Northwest Atlantic Fisheries Organization

Serial No. N4691 **NAFO SCR Doc. 02/77**
Revised

SCIENTIFIC COUNCIL MEETING – SEPTEMBER 2002

The Impact of Closure of the Shallow Water Area of Flemish Cap (Division 3M) on Young Shrimp (*Pandalus borealis*) in Two Periods of the Year

by

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Abstract

An attempt was made to evaluate the impact of closing the shallow water area on Flemish Cap for the period June to December. Also the impact for the rest of the year January to May was studied as well.

The Faroese survey revealed that in June 73 % of the two year olds are found below 140 fathoms which is the approximate closed area.

The nominal catch of all nations fishing at Flemish Cap was divided into the depth strata 0-140 fathoms the approximate area of closure at present and 141-540 fathoms for two periods of the year in 6 years. On the average the 5.5% of the shrimp catch was caught in shallow water for the whole year, divided into 13.4 % in the period January to May but only 1.8% in the period June to December.

Ageing was carried out on length frequencies collected within observer database. Closure of the area <140fm would save 16% of one year olds in the period January-May as judged by very scanty data. About 12.4% of two year olds would be saved in the period Jan-May if the area was closed and 2.9% in the period Jun.-Dec. Then 4.6% of three year olds would be saved in the Jan-May period as compared to 1.3% in the period Jun-Dec. This is based on the fishery that took place in the years 1996, 1999 and 2000 in the shallow water and at all depths. Fishery could be more detrimental if fishery pressure was increased greatly in the shallow water in either period of the year as there appeared to be twice as many two year old shrimp in the shallow water as compared to depths > 140 fm.

Introduction

In year 2000 there was some concern about some fleets fishing to a great extent in shallow waters on Flemish Cap for northern shrimp. As there were indications from observer data and survey data that the younger shrimp was more prevalent in the shallow area than deeper down, it was suggested by STACFIS that there would be a closure of the area above 140 fathoms approximately. The Fisheries Commission agreed to a summer closure for year 2001. In 2001 STACFIS recommended a closure for the whole year of the shallow water as it was pointed out that there was even more fishing in the area in the months February to May than during the summer and the rest of the year. In January 2002 Fisheries Commission decided to have a closure of the shallow area for the months June through

December. At the same time there was a request as to what effect it has on the shrimp stock to have a closure or not in the period June through December. As we feel that there should also be a closure in the months January through May of the shallow area the effect of closure during that time of the year is also studied.

Material and Methods

Data from the Faroese shrimp survey (Nicolajsen, 1999, 2000, 2001) were used in calculating stock in numbers of age group 2 yr by depth strata. The stock in number of age group 2 years was calculated in two steps: 1. separate numbers in the length distribution in each survey strata into substrata according to depth and 2.calculate number of age group 2 yr by the MIX software (MacDonald and Pitcher, 1979).

Logbook information from the Faroese and Icelandic shrimp fleets were presented as catches and percentages by depth strata (<140fm and >140fm), month and season for 1995-2000. For the Faroese fleet the catches were summed by squares (10 lateral minutes by 15 longitudinal minutes) and displayed in monthly maps (Fig. 2).

Only the Icelandic observer samples were used in this study, as these were available by depth. Shrimp were separated into 3 categories namely, males, primiparous females (including transitionals) and multiparous females according to the sternal spine criterion (McCrary, 1971), oblique carapace lengths were measured using sliding calipers and grouped into 0.5 mm length-classes. Modal analysis (MacDonald and Pitcher, 1979) was conducted on an individual month-by-month basis and depth strata. This analysis provided the mean lengths and proportions at age and sex per month and depth stratum. The mean lengths were converted to mean weights using length weight relationships shown below to calculate the number caught (Skuladottir, 1997). An average length at age was calculated for the whole period. The calculated numbers were calculated from all the samples pooled over several months and depth stratum whereupon the numbers where raised to that of the nominal catch of all nations. The mean lengths were then converted to weights using the length weight relationship for April-June. This length weight relationship was used for both periods of the year Jan-May and Jun-Dec.

For males and primiparous females for all year around : $\ln y = 3.037 * \ln x - 7.549$
For multiparous females in April-June: $\ln y = 2.778 * \ln x - 6.689$

Results

Data from the Faroese shrimp survey (Nicolajsen, 1999, 2000, 2001) were used in calculating stock in numbers of age group 2. By the two depth strata <140 fm (shallow water area) and >140 fm (deeper area). The Faroese survey which takes place in June each year shows that most of the two year olds or 73% on the average of three years are found in deeper waters (Table 1). If shallow water area (see Fig. 1) is closed in June then possibly 27 % of two year olds of the whole stock are saved in that month.

The shrimp catches are spread all around the cap as shown by the catch of the Faroese (Figure 2). Skuladottir has shown position of tows by months for several years (Skuladottir, 1997, 1998, 1999 and 2000). It is also interesting to see Table 2 where the catch from logbooks of Iceland (top line in each month of Table 2 and Faroe Islands are combined by month and depth strata. All together the catch was somewhere from 30-50% of the total nominal catch. It assumed that other nations behave in a similar manner. The period of the months January to May on one hand and June to December on the other are summed. Appendix 1 shows the logbook catch turned into nominal catch by depth strata and two periods of the year. From Table 2 Fig. 3 shows how the catch at he beginning of the year rises gradually in the shallow area. There is a curious second peak in one year out of 6 in September and October. The highest peak of catch in the deeper water is during summer (Fig. 4). An overall picture of averages of all years is shown in Fig. 5. There it is evident that the highest peak of catch in the shallow water is in March and April. This makes up 13.4% of the catch in the period January to May but decreases to 1.8% of the catch in the period June to December (Table 2). What is perhaps worrying is the trend in later years to increase fishing in shallow water as happens in 1999 and 2000. There was also a substantial increase of fishing in the period June to December, namely in September and October of 1999. But in year 2000 things were back to normal again in the latter period.

Shrimp was sampled all years at different depths by Icelandic observers. But the data were very scanty in the shallow water area in the years 1995 1997 and 1998. So only three years could give some picture of the different proportions of the age groups in the two depth strata. The length frequency distributions of shrimp are shown on

Figure 6 in two depth strata and two periods of the year. It happens in 1999 that the two year olds seem a bit larger in the deeper area as compared to the shallow area and the same applies to the three year olds in year 2000 in the period Jan. to May. From the age assessment total number were calculated for each time period and three depth strata (Table 3 and 4).

After applying the Mix analysis on the the three sex categories mentioned above the overall proportions were calculated the lengths at age were turned into weights at age so as to be able to calculate the number caught corresponding to the nominal catch (Appendix 2).

Ageing was very difficult in year 2000. I seemed necessary to fix the age of one year lolds at the carapace length 8 mm as deduced from the length frequency distribution of males in the period January- May. Also the length distribution from shrimp caught in the juvenile bag (Nicolajsen and Brynjolfsson, 2000) shows a peak of about 9 mm in late June 2000. Assuming a growth the length of one year olds was fixed at 8 mm and the by assuming 4 components in the male distribution, the two year olds were at the mean size of 11.9 mm in the shallow water and 13 mm at all depths. Later in the year no one year olds were assumed as the length frequency distribution lacked the small sizes of shrimp and the size of two year olds had grown to 14.9 and 14.8 mm in shallow water and all depths respectively (Appendix 2)

Each year especially some two year olds would be saved by not fishing in the shallow area. This was as much as 18.4 % of all the two year olds caught in Jan.-May in 1996. In other two years these percentages were lower in the same period, namely 1% in 1999 and 17.7% in 2000. An overall average was 12.4% saved of all two year olds in the Jan-May period.

Of three year olds some would also be saved by closing the shallow area, or 1% in year 1996, 11% in 1999 and 1.8% in 2000. An overall was 4.6% saved for all three years in the period Jan-May.

In the latter period, Jun.-Dec. there is only 1.9% of one year olds saved and they also seem to have disappeared from the fishery. Only 0.7% of two year olds are saved in year 1996, 3.7% in 1999 and 4.4 in 2000. An overall average is 2.9% (Table 4). For the three year olds there is no gain in closing the shallow water area except in year 1999 when it is 3.7%. An overall figure is 1.3 %.

It is also possible to that there could be more fishing in the shallow area than has been assumed here. By looking at percentages of the youngest ages in percentages (Table 7) there appears to be from 5% to 3.8 times as many two year olds in the shallow water as in the deeper water irrespective of time of the year. Here is added year 2001 although not calculated in numbers as the catch data by depth were uncertain in that year and also the shallow area was closed during summer. The three year olds were only from nothing to 1.6 times as many in the shallow water. It is possible if the shallow area was open all year that the fishing pressure could be increased considerably there.

