



**SCIENTIFIC COUNCIL MEETING – NOVEMBER 2001**

Young Northern Shrimp (*Pandalus borealis*) Index for Flemish Cap (Division 3M) 1998-2001

by

Árni Nicolajsen<sup>1</sup> and Stefan Brynjolfsson<sup>2</sup>

<sup>1</sup> Fiskirannsóknarstovan, Nóatún 1, Tórshavn, Faroe Islands

<sup>2</sup> Hafrannsóknarstofnin, Skúlagata 4, Reykjavík, Ísland

**Abstract**

Indices for shrimp age 2 caught in larval bag on Flemish Cap in June-July 1998-2001 were estimated to 2532 mill., 5680 mill., 458 mill. and 4377 for 1998, 1999, 2000 and 2001, respectively. Year-classes 1997 and 1999 seem to be at a relatively strong level where as year-class 1998 is comparatively weak.

This paper present the results of a young northern shrimp survey carried out in the period 1998-2001 in connection with the Faroese shrimp survey on Flemish Cap (Nicolajsen, 2001).

**Material and Method**

A laval bag was mounted on the codend by the method used in Icelandic shrimp surveys. The shrimps were measured to the nearest 0.5 mm using Vernier calipers. The length distribution from each sample was divided by area swept for each station to get abundance per unit area (density) at length. Mean density at length was calculated for each strata and multiplied by strata area to get stock in numbers by strata before summing all strata by length. By using an Excel worksheet length distributions were separated into age groups by fitting by eye normal distributions to them.

**Results**

The stock in numbers by length and strata and total for the period 1998-2001 are shown in Tables 1-4, stock in numbers are shown in Table 1 and length distribution for total young northern shrimp stock for this period is shown in Fig. 1. Age distribution is shown in Table 5 and Fig. 2.

**Reference**

NICOLAJSSEN, Á. 2001. Biomass estimate, growth, length and age distribution of the northern shrimp (*Pandalus borealis*) stock on Flemish Cap (NAFO Div. 3M) in June. NAFO SCR 01/188, Serial No. N4578, 18 p.

**Table 1** Young shrimp in numbers (mill.) at length by strata and total, Flemish Cap (NAFO Div. 3M) in July 1998.

STRATA OCL, mm	13	14	15	16	17	18	19	20	21	22	23	26	Total
7.0	0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	0	0	0	0	0	0	0	0	0	0	0	0	0
8.0	0	0	0	0	10	2	0	0	0	0	0	0	11
8.5	0	0	0	2	34	5	0	0	0	0	0	0	41
9.0	0	2	0	0	60	69	0	0	0	0	0	0	130
9.5	0	0	0	2	109	188	0	0	0	0	0	0	299
10.0	2	0	0	4	149	245	0	0	0	0	0	0	399
10.5	2	2	0	11	153	193	0	0	0	3	0	0	364
11.0	2	2	0	20	98	99	0	0	0	0	0	0	220
11.5	0	2	0	16	41	51	0	0	0	0	0	0	110
12.0	0	2	0	34	83	30	0	0	0	0	0	0	149
12.5	4	5	0	42	119	76	0	0	0	0	0	0	245
13.0	17	7	2	47	174	107	0	0	0	0	0	0	354
13.5	19	14	2	55	178	172	0	0	0	0	0	0	439
14.0	26	14	17	55	190	112	0	0	0	0	0	0	414
14.5	49	24	12	44	133	96	2	0	0	0	0	0	360
15.0	15	24	15	28	59	60	2	0	0	0	0	0	203
15.5	21	26	25	18	55	31	4	0	0	0	0	0	180
16.0	11	16	16	4	12	13	0	0	0	0	0	0	71
16.5	6	12	14	4	6	5	0	0	0	0	0	0	46
17.0	6	12	18	5	16	10	0	0	0	0	0	0	66
17.5	10	3	4	17	20	16	2	0	0	0	3	0	74
18.0	33	14	2	16	30	20	2	0	0	0	5	0	121
18.5	26	19	4	16	25	23	2	0	6	0	14	0	136
19.0	21	16	8	25	37	21	4	0	0	0	16	0	148
19.5	8	14	2	6	13	8	2	2	0	0	6	3	63
20.0	8	11	0	11	15	11	2	2	3	0	3	3	68
20.5	2	5	4	2	4	5	0	0	0	0	2	5	28
21.0	0	4	0	0	8	0	2	2	0	10	0	8	33
21.5	0	0	0	0	2	5	2	0	0	3	2	5	19
22.0	0	3	0	0	4	0	2	0	0	7	0	0	16
22.5	0	0	0	0	4	0	2	0	0	0	0	0	6
23.0	2	0	0	0	2	2	0	0	0	0	0	0	5
23.5	0	0	0	0	0	0	0	0	0	0	0	0	0
24.0	0	2	0	0	2	0	0	0	0	3	0	0	7
24.5	0	0	0	0	2	0	0	0	0	0	0	0	2
25.0	0	0	0	0	0	0	0	0	0	0	0	0	0
25.5	2	0	0	0	0	0	0	0	0	0	0	0	2
26.0	0	0	0	0	0	0	0	0	0	0	0	0	0
26.5	0	0	0	0	2	2	0	0	0	0	0	3	6
27.0	0	0	0	0	0	0	0	0	0	0	0	0	0
27.5	0	0	0	0	0	0	0	0	0	0	0	0	0
28.0	0	0	0	0	0	0	0	0	0	0	0	0	0
28.5	0	0	0	0	0	0	0	0	0	0	0	0	0
29.0	0	0	0	0	0	0	0	0	0	0	0	0	0
29.5	0	0	0	0	0	0	0	0	0	0	0	0	0
30.0	0	0	0	0	0	0	0	0	0	0	0	0	0
30.5	0	0	0	0	0	0	0	0	0	0	0	0	0
31.0	0	0	0	0	0	0	0	0	0	0	0	0	0
31.5	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	289	253	144	483	1845	1677	31	5	9	27	50	26	4839

