



**SCIENTIFIC COUNCIL MEETING – NOVEMBER 2001**

Russian Fishery for Northern Shrimp (*Pandalus borealis*) on Flemish Cap Bank, NAFO Division 3M and Grand Bank, Division 3L, in 2000 and January-September 2001

by

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**Abstract**

The paper gives brief preliminary review of Russian fishery for shrimp on Flemish Cap Bank and Grand Bank during January-December 2000 and January-September 2001. Maximum catches per effort were taken in June-July 2000 and January-May 2001. Length and sex compositions of catch by month are reported. Redfish were the most frequent in by-catch, as well as common wolffish. Besides, spotted wolffish, roughhead grenadier and Greenland halibut were taken as by-catch.

**Introduction**

Russian fishery for shrimp on Flemish Cap Bank commenced in January 2000 by two vessels and continued until December. In the year 2001, it was started again in January. The number of vessels varied from 2 to 10. Most of the vessels were 54.8m and above with a main engine power being above 1000 h.p. Based on monthly reporting to Russian authorities by Russian vessels the total catch at Flemish Cap in 2000 amounted to 7 078 tons. The total catch on Flemish Cap in 2001 until October amounted to 4 531 tons, where catches in 2001 on Grand Bank amounted to 67 tons in the same periods.

**Material and Methods**

Based on monthly reporting to Russian authorities total catches, numbers of vessels and numbers of fishing days in the shrimp fishery in NAFO Div. 3M and Div.3L was compiled from 1994 until October 2001.

Catch and effort data from individual fishing vessels as reported via the “Informrybflot” system using radio communication were analysed to show the monthly distribution of catches and fishing effort.

Size composition of shrimp catches in Div. 3M was generated from samples from the commercial fishery from April 2000 to March 2001. Shrimps were measured by non-electronic calipers and staged by the methods suggested by Rasmussen (1953) and modified by McCrary (1971).

## Results

In 2000 the shrimp fishery started in January. Nominal catch and number of vessels participated in the shrimp fishery is given in Table 1. Compared to the same period of 2000, the catch taken in 2001 decreased and constituted 4 531 tons. Distribution of efforts by months and years is presented in Figures 1-3. In 2000 the Russian fishery was conducted mainly along the northern and northeastern slopes, while in 2001 tows were made along northeastern, northern and likewise on the western slopes.

The mean CPUE in 2001 increased up to 283 kg/h for the vessels equipped by single trawl, and retained at the level of 2000 (446 kg/h) for the vessels with twin trawl (Table 2). The maximum catch rates from Russian vessels on the Flemish Cap were noted in June-July 2000 and in January-May 2001. The highest catch rates were observed in the depth range of 201-300 m.

The mean CPUE in Div. 3L in 2001 increased up to 270 kg/h for the vessels with single trawl. The catch rates by vessels rigged with twin trawl also increased up to 580 kg/h in January in 2001 (Table 3). The maximum catch rates were recorded in areas deeper than 301 m in May 2000 and January 2001.

Length of carapace in shrimp from catches varied from 8 to 32mm (Figure 4). In this case, males attained 24mm. Length of females with sternal spines varied from 15.5 to 27.5mm and from 16 to 32mm - in those without them. No clearly pronounced fluctuations were noted in sex ratio during the years.

The by-catch was about 1-3 % in the years 2000 and 2001. During the Russian fishery for shrimp on Flemish Cap Bank the young redfish were most frequent in by-catch. Maximum catch of this species was registered on the bank western slope (430 indiv./1 t of shrimp) in June 2000. Redfish length was 8-23 cm. Redfish occurred in catches taken during operations in the areas at 220-440m; however, its large quantities were noted at 250-300m. Redfish by-catch decreased with an increase in depth of trawling. Besides redfish, common wolffish, roughhead grenadier and Greenland halibut constantly occurred in by-catch.

## References

- McCRARY, J.A. 1971. Sternal spines as a characteristic for differentiating between females of some Pandalidae. *J.Fish.Res.Board.Can.*, 28:98-100.
- RASMUSSEN, B. 1953. On the geographical variation in growth and sexual development of the deep sea prawn (*Pandalus borealis* Kr.). *Fisk.Dir.Skr.*, ser.Havunders, 10(3):160p.

Table 1. Nominal catch (tons) and number of fishing days of Russian vessels at Flemish Cap.