Egg bearing females may migrate to the shallower area to hatch in spring. The only evidence of this is seen in 1999 when 4.1% of six year olds would be saved by closing the shallow area. In 1996 and 2000 there are no signs of this from the calculations carried out here. But again the ageing is very difficult for the oldest animals.

If one does not believe in the age assessments, it is possible to look at percentages of numbers at length. This is done in Tables 5 and 6. First there is Table 5 where <18 mm saved is calculated by time periods. Again there are more of the small shrimp saved in the period January to May or 3.3% as compared to 0.3% in the period June to December. Very similar results are obtained if the limit is >20 mm Carapace length (Table 6). This is also due to the fishing pattern that has been traditional in the years studied, namely to fish to a certain extent in the shallow area in the first part of the year (about 13%) and to much lesser degree in the period June through December (5.5% on average).

Conclusion

The gain of closing the shallow water area is small in the period June to December of two year olds saved as based on the traditional fishery pattern to present time, whereas in the period January to May three times as many two year olds would be saved. There is the possibility that fishing pressure could be increased drastically in the period June-December as shown by survey results about 25% of the shrimp stock is in the shallow area. Therefore the shallow

water area should be closed for the whole year. This would give some two year olds a time to grow before they move eventually to deeper areas.

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Table 1. Males age group two by depth strata in the Faroese survey

	Stock in Numbers (mill.)			Percentage		
Year	Shallower than 140fm	Deeper than 140fm	Total	Shallower than 140fm	Deeper than 140fm	Total
1999	222	662	884	25,1	74,9	100,0
2000	28	81	108	25,5	74,5	100,0
2001	370	849	1218	30,3	69,7	100,0
Average	206	531	737	27,0	73,0	100,0

Table 2. Catch of shrimp (kgs) from log books of Iceland and Faroe Islands by depth strata on the Flemish Cap 1995-2000.

1995	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Month	Catch kg	%	Catch kg	%	Catch kg	%
1						
1			9581	100.0	9581	100.0
Total			9581	100.0	9581	**100.0**
2			18150	100.0	18150	100.0
2						
Total			**18150**	100.0	**18150**	**100.0**
3	47550	27.4	126150	72.6	173700	100.0
3			134444	100.0	134444	100.0
Total	**47550**	15.4	**260594**	84.6	**308144**	**100.0**
4	37050	17.6	173429	82.4	210479	100.0
4	151857	38.2	245169	61.8	397026	100.0
Total	**188907**	31.1	**418598**	68.9	**607505**	**100.0**
5	1500	0.2	663894	99.8	665394	100.0
5	3075	0.6	545079	99.4	548154	100.0
Total	**4575**	0.4	**1208973**	99.6	**1213548**	**100.0**
Total Jan-May	**241032**	**11.2**	**1915896**	**88.8**	**2156928**	**100.0**
6			903708	100.0	903708	100.0
6	2288	0.6	395332	99.4	397620	100.0
Total	**2288**	**0.2**	**1299040**	**99.8**	**1301328**	**100.0**
7			1606187	100.0	1606187	100.0
7	524	0.1	519458	99.9	519982	100.0
Total	**524**	**0.0**	**2125645**	**100.0**	**2126169**	**100.0**
8	3117	0.4	851618	99.6	854735	100.0
8			626963	100.0	626963	100.0
Total	**3117**	**0.2**	**1478581**	**99.8**	**1481698**	**100.0**
9	2600	0.7	380449	99.3	383049	100.0
9			513631	100.0	513631	100.0
Total	**2600**	**0.3**	**894080**	**99.7**	**896680**	**100.0**
10	800	0.2	344830	99.8	345630	100.0
10			373087	100.0	373087	100.0
Total	**800**	**0.1**	**717917**	**99.9**	**718717**	**100.0**
11	1700	1.1	153996	98.9	155696	100.0
11			447748	100.0	447748	100.0
Total	**1700**	**0.3**	**601744**	**99.7**	**603444**	**100.0**
12	26260	16.9	129110	83.1	155370	100.0
12			160894	100.0	160894	100.0
Total	**26260**	**8.3**	**290004**	**91.7**	**316264**	**100.0**
Total Jun.-Dec.	**37289**	**0.5**	**7407011**	**99.5**	**7444300**	**100.0**
Total 1995	**278321**	**2.9**	**9322907**	**97.1**	**9601228**	**100.0**

1998	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Month	Catch kg	%	Catch kg	%	Catch kg	%
1						
1			9581	100.0	9581	100.0
Total			9581	100.0	9581	100.0
2			18150	100.0	18150	100.0
2						
Total			**18150**	100.0	**18150**	**100.0**
3	1875	1.1	163786	98.9	165661	100.0
3	1216	0.2	611822	99.8	613038	100.0
Total	**3091**	0.4	**775608**	99.6	**778699**	**100.0**
4	199597	98.8	2439	1.2	202036	100.0
4	53316	4.9	1023776	95.1	1077092	100.0
Total	**252913**	19.8	**1026215**	80.2	**1279128**	**100.0**
5	3386	0.5	733784	99.5	737170	100.0
5			1550379	100.0	1550379	100.0
Total	**3386**	0.1	**2284163**	99.9	**2287549**	**100.0**
Total Jan-May	**259390**	**5.9**	**4113717**	**94.1**	**4373107**	**100.0**
6	31520	2.7	1138151	97.3	1169671	100.0
6	14503	1.0	1469202	99.0	1483705	100.0
Total	**46023**	**1.7**	**2607353**	**98.3**	**2653376**	**100.0**
7			1174735	100.0	1174735	100.0
7	10065	0.9	1163923	99.1	1173988	100.0
Total	**10065**	**0.4**	**2338658**	**99.6**	**2348723**	**100.0**
8			812768	100.0	812768	100.0
8			1204697	100.0	1204697	100.0
Total	**0**	**0.0**	**2017465**	**100.0**	**2017465**	**100.0**
9	500	0.1	926965	99.9	927465	100.0
9			72097	100.0	72097	100.0
Total	**500**	**0.1**	**999062**	**99.9**	**999562**	**100.0**
10	824	0.1	708102	99.9	708926	100.0
10			375378	100.0	375378	100.0
Total	**824**	**0.1**	**1083480**	**99.9**	**1084304**	**100.0**
11	935	0.3	359317	99.7	360252	100.0
11			466918	100.0	466918	100.0
Total	**935**	**0.1**	**826235**	**99.9**	**827170**	**100.0**
12		0.0	129110	100.0	129110	100.0
12	17076	0.7	2273209	99.3	2290285	100.0
Total	**17076**	**0.7**	**2402319**	**99.3**	**2419395**	**100.0**
Total Jun.-Dec.	**75423**	**0.6**	**12274572**	**99.4**	**12349995**	**100.0**
Total 1998	**334813**	**2.0**	**16388289**	**98.0**	**16723102**	**100.0**

1996	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Month	Catch kg	%	Catch kg	%	Catch kg	%
1	1940	0.5	351695	99.5	353635.0	100.0
1			9581	100.0	9581	100.0
Total	**1940**	0.5	**361276**	99.5	**363216**	**100.0**
2	8500	2.5	325195	97.5	333695	100.0
2	1735	1.1	159724	98.9	161459	100.0
Total	10235	2.1	**484919**	97.9	**495154**	**100.0**
3	246715	20.5	958409	79.5	1205124	100.0
3	103517	11.7	783431	88.3	886948	100.0
Total	**350232**	16.7	**1741840**	83.3	**2092072**	**100.0**
4	488378	21.5	1782850	78.5	2271228	100.0
4	38772	4.1	905477	95.9	944249	100.0
Total	**527150**	16.4	**2688327**	83.6	**3215477**	**100.0**
5	9931	0.4	2384623	99.6	2394554	100.0
5	6882	0.5	1478924	99.5	1485806	100.0
Total	**16813**	0.4	**3863547**	99.6	**3880360**	**100.0**
Total Jan-May	**906370**	**9.0**	**9139909**	**91.0**	**10046279**	**100.0**
6	10102	0.4	2806894	99.6	2816996	100.0
6	2519	0.2	1234953	99.8	1237472	100.0
Total	**12621**	**0.3**	**4041847**	**99.7**	**4054468**	**100.0**
7	2049	**0.1**	2108653	99.9	2110702	100.0
7	2595	0.2	1170829	99.8	1173424	100.0
Total	**4644**	**0.1**	**3279482**	**99.9**	**3284126**	**100.0**
8			1349424	100.0	1349424	100.0
8			638584	100.0	638584	100.0
Total	**0**	**0.0**	**1988008**	**100.0**	**1988008**	**100.0**
9	33433	2.5	1316437	97.5	1349870	100.0
9	8699	1.4	595795	98.6	604494	100.0
Total	**42132**	**2.2**	**1912232**	**97.8**	**1954364**	**100.0**
10	18957	2.7	692259	97.3	711216	100.0
10	980	0.2	512801	99.8	513781	100.0
Total	**19937**	**1.6**	**1205060**	**98.4**	**1224997**	**100.0**
11	295	0.1	200456	99.9	200751	100.0
11	2516	1.0	245224	99.0	247740	100.0
Total	**2811**	**0.6**	**445680**	**99.4**	**448491**	**100.0**
12		0.0	40000	100.0	40000	100.0
12			1167	100.0	1167	100.0
Total	**0**	**0.0**	**41167**	**100.0**	**41167**	**100.0**
Total Jun.-Dec.	**82145**	**0.6**	**12913476**	**99.4**	**12995621**	**100.0**
Total 1996	**988515**	**4.3**	**22053385**	**95.7**	**23041900**	**100.0**