**Table 2.** Young shrimp in numbers (mill.) at length by strata and total, Flemish Cap (NAFO Div. 3M) in July 1999.

STRATA OCL, mm	13	14	15	16	17	18	19	20	21	22	23	Total
7.0	0	0	0	0	2	0	0	0	0	0	0	2
7.5	0	0	0	0	0	0	0	0	0	0	0	0
8.0	2	0	0	10	6	0	0	0	0	0	0	18
8.5	2	0	0	4	11	0	0	0	0	0	0	17
9.0	6	0	0	8	2	8	0	0	0	0	0	24
9.5	10	2	0	8	7	14	0	0	0	0	0	41
10.0	2	4	0	8	42	8	0	0	0	0	0	63
10.5	6	2	0	6	67	16	0	0	0	0	0	96
11.0	2	0	0	0	8	4	0	0	0	0	0	13
11.5	0	2	0	4	4	2	0	0	0	0	0	11
12.0	6	0	0	9	11	7	0	0	0	0	0	33
12.5	4	0	0	30	13	16	0	0	0	0	0	63
13.0	14	2	0	99	72	93	0	0	0	0	0	280
13.5	40	11	2	139	145	151	0	0	0	0	0	487
14.0	72	65	8	249	251	259	0	0	0	7	0	912
14.5	104	80	11	334	246	296	0	0	4	31	0	1106
15.0	134	114	11	339	285	215	0	0	2	37	0	1135
15.5	78	106	15	311	169	147	0	2	0	66	0	894
16.0	54	50	21	329	112	106	2	0	0	59	2	734
16.5	40	34	15	229	72	77	11	5	0	49	0	532
17.0	48	41	17	287	88	85	7	5	2	46	2	626
17.5	22	37	23	339	70	92	13	15	6	77	5	700
18.0	30	35	27	238	65	71	33	24	2	53	2	582
18.5	12	15	13	74	28	51	24	17	15	42	5	296
19.0	12	9	11	30	13	31	4	27	2	22	7	167
19.5	0	0	6	32	4	13	7	12	2	22	3	101
20.0	6	0	4	17	8	7	0	7	0	7	3	60
20.5	0	0	0	23	8	11	0	2	6	7	0	58
21.0	2	7	4	8	8	5	0	2	2	7	3	49
21.5	2	4	0	15	4	7	0	0	6	11	2	51
22.0	2	4	2	2	8	2	0	0	4	2	0	25
22.5	2	7	0	2	2	8	0	0	2	2	0	25
23.0	0	2	0	2	0	0	2	0	0	2	0	8
23.5	0	4	0	2	4	2	2	2	0	2	0	18
24.0	0	2	0	2	2	3	0	5	0	0	2	15
24.5	0	0	0	0	2	0	0	0	0	0	0	2
25.0	0	0	0	0	4	5	0	0	0	2	0	11
25.5	0	0	0	0	2	0	0	0	0	0	0	2
26.0	0	0	0	0	0	0	0	0	0	0	0	0
26.5	0	0	0	0	0	0	0	0	0	0	0	0
27.0	0	0	0	0	0	0	0	0	0	0	0	0
27.5	0	0	0	0	0	0	0	0	0	0	0	0
28.0	0	0	0	0	0	0	0	0	0	0	0	0
28.5	0	0	0	0	0	0	0	0	0	0	0	0
29.0	0	0	0	0	0	0	0	0	0	0	0	0
29.5	0	0	0	0	0	0	0	0	0	0	0	0
30.0	0	0	0	0	0	0	0	0	0	0	0	0
30.5	0	0	0	0	0	0	0	0	0	0	0	0
31.0	0	0	0	0	0	0	0	0	0	0	0	0
31.5	0	0	0	0	0	0	0	0	0	0	0	0
Total	713	639	190	3186	1841	1810	106	127	57	553	35	9257