	January – July				August – December			
	Month	No. of Vessels	Fishing Days	Catch, t	Month	No. of Vessels	Fishing Days	Catch, t
1994	Jan				Aug	4	90	189.000
	Feb				Sep	4	41	86.000
	Mar				Oct	4	36	75.000
	Apr				Nov			
	May				Dec			
	Jun				Total	4	167	350.000
	Jul							
1995	Jan				Aug	3	277	427.000
	Feb				Sep	3	266	394.000
	Mar				Oct	2	87	193.000
	Apr	2	104	137.000	Nov	1	23	80.000
	May	2	212	645.000	Dec	1	17	51.000
	Jun	2	273	792.000	Total	4	1533	3327.000
	Jul	3	274	608.000				
1996	Jan	2	26	17.598	Aug	13	338	526.704
	Feb	6	63	78.020	Sep	4	94	184.500
	Mar	12	257	381.916	Oct	2	56	71.069
	Apr	15	383	651.059	Nov	2	26	21.408
	May	14	409	800.655	Dec			
	Jun	18	475	972.500	Total	20	2541	4444.829
	Jul	16	409	739.500				
1997	Jan				Aug	3	68	179.912
	Feb	1	12	16.078	Sep	3	79	196.936
	Mar	1	29	37.994	Oct	1	14	15.228
	Apr	2	25	47591	Nov	1	22	24.000
	May	3	74	126.817	Dec			
	Jun	3	85	195.038	Total	3	448	1089.879
	Jul	3	80	250.285				
1999	Jan				Aug	2	26	94.944
	Feb				Sep	2	10	8.773
	Mar	1	6	3.596	Oct	3	92	193.560
	Apr	2	57	122.145	Nov	3	70	209.149
	May	2	56	131.609	Dec	1	26	63.024
	Jun	2	36	131.048	Total	5	441	1141.962
	Jul	2	62	184.118				
2000	Jan	2	42	87.763	Aug	6	116	392.916
	Feb	2	11	59.346	Sep	8	179	612.195
	Mar	3	92	652.399	Oct	8	211	671.986
	Apr	5	148	810.717	Nov	6	130	460.251
	May	6	116	846.690	Dec	5	68	299.466
	Jun	5	148	1174.386	Total	12	1411	7078.237
	Jul	5	141	1010.122				
2001*	Jan	3	59	374.543	Aug	2	33	129.876
	Feb	7	107	563.294	Sep	2	53	276.181
	Mar	10	185	871.843	Oct			
	Apr	7	144	864.993	Nov			
	May	5	99	695.469	Dec			
	Jun	4	56	410.888	Total		787	4531.032
	Jul	2	51	343.945				

\*- preliminary data

Table 2. Catch (tons), effort (hours) and catch per effort (kg/hr) from the Russian Shrimp Fishery on Flemish Cap in 3M area.

<b>2000</b>									
Month	Single trawl			Twin trawl			Total		
	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE
January	87,8	584	150,3				87,8	584	150,3
February	59,3	237	250,4				59,3	237	250,4
March	519,8	2729	190,5	132,6	228	580,6	652,4	2957	220,6
April	585,1	2270	257,8	225,6	560	402,7	810,7	2830	286,5
May	637,5	3463	184,1	209,2	520	402,3	846,7	3983	212,6
June	897,4	3107	288,8	277,0	559	495,2	1174,4	3667	320,3
July	808,5	2903	278,5	201,7	413	488	1010,1	3316	304,6
August	392,9	1493	263,2				392,9	1493	263,2
September	612,2	3170	193,1				612,2	3170	193,1
October	672,0	3455	194,5				672	3455	194,5
November	460,3	2609	176,4				460,3	2609	176,4
December	95,3	491	194,3	204,2	485	421,4	299,5	975	307,2
<b>Total 2000</b>	5828,0	26510	219,8	1250,2	2765,7	452	7078,2	29276	241,8
<b>2001*</b>									
Month	Single trawl			Twin trawl			Total		
	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE
January	178,5	511	349,5	196	399	491,2	374,5	910	411,7
February	356,9	1211	294,7	206,4	483	427,4	563,3	1694	332,5
March	597,5	1829	326,6	274,3	610,4	449,4	871,8	2440	357,3
April	624,4	2003	311,8	240,6	483	498,1	865	2486	348,0
May	392,1	1738	225,6	303,4	518	585,8	695,5	2256	308,3
June	158,2	561	281,8	252,7	479,5	526,9	410,9	1041	394,8
July	127,6	421	303,2	216,3	566,1	382,1	343,9	987	348,4
August	115,5	477	242,2	14,4	84	171	129,9	561	231,6
September	111,2	447	248,5	165	549	300,5	276,2	996	277,2
October									
November									
December									
<b>Total 2001</b>	2605,1	9198	283,2	1925,9	4319	445,9	4531,0	13370	338,9

\*- preliminary data

Table 3. Catch (tons), effort (hours) and catch per effort (kg/hr) from the Russian Shrimp Fishery on Flemish Cap in 3L area.