1999	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Month	Catch kg	%	Catch kg	%	Catch kg	%
1			72588	100.0	72588	100.0
1			9581	100.0	9581	100.0
Total	**0**	**0**	**82169**	100.0	**82169**	**100.0**
2	2600	**1.9**	131309	98.1	133909	100.0
2						
Total	2600	**1.9**	**131309**	98.1	**133909**	**100.0**
3	244274	45.6	291397	54.4	535671	100.0
3	138373	43.8	177396	56.2	315769	100.0
Total	**382647**	**44.9**	**468793**	55.1	**851440**	**100.0**
4	291696	33.1	589484	66.9	881180	100.0
4	174265	21.1	651703	78.9	825968	100.0
Total	**465961**	27.3	**1241187**	72.7	**1707148**	**100.0**
5	3215	0.2	1479098	99.8	1482313	100.0
5	5550	0.6	930215	99.4	935765	100.0
Total	**8765**	0.4	**2409313**	99.6	**2418078**	**100.0**
Total Jan-May	**859973**	**16.6**	**4332771**	**83.4**	**5192744**	**100.0**
6	7786	0.5	1699850	99.5	1707636	100.0
6	6328	0.4	1409485	99.6	1415813	100.0
Total	**14114**	**0.5**	**3109335**	**99.5**	**3123449**	**100.0**
7			1464606	100.0	1464606	100.0
7	10600	0.9	1213225	99.1	1223825	100.0
Total	**10600**	**0.4**	**2677831**	**99.6**	**2688431**	**100.0**
8	11350	1.2	902073	98.8	913423	100.0
8	74382	5.0	1409972	95.0	1484354	100.0
Total	**85732**	**3.6**	**2312045**	**96.4**	**2397777**	**100.0**
9	57158	8.2	640372	91.8	697530	100.0
9	297948	26.4	830589	73.6	1128537	100.0
Total	**355106**	**19.4**	**1470961**	**80.6**	**1826067**	**100.0**
10	26290	4.8	523321	95.2	549611	100.0
10	230396	29.5	549445	70.5	779841	100.0
Total	**256686**	**19.3**	**1072766**	**80.7**	**1329452**	**100.0**
11	52929	9.5	503915	90.5	556844	100.0
11	7188	1.0	733836	99.0	741024	100.0
Total	**60117**	**4.6**	**1237751**	**95.4**	**1297868**	**100.0**
12	26260	10.3	228078	89.7	254338	100.0
12	17076	5.9	273209	94.1	290285	100.0
Total	**43336**	**8.0**	**501287**	**92.0**	**544623**	**100.0**
Total Jun.-Dec.	**825691**	**6.3**	**12381976**	**93.7**	**13207667**	**100.0**
Total 1999	**1685664**	**9.2**	**16714747**	**90.8**	**18400411**	**100.0**

Table 2 continued.

1997	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Month	Catch kg	%	Catch kg	%	Catch kg	%
1			72588	100.0	72588	100.0
1			9581	100.0	9581	100.0
Total			**82169**	100.0	**82169**	**100.0**
2			133281	100.0	133281	100.0
2			19418	100.0	19418	100.0
Total			**152699**	100.0	**152699**	**100.0**
3					0	0.0
3	181040	23.7	583638	76.3	764678	100.0
Total	**181040**	**23.7**	**583638**	76.3	**764678**	**100.0**
4	1684	2.4	67721	97.6	69405	100.0
4	24685	2.5	949441	97.5	974126	100.0
Total	**26369**	2.5	**1017162**	97.5	**1043531**	**100.0**
5	6299	1.2	521870	98.8	528169	100.0
5	25164	2.9	830884	97.1	856048	100.0
Total	**31463**	**2.3**	**1352754**	97.7	**1384217**	**100.0**
Total Jan-May	**238872**	**7.0**	**3188422**	**93.0**	**3427294**	**100.0**
6	1530	0.2	901632	99.8	903162	100.0
6	15243	1.5	972900	98.5	988143	100.0
Total	**16773**	**0.9**	**1874532**	**99.1**	**1891305**	**100.0**
7	3809	**0.3**	1209879	99.7	1213688	100.0
7	1941	0.2	1009506	99.8	1011447	100.0
Total	**5750**	**0.3**	**2219385**	**99.7**	**2225135**	**100.0**
8			878514	100.0	878514	100.0
8	4986	0.6	823127	99.4	828113	100.0
Total	**4986**	0.3	**1701641**	**99.7**	**1706627**	**100.0**
9	2666	0.4	700953	99.6	703619	100.0
9	917	0.1	817378	99.9	818295	100.0
Total	**3583**	0.2	**1518331**	**99.8**	**1521914**	**100.0**
10	3724	0.7	553447	99.3	557171	100.0
10	2805	0.5	549317	99.5	552122	100.0
Total	**6529**	**0.6**	**1102764**	**99.4**	**1109293**	**100.0**
11		0.0	194395	100.0	194395	100.0
11	885	0.2	393415	99.8	394300	100.0
Total	**885**	0.2	**587810**	**99.8**	**588695**	**100.0**
12		0.0	75879	100.0	75879	100.0
12	1448	0.6	224137	99.4	225585	100.0
Total	**1448**	**0.5**	**300016**	**99.5**	**301464**	**100.0**
Total Jun.-Dec.	**39954**	**0.4**	**9304479**	**99.6**	**9344433**	**100.0**
Total 1997	**278826**	**2.2**	**12492901**	**97.8**	**12771727**	**100.0**

2000	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Month	Catch kg	%	Catch kg	%	Catch kg	%
1	21689	7.8	255348	92.2	277037	100
1						
Total	**21689**	7.8	**255348**	**92.17108**	**277037**	**100.0**
2	291663	47.1	327097	52.9	618760	100.0
2						
Total	291663	47.1	**327097**	52.9	**618760**	**100.0**
3	510041	50.5	499754	49.5	1009795	100.0
3	291414	92.1	24898	7.9	316312	100.0
Total	**801455**	60.4	**524652**	39.6	**1326107**	**100.0**
4	211098	17.1	1024704	82.9	1235802	100.0
4	139948	25.9	401348	74.1	541296	100.0
Total	**351046**	19.8	**1426052**	80.2	**1777098**	**100.0**
5	134999	11.8	1012345	88.2	1147344	100.0
5	19378	3.4	557458	96.6	576836	100.0
Total	**154377**	9.0	**1569803**	91.0	**1724180**	**100.0**
Total Jan-May	**1620230**	**28.3**	**4102952**	**71.7**	**5723182**	**100.0**
6	300	0.0	1120369	100.0	1120669	100.0
6	1865	0.2	918436	99.8	920301	100.0
Total	**2165**	**0.1**	**2038805**	**99.9**	**2040970**	**100.0**
7	2792	**0.4**	763268	99.6	766060	100.0
7			937975	100.0	937975	100.0
Total	**2792**	**0.2**	**1701243**	**99.8**	**1704035**	**100.0**
8	27302	4.7	551602	95.3	578904	100.0
8	3822	0.3	1111153	99.7	1114975	100.0
Total	**31124**	1.8	**1662755**	**98.2**	**1693879**	**100.0**
9		0.0	559899	100.0	559899	100.0
9	6579	0.7	950715	99.3	957294	100.0
Total	**6579**	0.4	**1510614**	**99.6**	**1517193**	**100.0**
10	30872	6.3	460274	93.7	491146	100.0
10	6528	0.8	849621	99.2	856149	100.0
Total	**37400**	2.8	**1309895**	**97.2**	**1347295**	**100.0**
11	14730	1.9	749450	98.1	764180	100.0
11	6670	0.7	929111	99.3	935781	100.0
Total	**21400**	1.3	**1678561**	**98.7**	**1699961**	**100.0**
12	40399	17.6	189345	82.4	229744	100.0
12	1910	1.0	198106	99.0	200016	100.0
Total	**42309**	**9.8**	**387451**	**90.2**	**429760**	**100.0**
Total Jun.-Dec.	**143769**	**1.4**	**10289324**	**98.6**	**10433093**	**100.0**
Total 2000	**1763999**	**10.9**	**14392276**	**89.1**	**16156275**	**100.0**