**Table 3.** Young shrimp in numbers (mill.) at length by strata and total, Flemish Cap (NAFO Div. 3M) in June 2000.

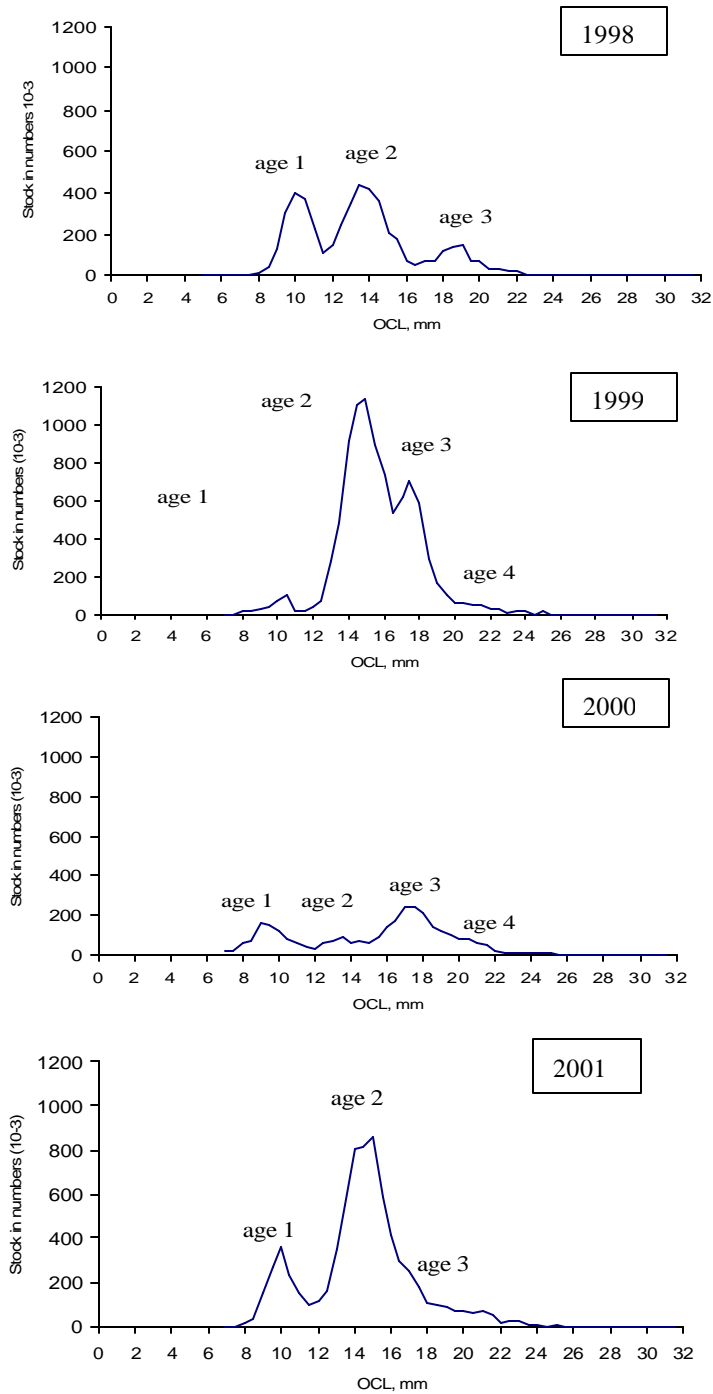
STRATA OCL, mm	13	14	15	16	17	18	19	20	21	22	23	Total
7.0	10	12	0	0	2	1	0	0	0	0	0	25
7.5	11	12	0	0	2	3	0	0	0	0	0	28
8.0	36	23	0	0	2	4	0	0	0	0	0	65
8.5	33	31	0	0	3	9	0	0	0	0	0	75
9.0	69	32	0	3	6	47	0	0	0	0	0	157
9.5	44	26	0	1	3	74	0	0	0	0	0	149
10.0	41	12	0	3	6	57	1	0	2	0	0	122
10.5	20	15	0	3	2	45	0	0	0	0	0	85
11.0	28	3	0	3	2	23	0	0	0	0	0	59
11.5	2	3	0	4	2	31	0	0	0	0	0	41
12.0	8	2	0	10	0	9	0	0	2	0	0	30
12.5	13	2	0	25	0	13	1	0	0	0	0	54
13.0	5	5	0	40	6	20	0	0	0	0	0	76
13.5	16	11	3	32	3	31	0	0	0	0	0	95
14.0	8	8	3	26	3	12	1	0	3	0	0	64
14.5	7	9	10	26	3	12	0	2	0	0	0	68
15.0	5	5	13	27	8	4	0	2	0	0	0	64
15.5	7	5	18	48	3	12	1	0	0	0	0	94
16.0	5	9	36	44	20	22	0	0	0	0	0	136
16.5	16	12	26	51	44	26	0	0	0	0	0	176
17.0	18	17	29	79	44	48	0	0	2	0	0	236
17.5	20	29	18	67	56	50	3	2	0	0	0	244
