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The Icelandic Shrimp Fishery (*Pandalus borealis*) in the Denmark Strait in 2004

by

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Abstract

In this paper there are logbook information on the Icelandic fishery for the years 1990-2004 as well as nominal catches. The nominal catch of Iceland was 400 tons in 2004, as compared to 703 tons in 2003. The unstandardized CPUE is 227 kg/hour in 2004 as compared to 279 kg/hour in 2003.

Introduction

In this paper there is an account of logbook information for the Icelandic fishery taking place on the eastern side of the midline between Greenland and Iceland.
The biological samples are also presented.

Material and Methods

For most of the catch data there are logbook data which include catch and effort. Not all skippers send in the logbooks, but information on landings can be obtained from the Fisheries directorate. Thus the equivalent to the nominal catch can be calculated for the effort. This is done by adding up all catch and effort by two periods of the year from the logbooks and calculating the CPUE. Wherupon the nominal catch for the same period is divided by the CPUE to get the corrected effort. The effort of twin trawls was doubled before combining with the effort of the single trawls.

The measuring of the shrimp was carried out using sliding calipers and measuring the carapace from the eye socket to the hind end of the carapace middorsally to the nearest half mm. After this every specimen in a length class is gouped by sexual character as done by Rasmussen (1953) as well as detecting the presence or absence of sternal spines (McCrary 1971). The sex groups detected are 9. Later the 9 sex groups are combined and grouped together in the three main groups males, primiparous females (with sternal spines) and multiparous females (without sternal spines). In the group primiparous females there are also transitionals.

Catch and Effort Data

In 2004 the fishery was carried out in the period April through June. But most of the catch was taken in April - May as usual The total annual catch was only 400 tons in 2004 (Table 1) compared to 700 tons I 2003. The mean unstandardized CPUE for the year 2002 was the highest ever for Iceland, namely 384 but fell to 279 kg/hr in 2003 and 227 in 2004. Before that the highest catch was in 1995, namely 307 kg/hour. In 1996 and 1997 the mean CPUE was 240 and 238 kg/hour, which was also rather high. The CPUE was lower in 1998, namely 175 kg/hour. After this the density of shrimp fell gradually to 153 kg/hour in 1999. After that there has been hardly any fishery until 2002. As usual shrimpers went to the traditional banks in 2000 and 2001 on the east side of the midline but the shrimp appeared not to be available.

Commercial Samples

The samples were obtained from shrimpers. The proportion of males was 46% in 2004, 55% in 2003 as compared to 50% in 2002. This is similar to most years except in 1996 when the proportion of males was very high, namely 70%. The percentage of females was 45% in 2003 as compared to 50% in 2002, 30% in 1996, 50% in 1997, 40% in 1998 and 50% in 1999. In 2000 and 2001 there were no samples obtained as the fishery was at a very low level.

Of the multiparous females 64% were carrying eggs in May 2004 as compared to 54% in May 2003, 45 % in May 2002 and 72% in 1998. As pointed out before almost all females will spawn every second year as hinted by the high percentage of mature females not carrying eggs in April and May. As a comparison in 1996 and 1997 the proportions not carrying eggs were 28% and 17% respectively. Of the eggbearing females only 5% in May 2004 and 7% in April 2004 were now developing headroes, i.e. preparing to spawn without resting a year. In 2003 no eggbearing females prepared spawning in the same year.

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Table 1. Catch rates (kg per hour trawling) and corresponding effort (tr. hrs) and catch (tons) from the shrimp fishery in Denmark Strait, north of 65°N, by Iceland.