All years	Depth stratum 0-140 fm		Depth stratum >140 fm		Total 0-540 fm	
Jan-May	Catch kg	%	Catch kg	%		%
1995	241032	11.17	1915896	88.83	2156928	100.0
1996	906370	9.02	9139909	90.98	10046279	100.0
1997	238872	7.14	3106253	92.86	3345125	100.0
1998	259390	5.93	4113717	94.07	4373107	100.0
1999	859973	16.56	4332771	83.44	5192744	100.0
2000	1620230	28.31	4102952	71.69	5723182	100.0
Jan.-May mean	**687645**	**13.38**	**4451916**	**86.62**	**5139561**	100.0
Jun.-Dec.						
1995	37289	0.50	7407011	99.50	7444300	100.0
1996	82145	0.63	12913476	99.37	12995621	100.0
1997	39954	0.43	9304479	99.57	9344433	100.0
1998	75423	0.61	12274572	99.39	12349995	100.0
1999	825691	6.25	12381976	93.75	13207667	100.0
2000	143769	1.38	10289324	98.62	10433093	100.0
Jun.-Dec. averag	**200712**	**1.83**	**10761806.3**	**98.17**	**10962518**	100.0
Total all years	**888356**	**5.52**	**15213722.7**	**94.48**	**16102079**	100.0

Corrected table 3 of paper SCR Doc. 02/77

Table 3. Total number of shrimp (based on nominal catch of all fleets) caught by age and depth strata in two periods of the year, January-May and June-Dec. The years where there are sufficient sample data are 1996, 1999 and 2000.

Jan-May 1996									
Age group	0-140 fm		141-540 fm		0-540 fm		Saved if 0-140 fm closed		Caught extra in 141-540 fm if closed
	No. (000)	%	No. (000)	%	No. (000)	%	%	No. (000)	No. (000)
2	24149	6,87	65579	2,17	89728	2,66	18,41	16520	7629
3	240679	68,47	1902005	62,95	2142684	63,53	0,91	19399	221280
4	51004	14,51	701229	23,21	752233	22,30	-4,06	-30577	81581
5	24043	6,84	227938	7,54	251981	7,47	-0,98	-2475	26518
6	11635	3,31	124644	4,13	136279	4,04	-2,10	-2866	14501
Total	**351510**	**100,00**	**3021395**	**100,00**	**3372905**	**100,00**			

Jan-May 1999									
Age group	0-140 fm		141-540 fm		0-540 fm		Saved if 0-140 fm closed		Caught extra in 141-540 fm if closed
	No. (000)	%	No. (000)	%	No. (000)	%	%	No. (000)	No. (000)
2	17911	4,32	68914	4,12	86825	4,16	0,96	831	17080
3	150545	36,31	371655	22,22	522200	25,01	11,19	58430	92115
4	110909	26,75	637119	38,08	748028	35,83	-6,28	-47001	157910
5	93268	22,49	426428	25,49	519696	24,90	-2,39	-12422	105690
6	42000	10,13	160660	9,60	202660	9,71	1,08	2180	39820
7			8140	0,49	8140	0,39			
Total	**414633**	**100,00**	**1672916**	**100,00**	**2087549**	**100,00**			

Jan-May 2000									
Age group	0-140 fm		141-540 fm		0-540 fm		Saved if 0-140 fm closed		Caught extra in 141-540 fm if closed
	No. (000)	%	No. (000)	%	No. (000)	%	%	No. (000)	No. (000)
1	1316	0,12	1683	0,08	2999	0,09	16,37	491	825
2	25653	2,34	31656	1,42	57309	1,72	17,68	10134	15519
3	366163	33,41	708372	31,68	1074535	32,25	1,76	18894	347269
4	466145	42,53	814301	36,42	1280446	38,43	5,23	66946	399199
5	194812	17,77	586850	26,25	781662	23,46	-11,88	-92883	287695
6	41988	3,83	92954	4,16	134942	4,05	-2,65	-3581	45569
Total	**1096077**	**100,00**	**2235816**	**100,00**	**3331893**	**100,00**			

Age group	Average saved all years if 0-140 fm closed	
	%	No. (000)
2	12,35	9161
3	4,62	32241
4	-1,71	-3544
5	-5,09	-35927
6	-1,23	-1422

Corrected table 4 of paper SCR Doc. 77.
Table 4. Total number of shrimp (based on nominal catch of all fleets) caught by age and depth strata in June-Dec. The years where there are sufficient sample data are 1996, 1999 and 2000.

Jun.-Dec. 1996									
Age group	0-140 fm		141-540 fm		0-540 fm		Saved if 0-140 fm closed		Caught extra in 141-540 fm if closed
	No. (000)	%	No. (000)	%	No. (000)	%	%	No. (000)	No. (000)
2	6788	20,80	448647	10,43	455435	10,51	0,74	3384	3404
3	19581	60,01	2667530	62,02	2687111	62,00	-0,02	-656	20237
4	5140	15,75	941697	21,89	946837	21,85	-0,21	-2004	7144
5	871	2,67	161196	3,75	162067	3,74	-0,22	-352	1223
6	251	0,77	82083	1,91	82334	1,90	-0,45	-372	623
Total	**32631**	**100,00**	**4301153**	**100,00**	**4333784**	**100,00**			

Jun-Dec. 1999									
Age group	0-140 fm		141-540 fm		0-540 fm		Saved if 0-140 fm closed		Caught extra in 141-540 fm if closed
	No. (000)	%	No. (000)	%	No. (000)	%	%	No. (000)	No. (000)
2	29452	8,01	241159	5,30	270611	5,49	3,69	9981	19471
3	161525	43,93	1326098	29,12	1487623	30,18	3,66	54458	107067
4	83502	22,71	1313424	28,84	1396926	28,34	-1,61	-22541	106043
5	75523	20,54	1222327	26,84	1297850	26,33	-1,78	-23165	98688
6	17686	4,81	451078	9,90	468764	9,51	-4,00	-18733	36419
7			7887	0,17	7887	0,16			
Total	**367688**	**100,00**	**4554086**	**100,00**	**4929661**	**100,00**			

Jun-Dec. 2000									
Age group	0-140 fm		141-540 fm		0-540 fm		Saved if 0-140 fm closed		Caught extra in 141-540 fm if closed
	No. (000)	%	No. (000)	%	No. (000)	%	%	No. (000)	No. (000)
1	0	0,00	0	0,00	0	0,00			
2	8165	9,52	130040	2,48	138205	2,59	4,37	6041	2124
3	25028	29,18	1390634	26,49	1415662	26,53	0,16	2313	22715
4	36770	42,87	2240670	42,68	2277440	42,68	0,01	169	36601
5	13054	15,22	1361521	25,93	1374575	25,76	-0,67	-9186	22240
6	2745	3,20	127455	2,43	130200	2,44	0,51	663	2082
Total	**85762**	**100,00**	**5250320**	**100,00**	**5336082**	**100,00**			

Age group	Average saved all years if 0-140 fm closed	
	%	No. (000)
2	2,93	6469
3	1,27	18705
4	-0,61	-8125
5	-0,89	-10901
6	-1,31	-6147

Table 5. Percentages and number in the length class <18 mm by three depth strata. The number of shrimp. saved if the shallow area was closed and the same total no. of shrimp was caught in the area 141-540 fm.