18.0	26	21	8	48	60	41	1	3	0	0	0	209
18.5	21	17	5	25	42	26	0	2	0	0	0	138
19.0	26	11	3	27	32	15	3	6	0	0	0	122
19.5	10	9	16	12	32	15	1	2	5	2	0	103
20.0	13	9	5	18	13	16	0	2	3	0	0	80
20.5	11	11	5	7	16	23	4	2	0	0	0	80
21.0	5	3	5	6	26	10	3	3	0	3	0	64
21.5	2	2	3	3	18	9	3	8	0	5	3	53
22.0	3	0	3	0	7	3	0	2	2	2	0	21
22.5	2	3	3	1	3	1	0	0	0	2	0	15
23.0	2	0	3	0	0	0	0	0	2	0	0	6
23.5	0	0	3	1	0	3	0	0	0	0	1	8
24.0	0	2	0	1	1	4	0	3	0	0	3	14
24.5	0	0	0	0	0	0	1	0	0	2	1	4
25.0	0	0	0	0	2	3	1	0	0	0	1	7
25.5	2	0	0	0	0	0	0	0	0	0	0	2
26.0	0	0	0	0	0	1	0	0	0	0	0	1
26.5	0	0	0	0	0	0	0	0	0	0	0	0
27.0	0	0	0	0	0	0	0	0	0	2	0	2
27.5	0	0	0	0	0	0	0	0	0	0	0	0
28.0	0	0	0	0	0	0	0	0	0	0	0	0
28.5	0	0	0	0	0	0	0	0	0	0	0	0
29.0	0	0	0	0	0	0	0	0	0	0	0	0
29.5	0	0	0	0	0	0	0	0	0	0	0	0
30.0	0	0	0	0	0	0	0	0	0	0	0	0
30.5	0	0	0	0	0	0	0	0	0	0	0	0
31.0	0	0	0	0	0	0	0	0	0	0	0	0
31.5	0	0	0	0	0	0	0	0	0	0	0	0
Total	544	369	215	644	472	723	26	35	21	15	10	3072

