, 29, 31-33, 38-40, 43-45, 48, 49, 51, 52, 56
Gen sp.I	4			15
Gen sp.II	1			3

Table 2. Species composition of ichthyoplankton on the Flemish Cap (basing on the 1984-1986 surveys), spec.

No.	Species	23 Mar-8Apr 1984		31 May-7Jun 1985		22 Apr-7 May 1986					
		egg	lar.	juv	egg	lar.	juv	egg	lar.	juv	
1.	Anguilliformes g.sp.	-	1	-	-	-	-	-	-	-	-
2.	Cyclothone acclini-dens Garman	-	2	-	-	-	-	-	-	-	-
3.	Cyclothone braueri Jespersen et Taning	-	11	-	-	-	4	-	-	-	2
4.	Bathylagus euryops Good et Bean	-	-	-	-	1	1	-	-	-	-
5.	Benthoosema glaciale (Reinhardt)	-	26	-	-	-	3	-	-	-	-
6.	Myctophum punctatum (Rafinesque)	-	21	-	-	-	-	-	-	-	-
7.	Scopelogadus beanii (Günther)	-	-	-	-	-	1	-	-	-	-
8.	Gadus morhua morhua Linné	148	4	-	37	66	-	232	2	2	-
9.	Pollachius virens (Linné)	-	1	-	-	-	-	-	-	-	-
10.	Brosme brosme (Ascanius)	-	3	-	-	-	-	250	-	-	-
11.	Urophycis chuss (Walbaum)	-	3	-	-	-	-	3	-	-	-
12.	Molva molva (Linné)	-	-	-	-	-	-	2	-	-	-
13.	Mallotus villosus (O.Müller)	-	1	-	-	1	-	-	-	-	-
14.	Sebastes spp.	-	13048	-	-	7659	-	-	-	1407	-
15.	Leptoclinus maculatus (Fries)	-	3	-	-	1	-	-	-	-	-
16.	Hippoglossoides plat-tessoides platessoides (Fabricius)	127	-	-	35	-	-	622	-	-	-
17.	Hippoglossus hippo-glossus (Linné)	2	-	-	-	-	-	-	-	-	-
18.	Anarhichas g.sp.	-	1	-	-	-	-	-	-	-	-
19.	Anarhichas denticu-latus (Krøyer)	-	-	-	-	-	3	-	-	-	-
20.	Myoxocephalus scorpius (Linné)	-	-	-	-	1	-	-	-	-	-
21.	Gen.sp.I	-	-	-	2	-	-	-	-	-	-
22.	Gen.sp.II	-	-	-	-	-	-	4	-	-	-
23.	Gen.sp.III	-	-	-	-	-	-	1	-	-	-