Month/year	0-140 fm <18 %	0-140 fm Total no. All lengths	0-140 fm <18 No. (000)	141-540 fm <18 %	141-540 fm Total no. All lengths	141-540 fm <18 No. (000)	0-540 fm <18 %	0-540 fm Total No. all lengths	0-540 fm <18 No. (000)	0-140 fm closed <18 mm saved %	0-140 fm closed <18 mm saved No. (000)	Caught extra in 141-540 if closed No. (000)
Jan-May 1996	13.35	352922	47115	6.25	3031532	189471	6.85	3384454	231835	0.74	25057	22058
Jan-May 1999	41.87	414653	173615	22.59	1672896	377907	25.14	2087549	524810	3.83	79945	93670
Jan-May 2000	42.29	1096105	463543	26.26	2235536	587052	29.40	3331641	979502	5.27	175706	287837
Average Jan.-May	**32.50**	**621227**	**228091**	**18.37**	**2313321**	**384810**	**20.46**	**2934548**	**578716**	**3.28**	**93569**	**134522**
Jun.-Dec 1996	22.23	32631	7254	10.59	4301153	455492	10.64	4333784	461115	0.09	3798	3456
Jun.-Dec 1999	22.99	367688	84531	12.95	4561973	590776	13.09	4929661	645293	0.75	36916	47616
Jun.-Dec 2000	18.44	85762	15815	8.39	5250320	440502	8.67	5336082	462638	0.16	8619	7195
Average Jun.-Dec.	**21.22**	**162027**	**35867**	**10.64**	**4704482**	**495590**	**10.80**	**4866509**	**523015**	**0.33**	**16444**	**19422**

Table 6. Percentages and number in the length class <20mm by three depth strata. The number of shrimp. saved if the shallow area was closed and the same total no. of shrimp was caught in the area 141-540 fm.

Month/year	0-140 fm <20 mm %	0-140 fm Total no. All lengths	0-140 fm <20 mm No. (000)	141-540 fm <20 mm %	141-540 fm Total no. All lengths	141-540 fm <20 mm No. (000)	0-540 fm <20 mm %	0-540 fm Total No. all lengths	0-540 fm <20 mm No. (000)	0-140 fm closed <20 mm saved %	0-140 fm closed <20 mm saved No. (000)	Caught extra in 141-540 if closed No. (000)
Jan-May 1996	48.01	352922	169438	35.17	3031532	1066190	36.23	3384454	1226188	1.34	45315	124123
Jan-May 1999	48.89	414653	202724	33.66	1672896	563097	35.67	2087549	744629	3.03	63152	139572
Jan-May 2000	59.01	1096105	646812	46.29	2235536	1034830	48.64	3331641	1620510	4.18	139425	507387
Average Jan.-May	**51.97**	**621227**	**339658**	**38.37**	**2313321**	**888039**	**40.18**	**2934548**	**1197109**	**2.85**	**82630**	**257027**
Jun.-Dec 1996	38.91	32631	12697	24.25	4301153	1043030	24.32	4333784	1053976	0.11	4784	7913
Jun.-Dec 1999	52.74	367688	193919	34.53	4561973	1575249	34.76	4929661	1713550	1.36	66956	126963
Jun.-Dec 2000	46.36	85762	39759	32.72	5250320	1717905	33.09	5336082	1765710	0.22	11698	28061
Average Jun.-Dec.	**46.00**	**162027**	**82125**	**30.50**	**4704482**	**1445395**	**30.72**	**4866509**	**1511079**	**0.56**	**27813**	**54312**

Table 7 . Percentages caught of ages 1, 2 and 3 years by depth strata

January - May

	1 year			2 years			3 years		
	0-140 fm	141-540fm	Proportion	0-140 fm	141-540fm	Proportion	0-140 fm	141-540fm	Proportion
1996				6,87	2,17	3,17	68,47	62,95	1,09
1999				4,32	4,12	1,05	36,31	22,22	1,63
2000	0,12	0,08	1,50	2,34	1,42	1,65	33,41	31,68	1,05
2001				9,42	4,62	2,04	17,75	13,31	1,33
Average	0,12	0,08	1,50	5,74	3,08	1,98	38,99	32,54	1,28

June - December

	1 year			2 years			3 years		
	0-140 fm	141-540fm	Proportion	0-140 fm	141-540fm	Proportion	0-140 fm	141-540fm	Proportion
1996				20,80	10,43	1,99	60,01	62,02	0,97
1999				8,01	5,30	1,51	43,93	29,12	1,51
2000				9,52	2,48	3,84	29,18	26,49	1,10
2001				19,45	8,82	2,21	17,23	12,05	1,43
Average	0	0	0,00	14,45	6,76	2,39	37,59	32,42	1,25

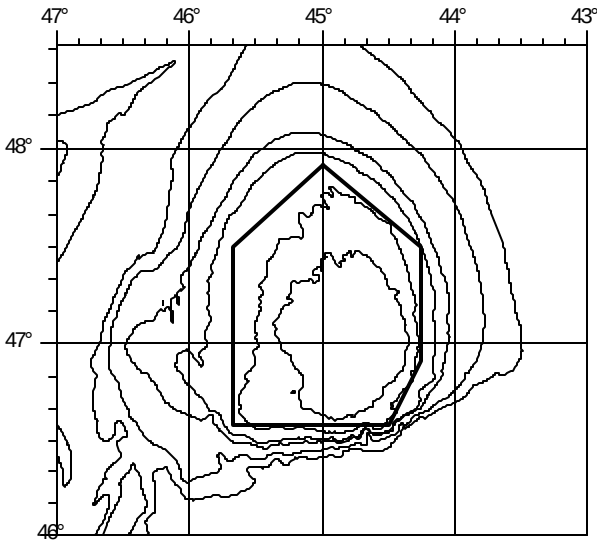

Fig. 1 Map of Flemish Cap with closed area (thick lines). Depth contours are 200 m, 250 m (about 140fm), 300m, 350 m, 600 m and 1000 m.

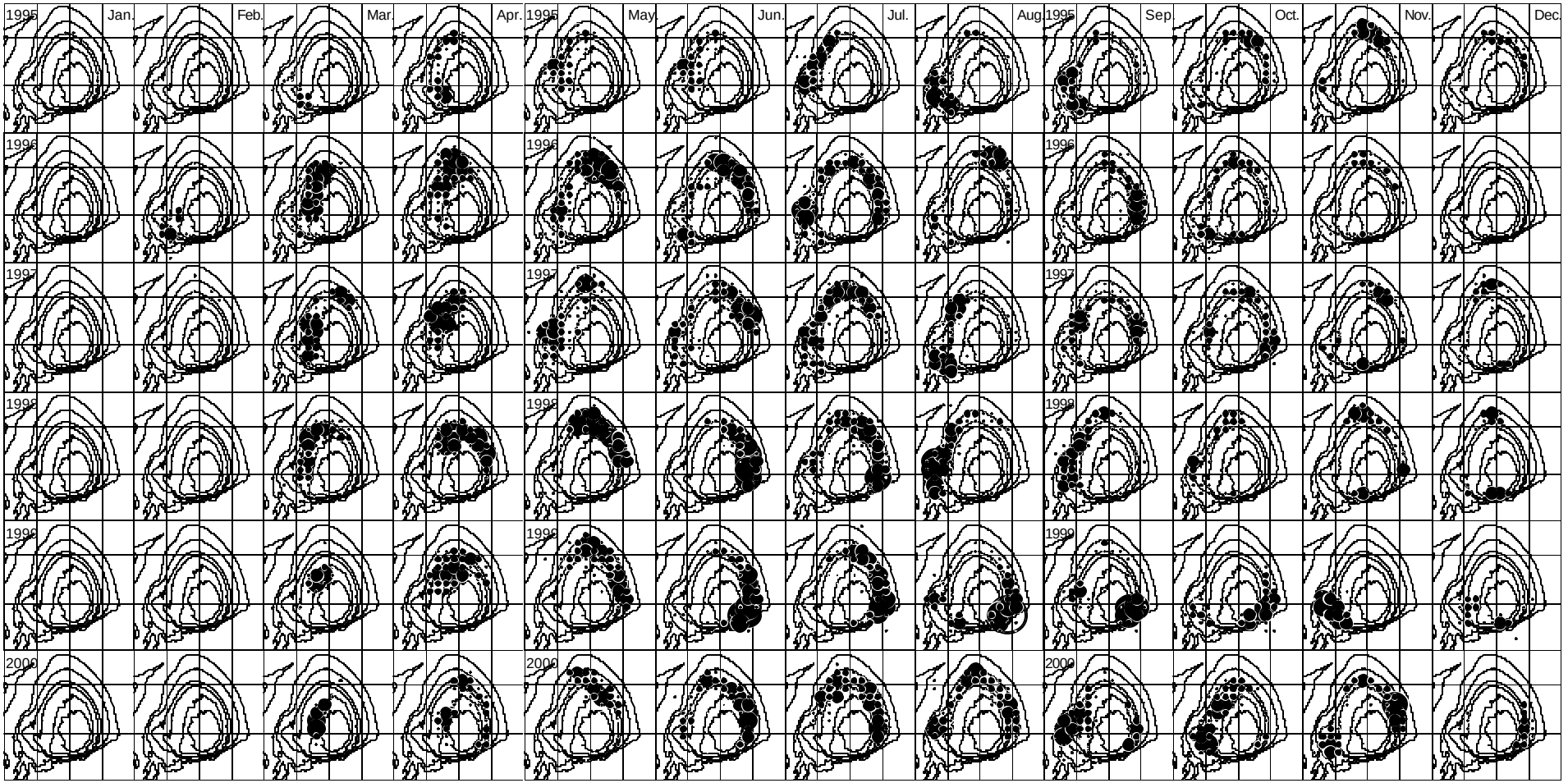

Fig. 2. Geographical distribution of Faroese catches of shrimp by year and month in the period 1995-2000. Depth contours: 200 m, 250 m, 300 m, 350 m, 600 m and 1 000 m.