**Table 4.** Young shrimp in numbers (mill.) at length by strata and total, Flemish Cap (NAFO Div. 3M) in June 2001

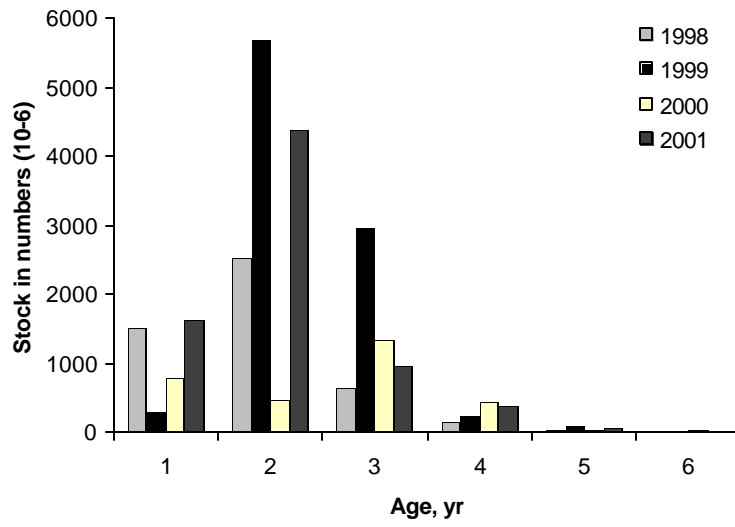
STRATA OCL, mm	13	14	15	16	17	18	19	20	21	22	23	Total
7.0	0	0	0	0	0	0	0	0	0	0	0	0
7.5	2	0	0	0	0	0	0	0	0	0	0	2
8.0	14	0	0	0	0	3	0	0	0	0	0	17
8.5	14	0	0	3	2	21	0	0	0	0	0	40
9.0	42	2	0	13	23	70	0	3	0	0	0	152
9.5	65	2	0	19	41	144	0	0	0	0	0	271
10.0	102	3	2	19	71	161	0	0	0	0	0	357
10.5	74	0	2	13	32	111	0	0	0	0	0	231
11.0	27	0	0	5	30	87	0	0	0	0	0	149
11.5	23	0	0	3	38	37	0	0	0	0	0	102
12.0	28	0	0	10	33	45	0	0	0	0	0	115
12.5	47	2	0	27	12	73	0	0	0	0	0	161
13.0	85	2	0	60	38	166	0	0	0	0	0	351
13.5	104	5	0	87	118	232	0	0	0	0	0	546
14.0	144	11	2	92	174	378	1	0	0	0	0	802
14.5	147	37	2	76	213	344	0	0	0	0	0	819
15.0	196	60	2	89	218	297	1	0	0	0	0	864
15.5	102	79	2	62	187	151	0	0	0	0	0	583
16.0	81	79	10	43	81	121	0	0	0	0	0	415
16.5	81	43	14	45	42	68	1	0	0	0	0	294
17.0	54	18	21	71	35	47	1	0	0	2	0	250
17.5	17	22	3	76	32	24	3	0	0	0	0	177
18.0	16	18	5	47	9	12	1	0	0	0	0	109
18.5	6	12	9	32	16	21	0	0	0	0	4	100
19.0	8	6	10	29	21	10	1	0	0	0	0	87
19.5	5	5	9	26	11	8	0	0	0	0	4	67
20.0	3	11	3	23	16	11	0	3	0	0	0	71
20.5	3	2	3	23	7	10	5	3	5	0	3	65
21.0	2	5	9	13	21	7	1	3	5	0	4	70
21.5	2	3	7	19	5	1	1	3	10	0	4	57
22.0	2	0	0	6	0	3	0	6	0	0	4	21
22.5	2	0	2	2	9	7	0	0	0	2	0	22
23.0	0	0	0	5	0	1	1	0	16	0	3	26
23.5	0	2	0	3	2	5	0	0	0	0	0	12
24.0	0	0	2	2	2	1	0	0	0	2	0	8
24.5	0	0	0	2	0	0	0	0	0	0	0	2
25.0	2	0	0	0	2	0	1	0	0	2	0	6
25.5	0	0	0	0	0	0	0	0	0	2	0	2
26.0	0	0	0	0	2	0	0	0	0	0	0	2
26.5	0	0	0	0	0	0	0	0	0	0	0	0
27.0	0	0	0	0	0	0	0	0	0	0	0	0
27.5	0	0	0	0	0	0	0	0	0	0	0	0
28.0	0	0	0	0	0	0	0	0	0	0	0	0
28.5	0	0	0	0	0	0	0	0	0	0	0	0
29.0	0	0	0	0	0	0	0	0	0	0	0	0
29.5	0	0	0	0	0	0	0	0	0	0	0	0
30.0	0	0	0	0	0	0	0	0	0	0	0	0
30.5	0	0	0	0	0	0	0	0	0	0	0	0
31.0	0	0	0	0	0	0	0	0	0	0	0	0
31.5	0	0	0	0	0	0	0	0	0	0	0	0
Total	1497	425	118	1044	1542	2678	22	21	37	8	26	7418

**Table. 5.** Stock in numbers from juvenile bag for age groups 1-6 for 1998-2001.

Age	1998	1999	2000	2001	Average
1	1499	288	773	1632	1048
2	2532	5683	456	4377	3262
3	628	2972	1349	964	1478
4	138	223	439	371	293
5	29	91	26	74	55
6	12		29		10
Total	4839	9257	3072	7418	6147



**Fig. 1.** Length distribution of young shrimp stock component on Flemish Cap (Div. 3M) in 1998-2000.



**Fig. 2.** Age distribution of young shrimp stock component on Flemish Cap (Div. 3M) in 1998-2001.