	January - June				July - December			
Year	Month	CPUE	Effort	Catch	Month	CPUE	Effort	Catch
1990	Jan	5	8	0.0	Jul	84	40	3.4
	Feb	44	11	0.5	Aug	69	168	11.7
	Apr	12	9	0.1	Sep	65	835	54.2
	Jun	81	2347	190.2	Oct	62	47	2.9
	Subtotal	80	2375	190.8	Subtotal	66	1090	72.2
	Total	80	2538	203.9	Total	66	1165	77.1
1991					Aug	24	9	0.2
	May	252	1536	387.7	Sep	68	64	4.4
	Jun	85	394	33.4	Oct	112	350	39.2
	Total	218	1930	421.1	Total	104	423	43.7
1992	Apr	326	2839	926.0	Jul	110	90	9.9
	May	127	3908	494.7	Sep	17	6	0.1
					Oct	78	13	1.0
	Subtotal	211	6747	1421	Sub total	101	109	11
	Total	211	8232	1733.3	Total	101	169	17.1
1993	Mar	329	688	226.4				
	Apr	193	7296	1405.9	Sep	220	15	3.3
	May	147	4381	644.3	Oct	200	4	0.8
	Jun	114	29	3.3				
	Subtotal	184	12394	2279.9	Subtotal	216	19	4.1
	Total	184	13854	2548.4	Total	216	21	4.6
1994	Feb	364	14	5.1				
	Mar	350	1533	536.2	Aug	179	14	2.5
	Apr	70	86	6.0	Sep	55	56	3.1
	May	265	2045	542.3	Oct	104	77	8
	Jun	149	263	39.2	Nov	90	20	1.8
	Subtotal	286	3941	1128.8	Subtotal	92	167	15.4
	Total	286	5233	1498.9	Total			
1995	Feb	383	1339	513.2				
	Mar	209	983	205.6	Sep	171	7	1.2
	May	10	4	0.0	Oct			
	Subtotal	309	2326	718.8	Subtotal	171	7	1.2
	Total	309	3721	1150.0	Total			
1996	Feb	198	1249	246.8				
	Mar	229	359	82.3	Jul	500	7	3.5
	Apr	341	618	210.9	Aug	164	14	2.3
	May	58	12	0.7	Sep	123	40	4.9
	Subtotal	242	2238	540.7	Subtotal	175	61	10.7
	Total	242	2297	555.0	Total	175	61	10.7
1997 *	Jan	29	7	0.2				
	Feb	245	785	192.5				
	Mar	262	4278	1120.4	Oct	71	236	16.8
	Apr	286	2700	772.1	Nov	14	7	0.1
	May	134	1189	159.5	Dec	108	931	100.1
	Jun	25	8	0.2				
	Subtotal	250	8967	2244.9	Subtotal	100	1174	117.0
	Total	250	10856	2717.8	Total	100	1388	138.3
1998 *	Jan	58	66	3.8				
	Feb	173	314	54.2	Sep	41	17	0.7
	Mar	90	39	3.5	Oct	30	10	0.3
	Apr	219	3507	766.5	Nov	60	243	14.5
	May	130	3148	408.8	Dec	117	47	5.5
	Subtotal	175	7074	1236.8	Subtotal	66	317	21.0
	Total	175	8010	1400.4	Total	66	317	21.0
1999 *	Jan	174	310	54.0				
	Feb	119	114	13.6				
	Mar	311	327	101.6				
	Apr	144	2156	311.0				
	May	122	1107	135.6				
	Jun	100	33	3.3				
	Subtotal	153	4047	619.1				
	Total	153	4896	749.0				

	January - June				July - December			
Year	Month	CPUE	Effort	Catch	Month	CPUE	Effort	Catch
2000	Jan							
	Feb	173	257	44.6	Sep			
	Mar	46	58	2.7	Oct			
	Apr	60	43	2.6	Nov			
	May	47	6	0.3	Dec	280	275.7	77.1
	Subtotal	138	364	50.1	Subtotal	280	275.7	77.1
	Total	138	373	51.4	Total	280	288.5	80.7
2001 *	Jan	25	30	0.8				
	Feb	55	14	0.8	July	100	12	1.2
	Mar	249	22	5.4				
	Apr	104	6	0.6				
	May							
	Subtotal	105	72	7.6	Subtotal	100	12	1.2
	Total	105	73	7.6	Total	100	12	1.2
2002 *	Apr	792	648	513.0				
	May	291	1759	512.4				
	Jun	223	633	140.9	Dec	140.6	9.6	1.35
	Subtotal	384	3040	1166.3				
	Total	384	3206	1230.0				
2003 *	Apr	316	1432	452.7				
	May	230	806	185.7				
	Jun	150	111	16.6				
	Subtotal	279	2349	655.0				
	Total	279	2521	703.0				
2004 *	Apr	81	102	8.2				
	May	242	1432	347.2				
	Jun	174	133	23.0				
	Subtotal	227	1667	378.4				
	Total	227	1808	410.4				