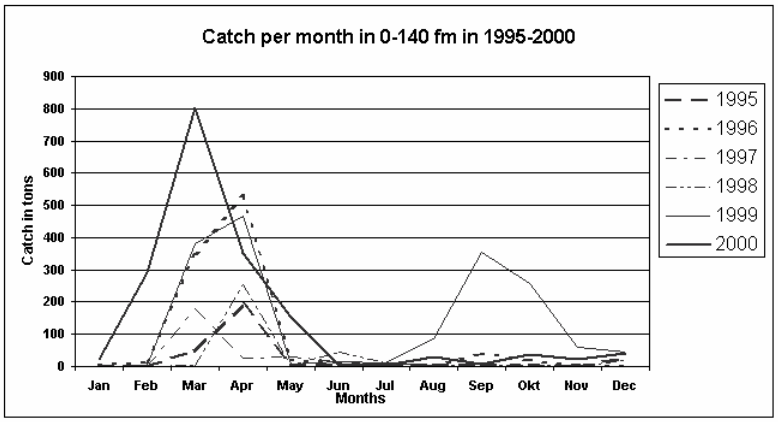

Figure 3. Catch by months in the depth stratum 0-14 fathoms in different years.

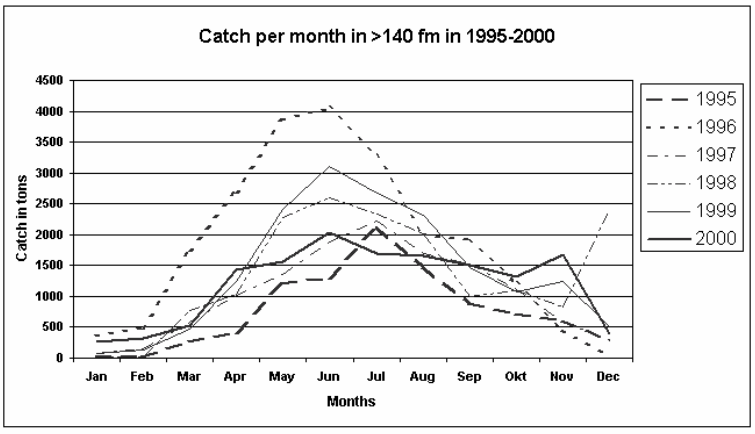

Figure 4. Catch (tons) by months in the stratum > 140 fathoms in different years.

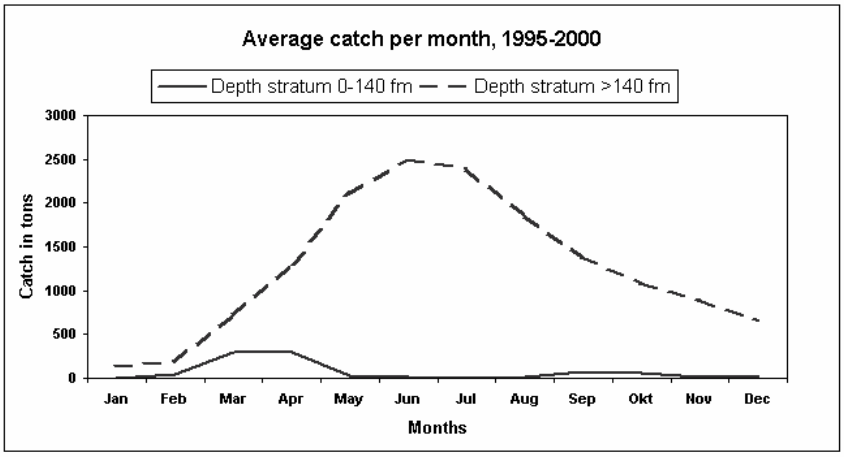

Figure 5. Average catch in tons for all 6 years in two depth strata.

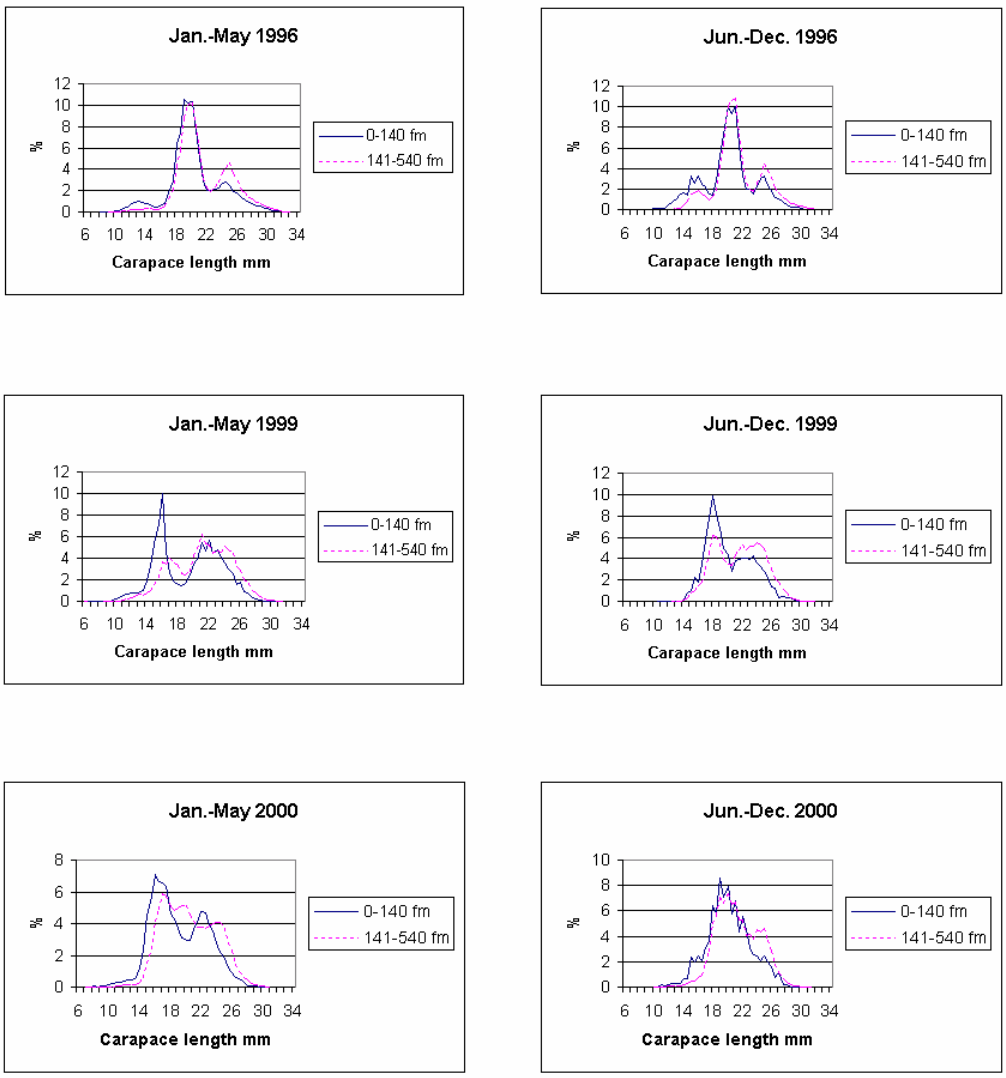

Figure 6. Length frequency distributions of shrimp at two depth strata in two periods of the year. The data of three years 1996, 1999 and 2000 are shown here.

Appendix 1. The catch data from table 2 (SCR Doc. 02/77) which are logbook data from Iceland and Faroe Islands by two depth strata, total for all depths and two periods of the year are here raised to the nominal catch of all nations fishing at Flemish Cap in the years 1995-2000. At the far right side is the percentage covered by the log books.