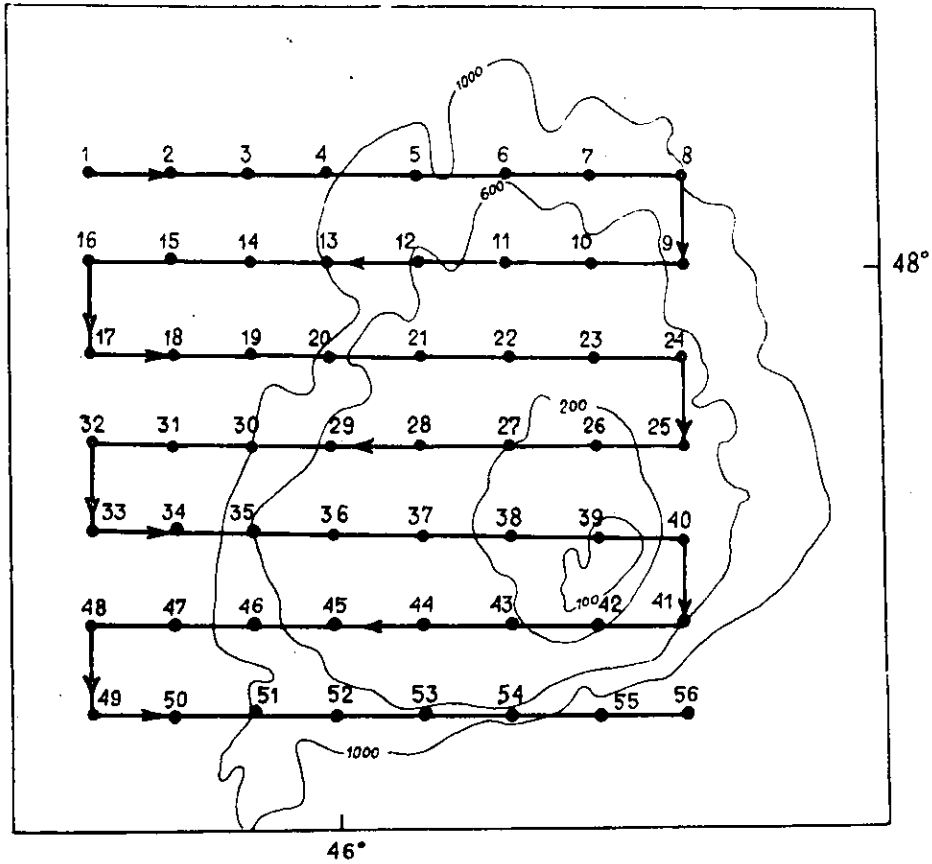


Fig. 1. Chart of the ichthyoplankton survey on the Flemish Cap in April/May 1986

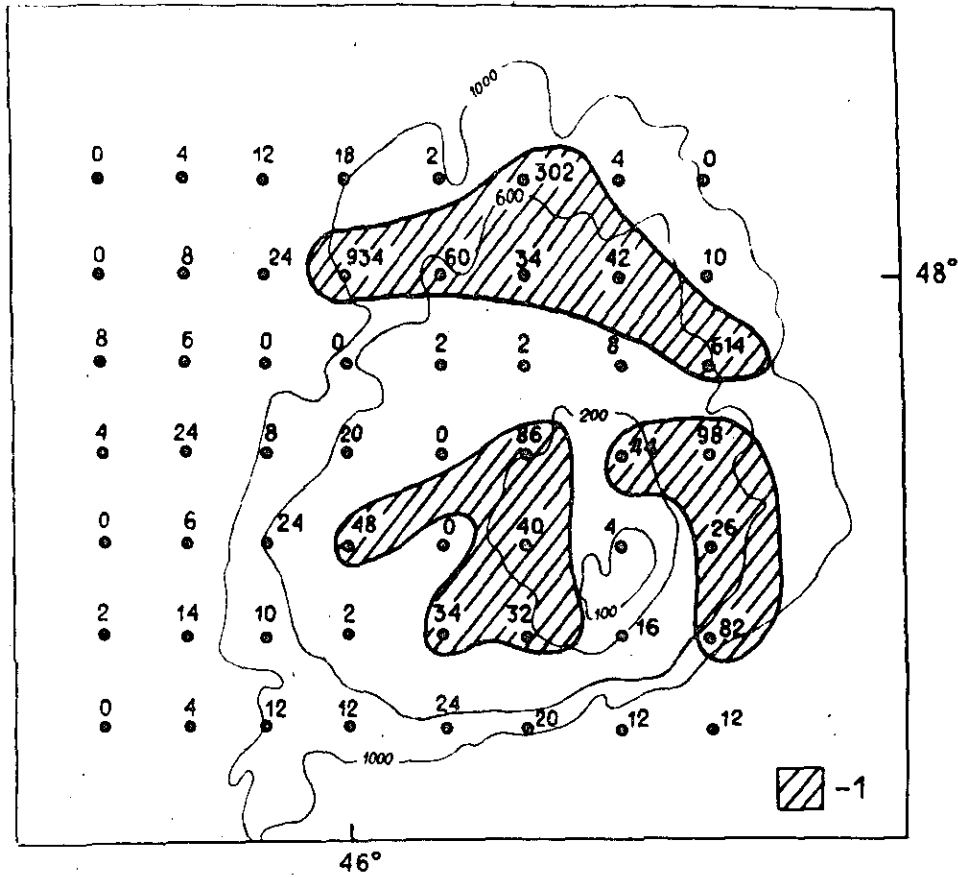


Fig. 2. Distribution of larval *Sebastes* spp. on the Flemish Cap in April/May 1986 (spec./m²)
