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Russian Fishery on Shrimp (*Pandalus borealis*) on the Flemish Cap Bank,  
NAFO Division 3M, in 1995 and in the 1st Half of 1996

by

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INTRODUCTION

Russian fishery on deepwater shrimp (*Pandalus borealis*) on the Flemish Cap Bank has been carried out since 1993. However, no reliable data on fishery for 1993-1994 are available. In 1995-1996 the number of Russian vessels conducted fishery on shrimp in this area essentially increased and accumulation of daily data on fishery began. Besides, studies on some biological parameters of shrimp populations on the Flemish Cap were undertaken onboard the Russian stern trawler "Kapitan Rogozin" (main engine is 1000 h.p.) in February-April 1996.

MATERIALS AND METHODS

Information of Russian fishery on shrimp on the Flemish Cap Bank was daily transmitted by radio to the PINRO database (data on biology and fishery) in Murmansk. The information included data on vessel positions, catch size, duration of fisheries operations, etc. Unfortunately, less body of information was obtained from the vessels in other ports of Russia. In particular, no data were available on a duration of fisheries operations. Therefore, a duration of trawling per twenty-four hours was assumed to be mean duration of fisheries operations per twenty-four hours performed by the vessels from Murmansk during fishery on shrimp on the Flemish Cap Bank for 1995 and for the 1st half of 1996.

Mean duration of hauls performed by the vessels from Murmansk for the period mentioned made up 16.2 hours per twenty-four hours.

Shrimp investigations were undertaken by the trawler "Kapitan Rogozin" from 20 February to 29 April 1996. Shrimp were measured and sex determined by Rasmussen's method (Rasmussen, 1953) with some addition done during the Russian-Norwegian meeting between shrimp specialists in June 1992 (Aschan et al., 1993). In total 20528 specimens of shrimp from 108 samples were examined during the investigations conducted by "Kapitan Rogozin". Each sample weight was 1 kg.

RESULTS

Russian fishery on shrimp was carried out on the Flemish Cap Bank from April to December 1995 (Table 1). In 1996 it commenced in January. Maximum fishing efforts and highest catch were in June-July 1995 and in May-June - in the 1st half of 1996.

In 1995 catch per effort (kg/hr) increased to May-June and then decreased in the third quarter and increased again in the fourth quarter (Table 2). In the first half of 1996 maximum catches were registered in June, however, they were much lower compared to the previous year corresponding period.

The main areas of Russian fishery on shrimp in 1995 and in the 1st half of 1996 were the western and northern slopes (Figs. 1a, 1b) and western slope of the bank (Fig. 1b) at 250-350m, mainly at

270-300m depth. The highest catches per effort were typical of the western (46°50'N - 47°20'N) and northern (47°40'N - 48°N) slopes.

Some differences were found in length and sex composition of shrimp population from different places of the bank. In April on the bank northern slope 94% of catches consisted of males and only 6% of females whereas at the same time in the area between 46°40'N and 47°20'N males made up 74 and females 26% of catches (Fig.2).

In February-April 1996 shrimp at 10-32mm carapace length occurred in catches (Fig.3). In this case, in February-March length composition of males was characterized by mainly one of the modal length 18-20mm and in April a relative abundance of small-size males at 12-14mm carapace length increased (Fig.3).

In April berried females disappeared in catches completely. Females with setae on pleopods and those with spines on abdominal side have appeared instead of them. Based on the observations a reliability of the fact should be noted that hatching of deepwater shrimp larvae on the Flemish Cap Bank took place during the first five days of April 1996.

Young fish by-catches during the fishery on shrimp in February-April 1996 were minor and constituted from several specimens of Greenland halibut (16-18, maximum 24cm long) and of catfish to tens of redfish specimens (10-12cm long). Besides these fishes, capelin, skate, plaice occurred from time to time, as well as cod were rare outside trawl codend.

#### CONCLUSIONS

Maximum fishing efforts and shrimp catch taken by the Russian fleet on the Flemish Cap Bank in 1995 and in the 1st half of 1996 were registered in July 1995 and in May-June 1996.

Catch per unit of fishing effort increased in the second quarter of both years.

The Russian fishery on shrimp was mainly conducted on the Flemish Cap western and northern slopes. Length and sex composition of shrimp population on these slopes was different in April 1996.