	1995					1995			
		Catch kg					Catch kg		
		logs	**All nations**				logs	**All nations**	**Nominal catch**
					Jan-May	0-140 fm	241032	**840266**	**33 471 tons**
Jan-May	0-540 fm	2156928	**7519302**			141-540 fm	1915896	**6679037**	
					Jun-Dec	0-140 fm	37289	**129994**	
Jun-Dec	0-540 fm	7444300	**25951698**			141-540 fm	7407011	**25821704**	
									% by logbooks
Total		9601228	**33471000**		Total		9601228	**33471000**	**28,7**
	1996					1996			
									Nominal catch
					Jan-May	0-140 fm	906370	**1899916**	**48 300 tons**
Jan-May	0-540 fm	10046279	**21058822**			141-540 fm	9139909	**19158906**	
					Jun-Dec	0-140 fm	82145	**172191**	
Jun-Dec	0-540 fm	12995621	**27241178**			141-540 fm	12913476	**27068987**	
									% by logbooks
Total		23041900	**48300000**		Total		23041900	**48300000**	**47,7**
	1997					1997			
									Nominal catch
					Jan-May	0-140 fm	238872	**461501**	**24 675 tons**
Jan-May	0-540 fm	3427294	**6621538**			141-540 fm	3188422	**6160037**	
					Jun-Dec	0-140 fm	39954	**77191**	
Jun-Dec	0-540 fm	9344433	**18053462**			141-540 fm	9304479	**17976271**	
									% by logbooks
Total		12771727	**24675000**		Total		12771727	**24675000**	**51,8**
	1998					1998			
									Nominal catch
					Jan-May	0-140 fm	259390	**479708**	**30 308 tons**
Jan-May	0-540 fm	4373107	**8087490**			141-540 fm	4113717	**7607782**	
					Jun-Dec	0-140 fm	75423	**139485**	
Jun-Dec	0-540 fm	12349995	**22839703**			141-540 fm	12274572	**22700218**	
									% by logbooks
Total		16723102	**30927193**		Total		16723102	**30927192,9**	**54,1**
	1999					1999			
									Nominal catch
					Jan-May	0-140 fm	859973	**2030145**	**43 438 tons**
Jan-May	0-540 fm	5192744	**12258553**			141-540 fm	4332771	**10228408**	
					Jun-Dec	0-140 fm	825691	**1949215**	
Jun-Dec	0-540 fm	13207667	**31179447**			141-540 fm	12381976	**29230232**	
									% by logbooks
Total		18400411	**43438000**		Total		18400411	**43438000**	**42,4**
	2000					2000			
									Nominal catch
					Jan-May	0-140 fm	1620230	**5036708**	**50 224 tons**
Jan-May	0-540 fm	5723182	**17791297**			141-540 fm	4102952	**12754590**	
					Jun-Dec	0-140 fm	143769	**446926**	
Jun-Dec	0-540 fm	10433093	**32432703**			141-540 fm	10289324	**31985777**	
									% by logbooks
Total		16156275	**50224000**		Total		16156275	**50224000**	**32,2**

Appendix 2. The calculation of number of shrimp caught per age group and depth strata based on nominal catch as calculated in Appendix 1.
Weight is calculated from 2 different length/weight relationsships.

	Jan-May 0-140 fm		1996			Nominal catch				
						1899916	kg			
Sex group	Age gr.		Mean	Weight	Weight*prop.	Nos.(000)	Weight		**Age**	**No. per age group**
		Prop.	Length	g			kg			**times 1000**
Males	1					0			**1**	**0,0000**
	2	0,0678	13,058	1,289	0,0874	23832	30730		**2**	**24149**
	3	0,6228	19,284	4,213	2,6241	218921	922384		**3**	**240679**
	4					0	0		**4**	**51004**
						0			**5**	**24043**
Primiparous	4	0,0578	20,894	5,375	0,3107	20317	109208		**6**	**11635**
females	5	0,0878	24,304	8,507	0,7469	30863	262553			
						0	0		**Total**	**351511**
Multiparous	2	0,0009	16,405	2,953	0,0027	316	934			
females	3	0,0041	20,190	5,256	0,0216	1441	7575			
	4	0,0573	23,154	7,690	0,4406	20142	154889			
	5	0,0684	25,880	10,476	0,7166	24043	251886			
	6	0,0331	28,526	13,729	0,4544	11635	159743			
	Total	1,0000			5,4050	351511	1899902			
	Jan-May 0-540 fm		1996			Nominal catch				
						21058822	kg		**Age**	**No. per age group**
	Age gr.		Mean Le	Weight	Weight*prop.	No (000)	Weight			**times 1000**
		Prop.		g			kg			
									1	**0,0000**
Males	1					0			**2**	**89728**
	2	0,0262	13,654	1,477	0,0387	88379	130501		**3**	**2142684**
	3	0,5768	19,547	4,390	2,5323	1945687	8542089		**4**	**752233**
	4					0	0		**5**	**251981**
						0			**6**	**136279**
Primiparous	3	0,0563	21,154	5,581	0,3142	189914	1059873			
females	4	0,1876	24,656	8,887	1,6672	632820	5623807		**Total**	**3372906**
					0,0000	0	0			
Multiparous	2	0,0004	17,106	3,317	0,0013	1349	4475			
females	3	0,0021	20,476	5,466	0,0115	7084	38717			
	4	0,0354	23,404	7,923	0,2805	119413	946093			
	5	0,0747	26,368	11,034	0,8243	251981	2780453			
	6	0,0404	28,862	14,183	0,5730	136279	1932906			
	Total	0,9999			6,2429	3372906	21058915			
	Jun.-Dec. 0-140 fm		1996			Nominal catch				
						172191	kg		**Age**	**No. per age group**
	Age gr.		Mean Le	Weight	Weight*prop.	No (000)	Weight			**times 1000**
		Prop.		g			kg			
Males	1					0			**1**	**0,0000**
	2	0,2051	15,136	2,019	0,4141	6693	13515		**2**	**6788**
	3	0,5435	20,169	4,828	2,6243	17737	85641		**3**	**19581**
	4					0	0		**4**	**5140**
						0			**5**	**871**
Primiparous	3	0,0377	22,111	6,383	0,2407	1230	7854		**6**	**251**
females	4	0,0879	25,012	9,282	0,8159	2869	26627			
					0,0000	0	0		**Total**	**32631**
Multiparous	2	0,0029	18,286	3,992	0,0116	95	378			
females	3	0,0188	21,792	6,498	0,1222	614	3987			
	4	0,0696	24,535	9,033	0,6287	2271	20516			
	5	0,0267	26,900	11,664	0,3114	871	10163			
	6	0,0077	28,709	13,976	0,1076	251	3512			
	7									
	Total	0,9999			5,2764	32631	172192			
	Jun.-Dec. 0-540 fm		1996			Nominal catch				
						27241178	kg			
	Age gr.		Mean Le	Weight	Weight*prop.	No (000)	Weight		**Age**	**No. per age group**
		Prop.		g			kg			**times 1000**
Males	1					0			**1**	**0,0000**
	2	0,1039	15,791	2,296	0,2386	450235	1033928		**2**	**455435**
	3	0,5656	20,467	5,048	2,8554	2450943	12373305		**3**	**2687111**
	4					0	0		**4**	**946837**
						0			**5**	**162067**
Primiparous	3	0,0346	21,906	6,205	0,2147	149934	930403		**6**	**82334**
females	4	0,0782	24,962	9,226	0,7215	338868	3126432			
					0,0000	0	0		**Total**	**4333784**
Multiparous	2	0,0012	18,262	3,977	0,0048	5200	20681			
females	3	0,0199	22,432	7,042	0,1401	86234	607272			
	4	0,1403	25,248	9,781	1,3723	607969	5946522			
	5	0,0374	27,359	12,225	0,4572	162067	1981321			
	6	0,0190	29,330	14,832	0,2818	82334	1221140			
	7									
	Total	1,0001			6,2864	4333784	27241002			

Appendix 2 continued for year 1999

Jan-May 0-140 fm			1999		Nominal Catch				
						2030145	kg		
Sex group	Age gr.		Mean Le	Weight	Weight* prop.	No (000)	Weight	**Age**	**No. per age group**
		Prop.		g			kg		**times 1000**
Males	2	0,0432	11,829	0,955	0,0413	17911	17106	**1**	
	3	0,3601	15,630	2,226	0,8016	149302	332352	**2**	**17911**
	4	0,0632	18,787	3,892	0,2460	26203	101987	**3**	**150545**
						0	0	**4**	**110909**
						0		**5**	**93288**
Primiparous	4	0,1627	20,808	5,308	0,8636	67457	358060	**6**	**42000**
females	5					0			
					0,0000	0	0	**Total**	**414653**
Multiparous	3	0,0030	17,187	3,360	0,0101	1244	4180		
females	4	0,0416	20,871	5,763	0,2398	17248	99408		
	5	0,2250	22,945	7,499	1,6872	93288	699536		
	6	0,1013	25,396	9,941	1,0070	42000	417526		
	Total	1,0001			4,8965	414653	2030155		