<b>2000</b>									
Month	Single trawl			Twin trawl			Total		
	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE
January									
February									
March									
April									
May	15,0	69,0	217,0				15,0	69,0	217,0
June									
July				32,1	71,0	451,7	32,1	71,0	451,7
August									
September	2,3	17,0	136,5				2,3	17,0	135,3
October									
November									
December									
<b>Total 2000</b>	17,3	86,0	201,2	32,1	71,0	451,7	49,4	157,0	314,4
<b>2001*</b>									
Month	Single trawl			Twin trawl			Total		
	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE	Catch,t	Hour	CPUE
January	26,7	99	270,0	40,0	69	579,7			
February									
March									
April									
May									
June									
July									
August									
September									
October									
November									
December									
<b>Total 2001</b>	26,7	99	270,0	40,0	69	579,7	66,7	168	397,0

\*- preliminary data

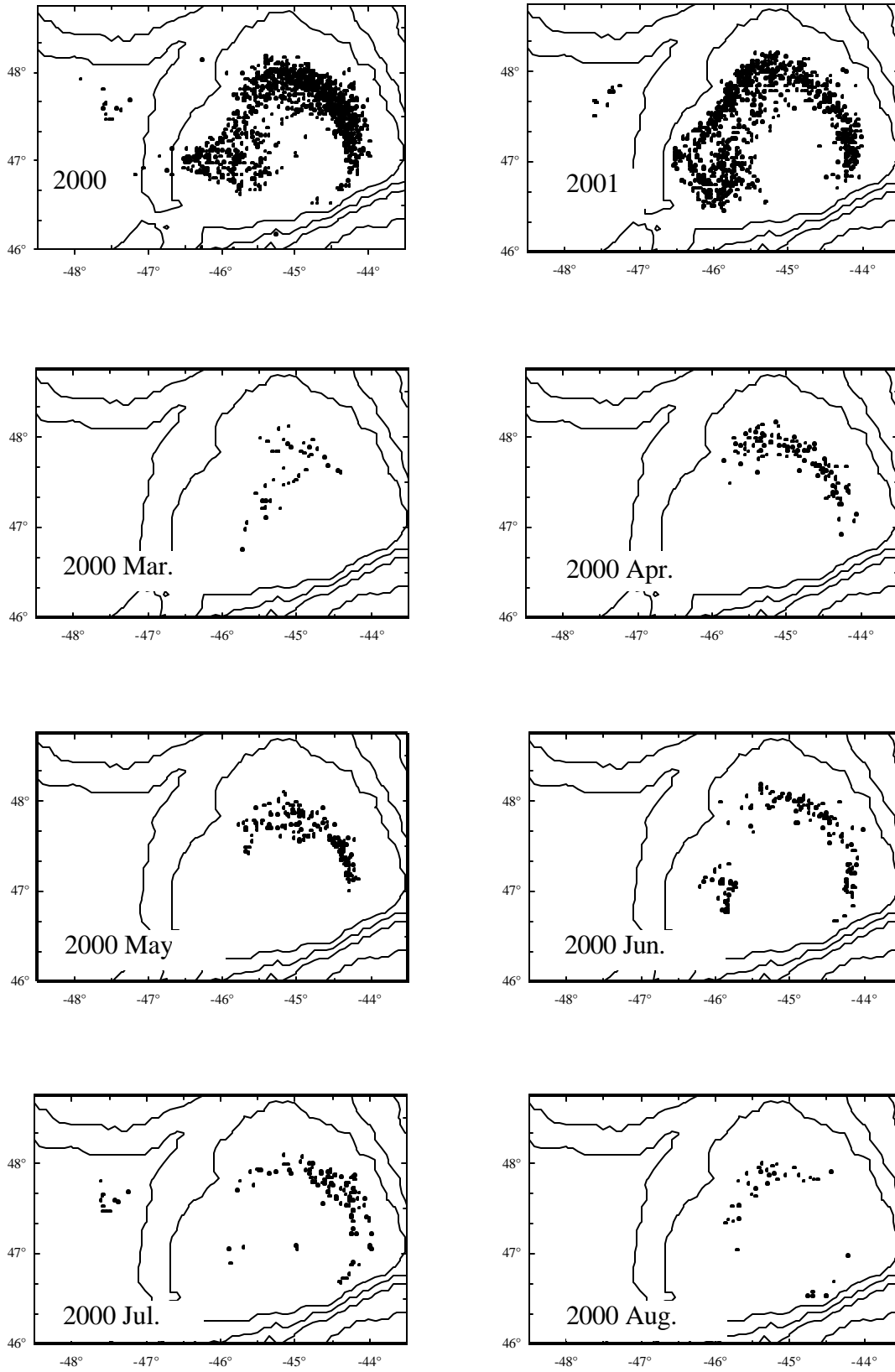


Fig. 1. Towing position in the Russian fleet on Flemish Cap in 2000-2001 and by month in 2000.