1 - more than 25 spec./m²

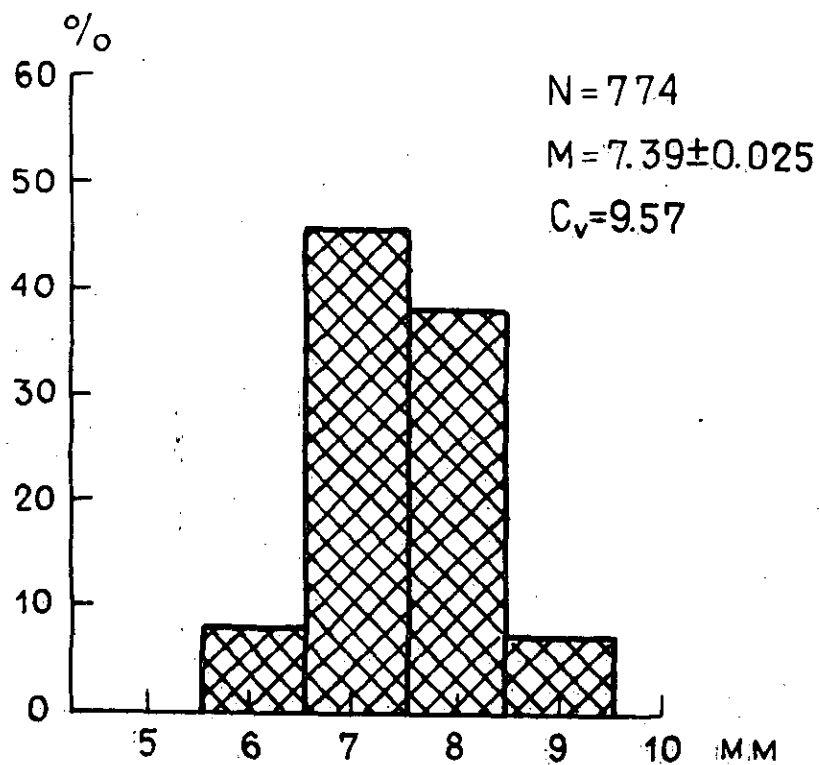


Fig. 3. Length distribution of larval *Sebastes* spp. from ichthoplankton samples taken on the Flemish Cap in April/May 1986