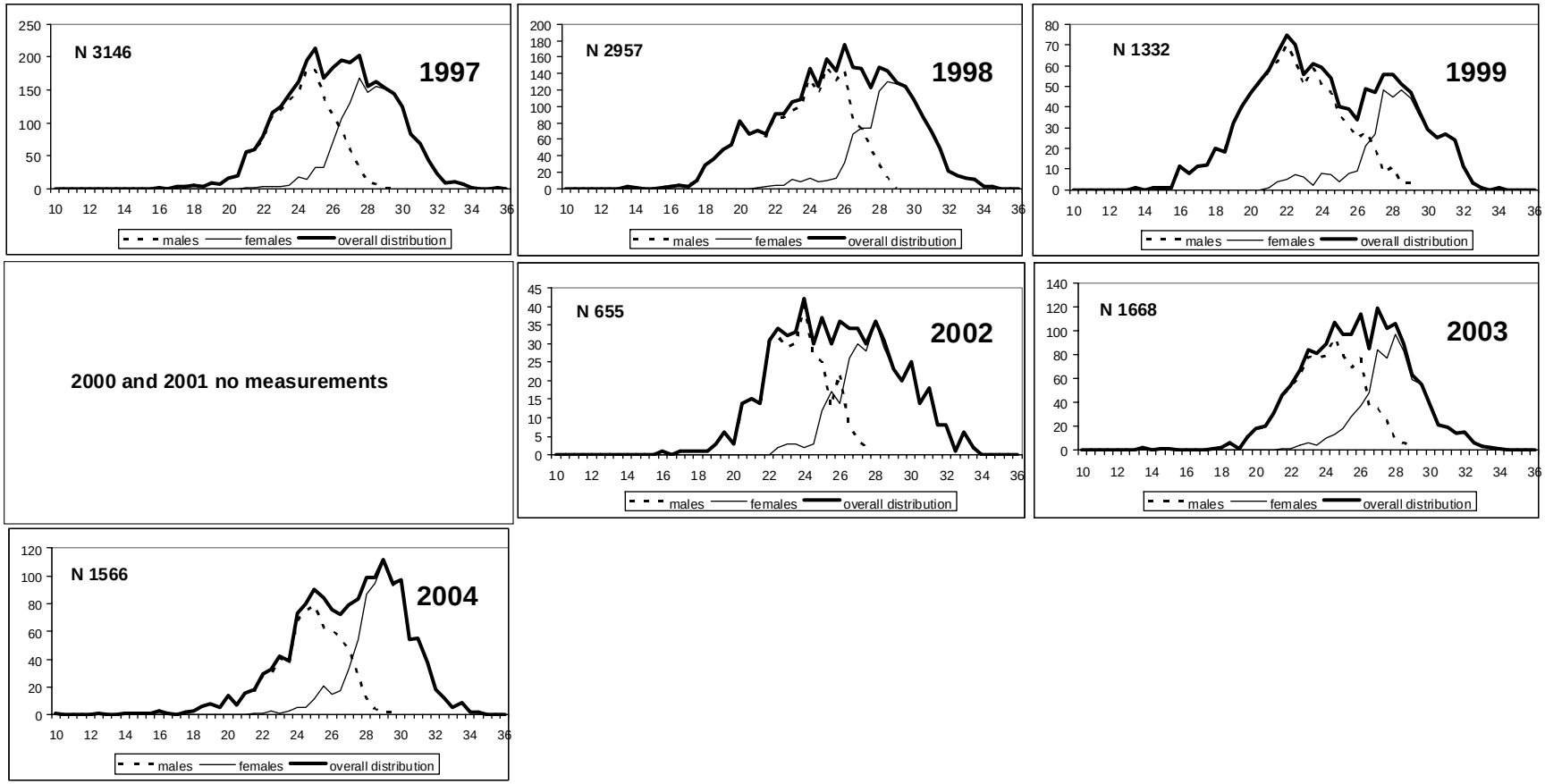

Figure 1. The length frequency distribution of shrimp North of 65 degrees north in the years 1997 to 1999 and a again in 2002 to 2004.