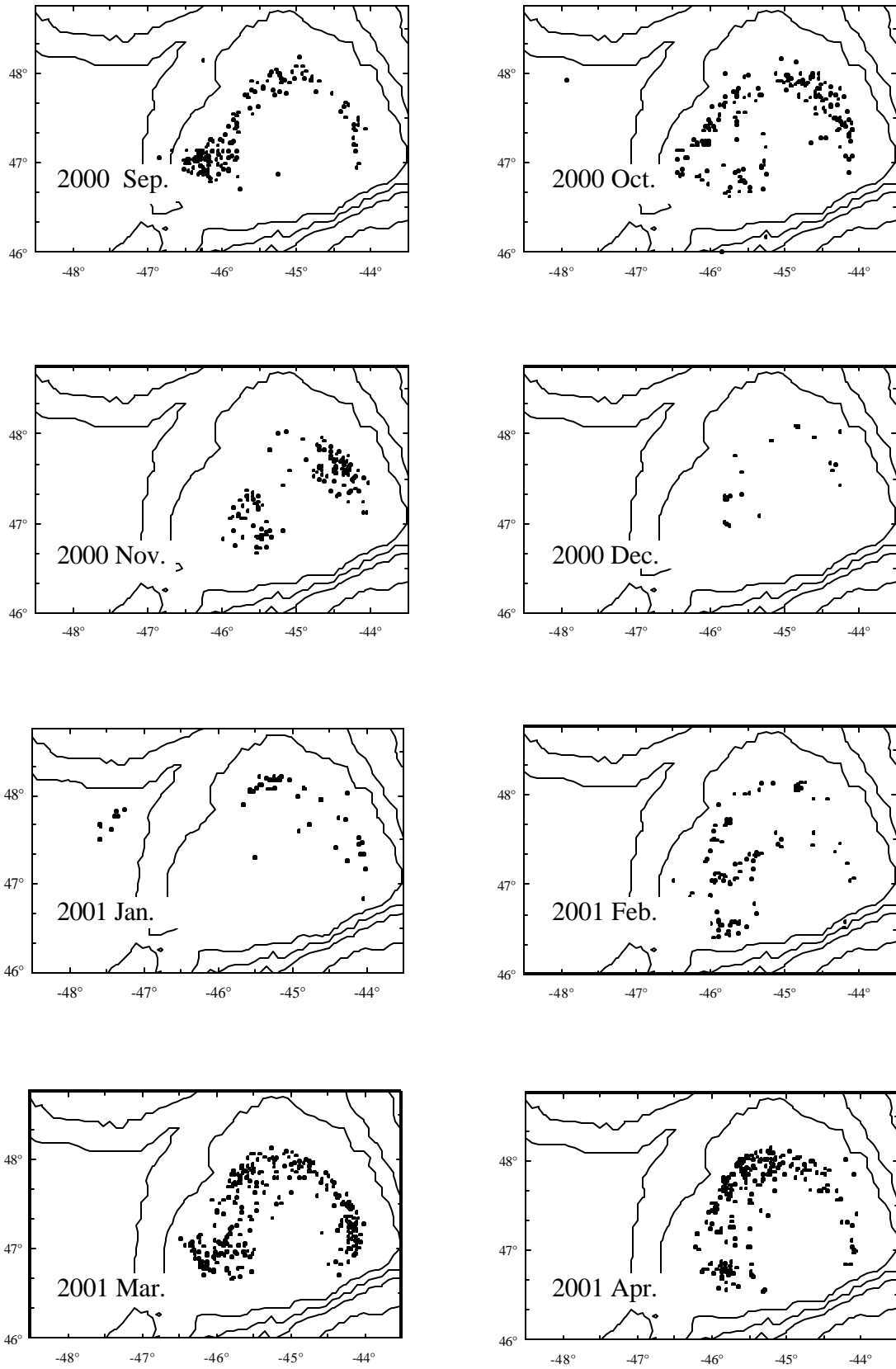


Fig. 2. Towing position in the Russian fleet on Flemish Cap by month in 2000-2001.