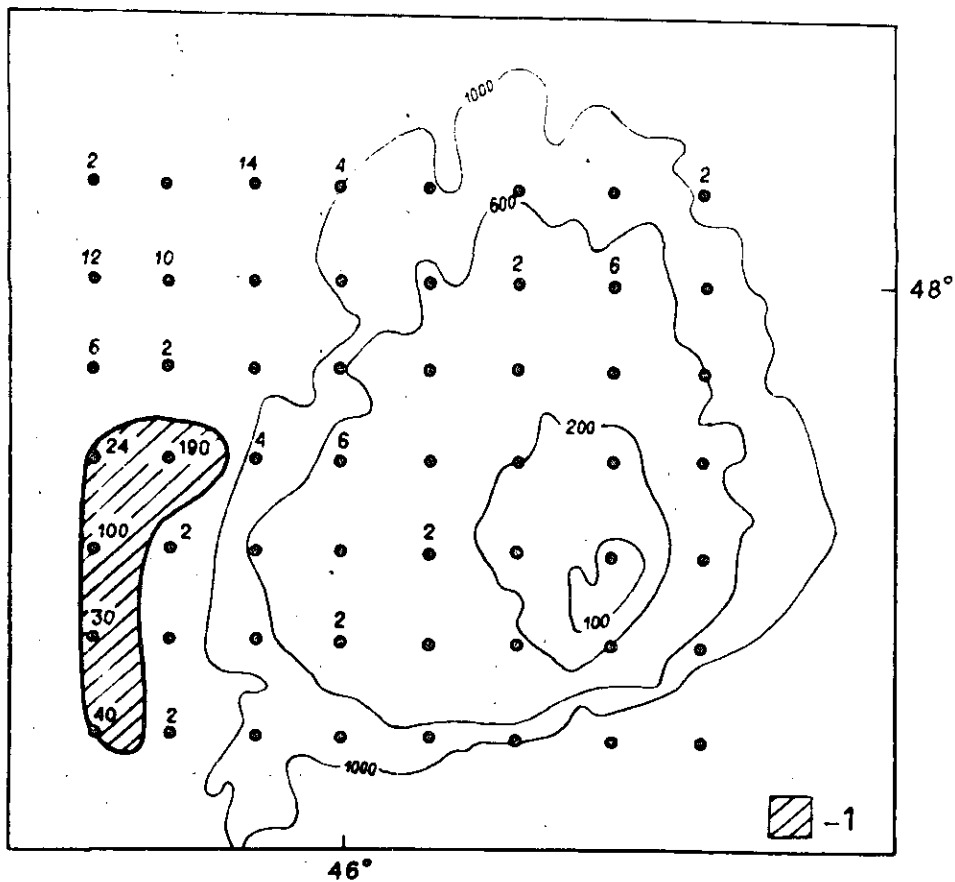


Fig. 4. Distribution of eggs of cod Gadus morhua on the Flemish Cap in April/May 1986 (spec./m²)
1 - more than 20 spec./m²