Hatching of P.borealis larvae took place in the first five days of April 1996.

#### REFERENCES

- ASCHAN, M., BERENBOIM, B., MUKHIN, S. and K.SUNNANA. 1993. Results of Norwegian and Russian investigations of shrimp (Pandalus borealis) in the Barents and Svalbard area in 1992. ICES C.M. 1993/K:9, 17 p.
- RASMUSSEN, B. 1953. On the geographical variations in growth and sexual development of deep-sea prawn (Pandalus borealis Kr.). Fiskeridir.Skr., v.10, No.3, 160 p.

Table 1

Catch (tons) and Effort (days and hours)  
from  
the Russian Shrimp Fishery on Flemish Cap.  
1995 to 1996

Month	1995			1996		
	tons	days	hours	tons	days	hours
January				16	12	194
February				36	22	356
March				458	209	3386
April	148	74	1199	577	286	4633
May	497	171	2770	701	339	5492
June	758	232	3758	927	338	5476
July	664	303	4907			
August	376	252	4082			
September	172	89	1442			
October	88	28	454			
November	85	25	405			
December	50	16	25			
Total	2838	1190	19042	2715	1206	19537

Table 2

Catch per Effort (kg/hr) from the Russian Shrimp Fishery on  
Flemish Cap, 1995 to 1996

Month	Jan.	Febr.	March	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1995				124	179	201	135	92	119	194	210	193	149
1996	82	101	135	124	128	169							139