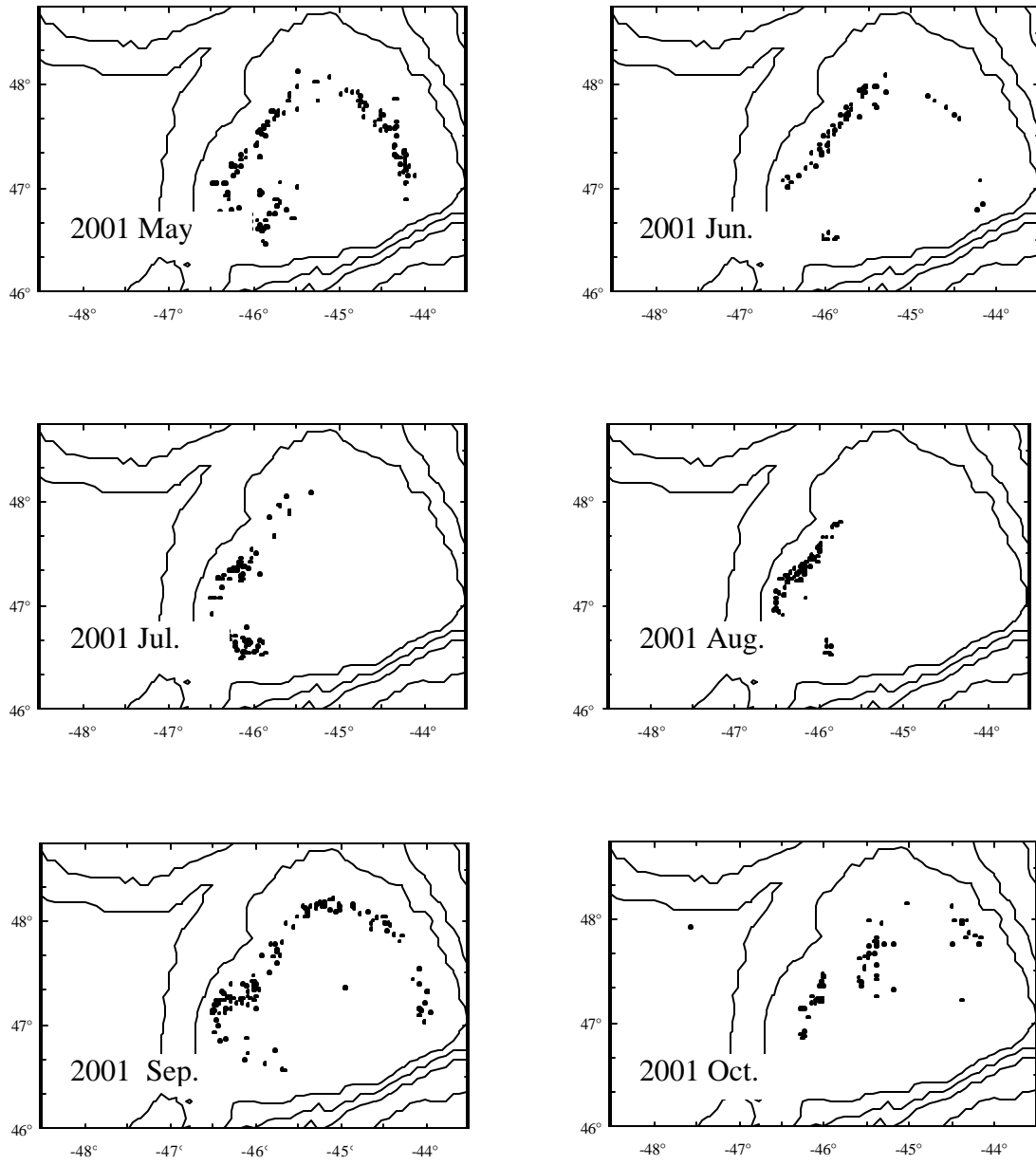


Fig. 3. Towing position in the Russian fleet on Flemish Cap by month in 2000-2001.