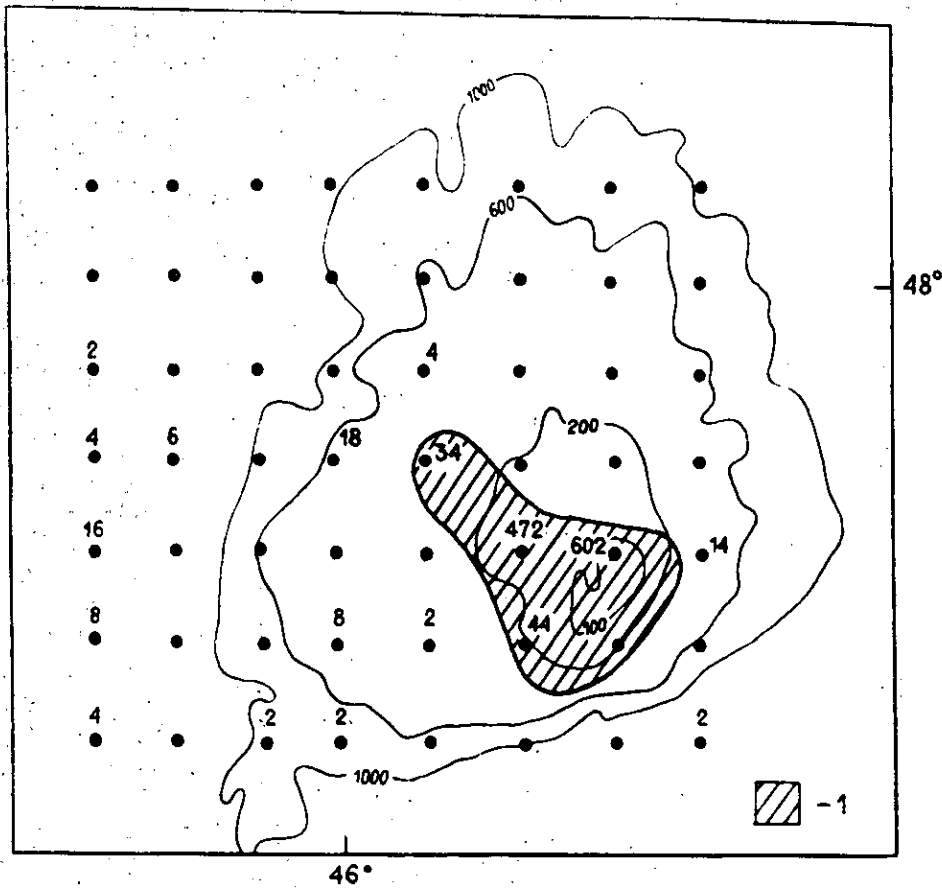


Fig. 5. Distribution of eggs of Hippoglossoides platessoides on the Flemish Cap in April/May 1986 (spec./m²)
1 - more than 30 spec./m²

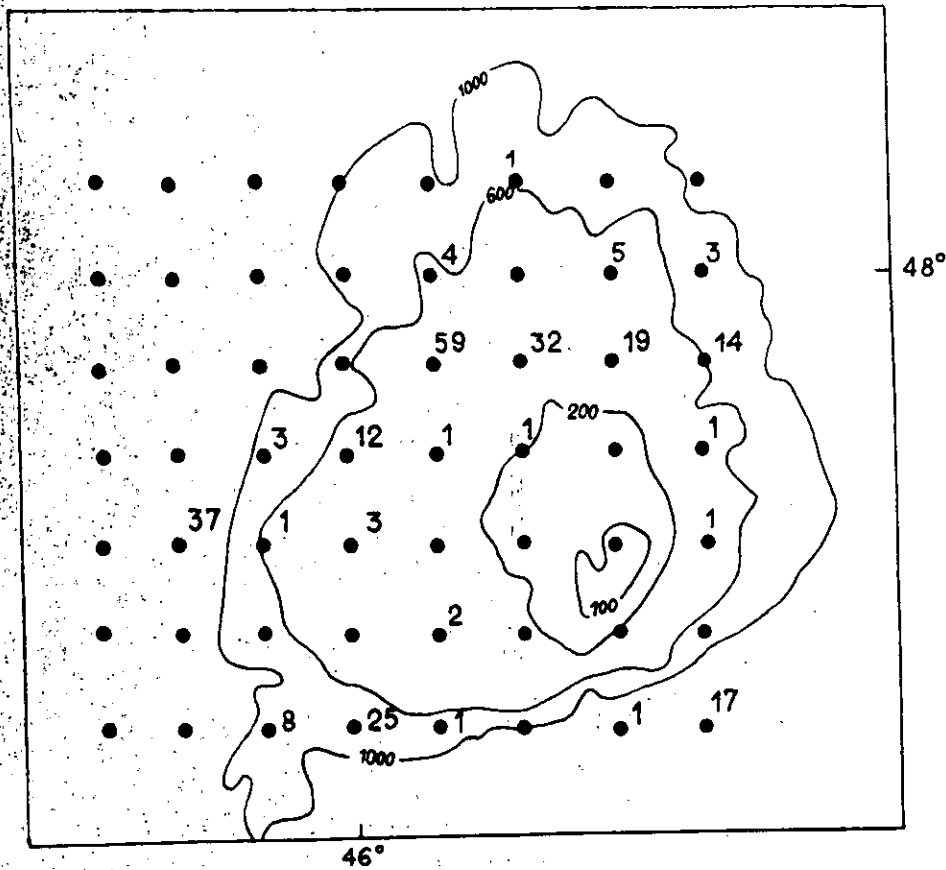


Fig. 6. Distribution of eggs of Brosme brosme on the Flemish Cap in April-May 1986 (spec.)