Jan-May 0-540 fm			1999		Nominal Catch				
						12258553	kg		
	Age gr.		Mean Le	Weight	Weight* prop.	No (000)	Weight	**Age**	**No. per age group**
		Prop.		g			kg		**times 1000**
Males	2	0,0416	13,023	1,279	0,0532	86825	111046	**1**	
	3	0,2481	16,600	2,673	0,6631	517817	1383966	**2**	**86825**
	4	0,2390	20,682	5,211	1,2455	498824	2599459	**3**	**522200**
						0	0	**4**	**748028**
						0		**5**	**519696**
Primiparous	4	0,0896	21,402	5,782	0,5181	187007	1081256	**6**	**202660**
females	5	0,1399	24,175	8,371	1,1711	291990	2444174	**7**	**8140**
					0,0000	0	0	**Total**	**2087548**
Multiparous	3	0,0021	17,931	3,780	0,0079	4383	16568		
females	4	0,0298	21,700	6,422	0,1914	62196	399435		
	5	0,1091	23,865	8,364	0,9125	227706	1904542		
	6	0,0971	26,221	10,864	1,0549	202660	2201767		
	7	0,0039	28,937	14,286	0,0557	8140	116286		
	Total	1,0002			5,8734	2087548	12258499		

Jun.-Dec. 0-140 fm			1999		Nominal Catch				
						1949215	kg		
	Age gr.		Mean Le	Weight	Weight* prop.	No (000)	Weight	**Age**	**No. per age group**
		Prop.		g			kg		**times 1000**
Males	1					0		**1**	**0,0000**
	2	0,0801	15,731	2,270	0,1818	29452	66856	**2**	**29452**
	3	0,4345	18,139	3,499	1,5201	159760	558929	**3**	**161525**
	4	0,0984	20,733	5,250	0,5166	36180	189957	**4**	**83502**
						0		**5**	**75523**
Primiparous	4	0,0199	21,650	5,988	0,1192	7317	43812	**6**	**17686**
females	5	0,0071	24,186	8,382	0,0595	2611	21883		
					0,0000	0	0	**Total**	**367686**
Multiparous	3	0,0048	17,667	3,628	0,0174	1765	6402		
females	4	0,1088	21,548	6,298	0,6852	40004	251945		
	5	0,1983	23,924	8,422	1,6700	72912	614038		
	6	0,0481	26,379	11,047	0,5314	17686	195377		
	Total	1,0000			5,3013	367686	1949200		

Jun.-Dec. 0-540 fm			1999		Nominal Catch				
						31179447	kg		
	Age gr.		Mean Le	Weight	Weight* prop.	No (000)	Weight	**Age**	**No. per age group**
		Prop.		g			kg		**times 1000**
Males	1					0		**1**	**0,0000**
	2	0,0549	15,885	2,338	0,1284	270611	632739	**2**	**270611**
	3	0,2995	18,375	3,639	1,0898	1476286	5371674	**3**	**1487623**
	4	0,2030	21,459	5,829	1,1832	1000621	5832415	**4**	**1396926**
						0		**5**	**1297850**
Primiparous	4	0,0477	22,460	6,694	0,3193	235121	1573998	**6**	**468764**
females	5	0,1017	24,350	8,556	0,8702	501296	4289165	**7**	**7887**
					0,0000	0	0	**Total**	**4929660**
Multiparous	3	0,0023	18,733	4,269	0,0098	11337	48395		
females	4	0,0327	22,170	6,816	0,2229	161184	1098635		
	5	0,1616	24,298	8,792	1,4209	796553	7003655		
	6	0,0951	26,433	11,110	1,0566	468764	5208010		
	7	0,0016	29,665	15,307	0,0245	7887	120721		
	Total	1,0001			6,3255	4929660	31179407		

Appendix 2 continued for year 2000

Jan-May 0-140 fm			**2000**			Nominal catch			
						5036708	kg		
	Age gr.	Prop.	Mean length	Weight	Weight*prop.	No (000)	Weight	**Age**	**No. per age group**
			mm	g			kg		**times 1000**
Males	1	0,0012	8,000	0,291	0,0003	1316	383	**1**	**1316**
	2	0,0234	11,912	0,976	0,0228	25653	25026	**2**	**25653**
	3	0,3213	15,832	2,315	0,7437	352240	815284	**3**	**366163**
	4	0,2026	18,250	3,564	0,7221	222109	791595	**4**	**466145**
								5	**194812**
Primiparous	4	0,0721	19,246	4,188	0,3020	79043	331044	**6**	**41988**
females	5	0,0230	23,466	7,647	0,1759	25215	192823		
					0,0000			**Total**	**1096076**
Multiparous	3	0,0127	18,326	4,016	0,0510	13923	55915		
females	4	0,1505	21,555	6,304	0,9487	164992	1040052		
	5	0,1547	23,405	7,924	1,2258	169597	1343854		
	6	0,0383	25,899	10,498	0,4021	41988	440779		
	Total	0,9998			4,5943	1096076	5036756		

Jan-May 0-540 fm			2000			Nominal catch			
						17791297	kg		
	Age gr.	Prop.	Mean Le	Weight	Weight*prop.	No (000)	Weight	**Age**	**No. per age group**
				g			kg		**times 1000**
Males	1	0,0009	8,000	0,291	0,0003	2999	873	**1**	**2999**
	2	0,0172	13,005	1,274	0,0219	57309	72988	**2**	**57309**
	3	0,3174	16,714	2,729	0,8661	1057542	2885850	**3**	**1074535**
	4	0,2218	19,778	4,550	1,0091	739013	3362320	**4**	**1280446**
								5	**781662**
Primiparous	4	0,0791	20,452	5,037	0,3984	263553	1327555	**6**	**134942**
females	5	0,0956	23,850	8,034	0,7680	318529	2558950		
					0,0000			**Total**	**3331891**
Multiparous	3	0,0051	18,273	3,984	0,0203	16993	67696		
females	4	0,0834	21,978	6,653	0,5549	277880	1848821		
	5	0,1390	24,392	8,887	1,2353	463133	4115985		
	6	0,0405	26,753	11,488	0,4653	134942	1550178		
	Total	1,0000			5,3397	3331891	17791215		

Jun.-Dec. 0-140 fm			2000			Nominal catch			
						446926	kg		
	Age gr.	Prop.	Mean Le	Weight	Weight*prop.	No (000)	Weight	**Age**	**No. per age group**
				g			kg		**times 1000**
Males	1	0,0000						**1**	**0**
	2	0,0952	14,936	1,939	0,1846	8165	15835	**2**	**8165**
	3	0,2701	18,146	3,503	0,9461	23167	81145	**3**	**25028**
	4	0,2523	20,505	5,077	1,2809	21640	109864	**4**	**36770**
								5	**13054**
	4	0,0652	19,682	4,483	0,2923	5592	25070	**6**	**2745**
	5	0,0652	24,060	8,250	0,5379	5592	46138		
					0,0000		0	**Total**	**85762**
	3	0,0217	20,144	5,223	0,1133	1861	9721		
	4	0,1112	21,989	6,663	0,7409	9538	63546		
	5	0,0870	24,328	8,823	0,7676	7462	65835		
	6	0,0320	26,207	10,848	0,3471	2745	29775		
	Total	0,9999			5,2107	85762	446929		

Jun.-Dec. 0-540 fm			2000			Nominal catch			
						32432703	kg		
	Age gr.	Prop.	Mean Le	Weight	Weight*prop.	No (000)	Weight	**Age**	**No. per age group**
				g			kg		**times 1000**
Males	1	0,0000						**1**	**0**
	2	0,0259	14,824	1,895	0,0491	138205	261954	**2**	**138205**
	3	0,2599	18,399	3,653	0,9494	1386848	5066285	**3**	**1415662**
	4	0,2875	20,653	5,189	1,4918	1534123	7960585	**4**	**2277440**
								5	**1374575**
	4	0,0553	21,560	5,913	0,3270	295085	1744696	**6**	**130200**
	5	0,0817	24,597	8,822	0,7208	435958	3846223		
					0,0000			**Total**	**5336081**
	3	0,0054	19,833	5,002	0,0270	28815	144131		
	4	0,0840	22,389	7,005	0,5884	448231	3139735		
	5	0,1759	24,790	9,296	1,6352	938617	8725361		
	6	0,0244	27,059	11,857	0,2893	130200	1543722		
	Total	1,0000			6,0780	5336081	32432691		