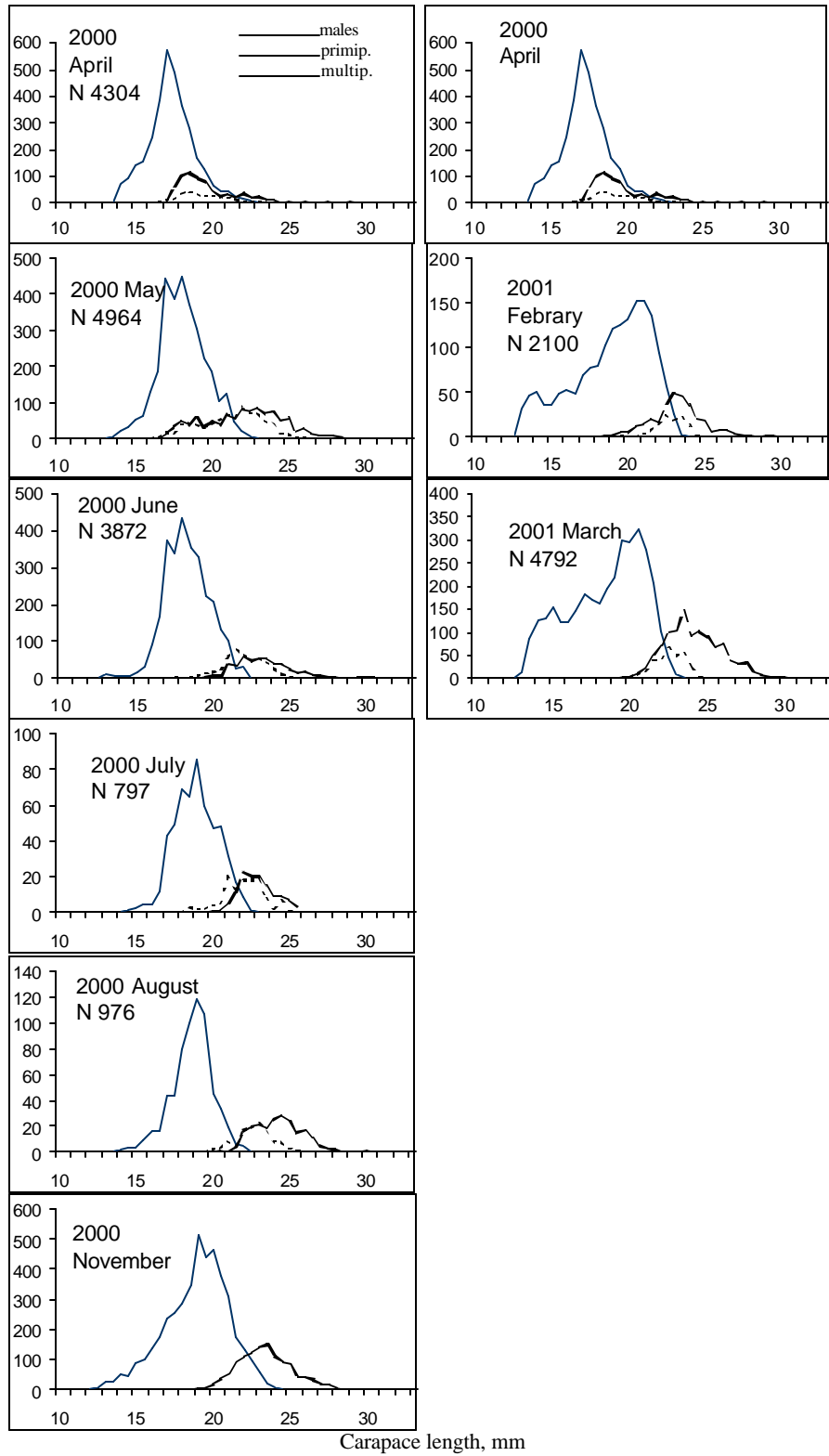


Fig. 4. The length frequency distribution from Russian catches of shrimp at Flemish Cap by month in 2000-2001.