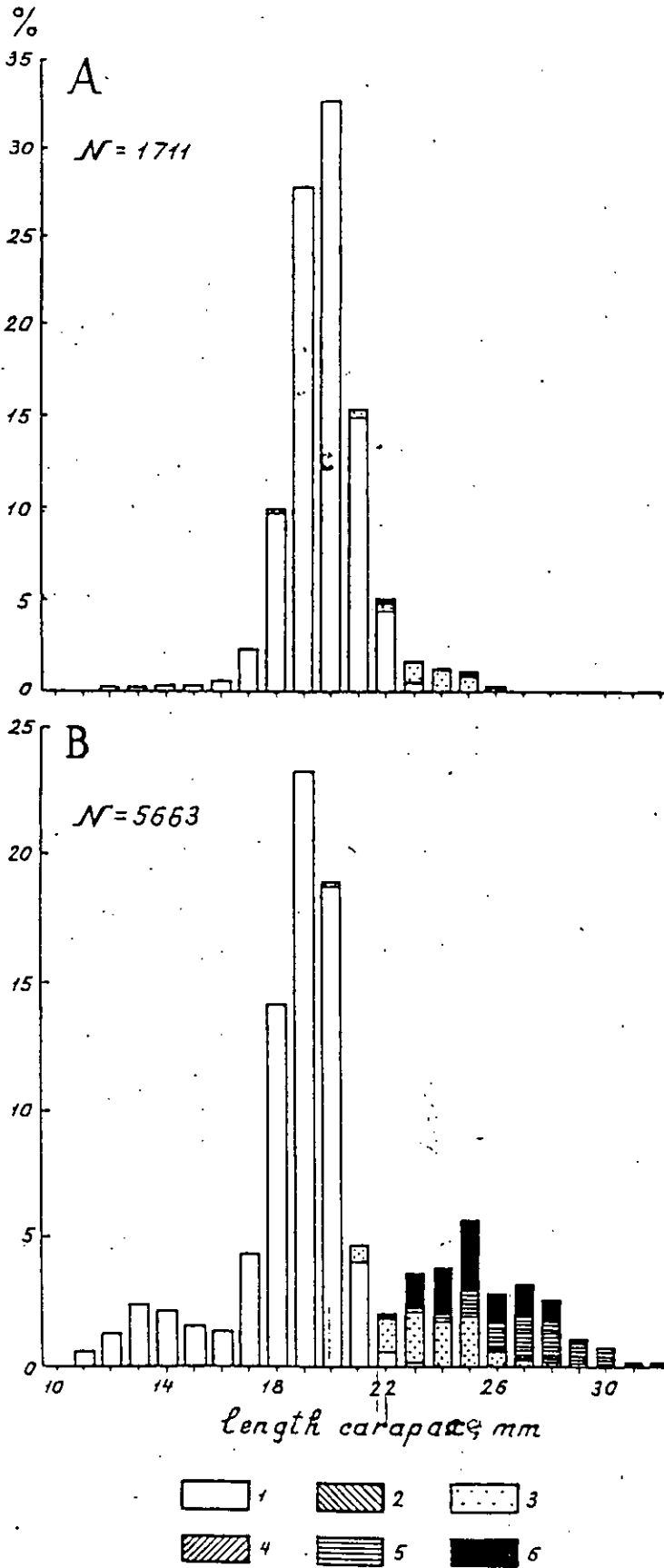


Fig. 2. Shrimp length distribution in the area between 47°40 N and 48° N (A) and area between 46°40 N and 47°20 N (B) on Flemish Cap, April 1996. 1 - males, 2 - intersex, 3 - females with headroe and spines, 4 - berried females, 5 - females with setae, 6 - females without spines.

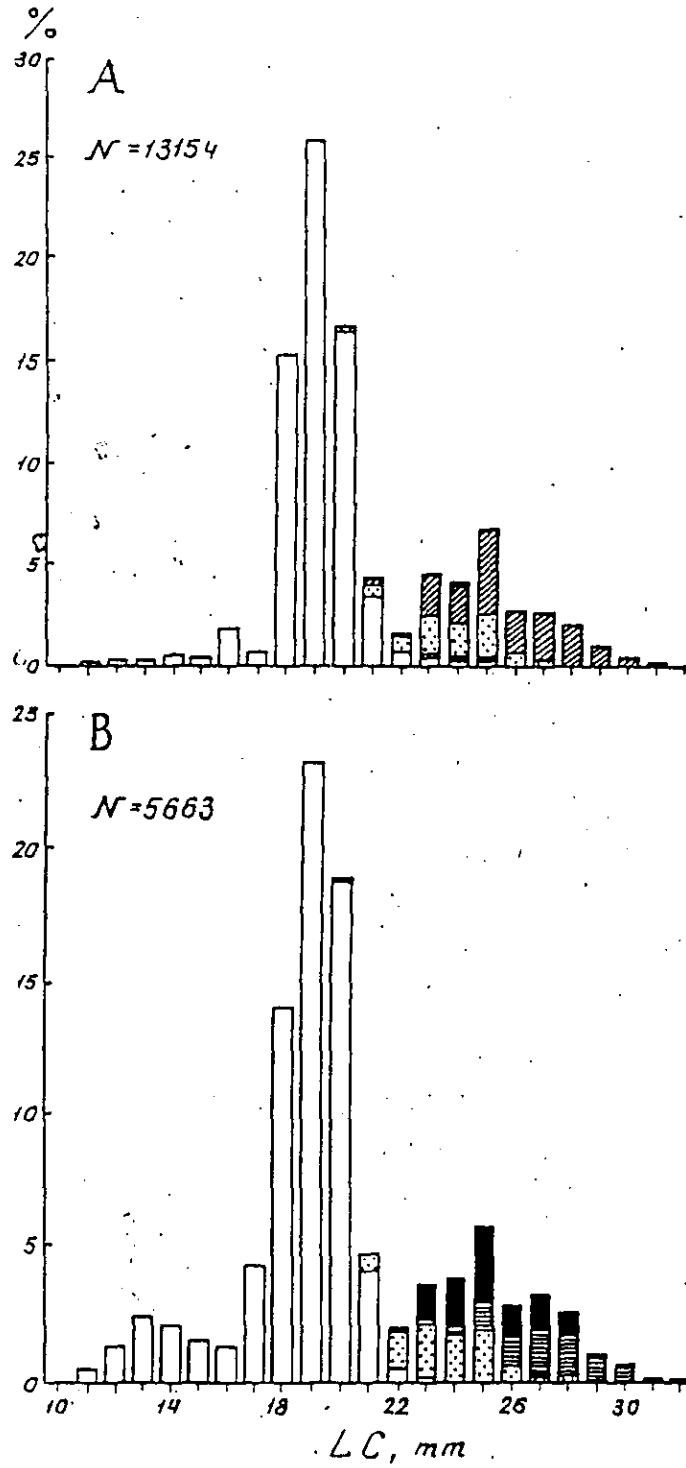


Fig. 3. Shrimp length distribution on the western Flemish Cap in February March (A) and April (B), 1996.