



SPANISH SHRIMP (*Pandalus borealis*) FISHERY IN FLEMISH CAP IN 1997.

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In 1997 one Spanish trawler have been involved in the shrimp fishery in Flemish Cap (NAFO Div. 3M) from March to May. A scientific observer remained on board this trawler during all the fishing period, providing information on the fishing activity and carrying out biological sampling. The gear used was a twin trawl, with a 19 mm bar spacing sorting grate.

In this paper, the main results of this fishery are presented.

MATERIAL AND METHODS

For every haul, data on catches, effort and discards have been recorded. Shrimp were measured on board from randomly selected samples of the unsorted catch and classified by sexes, according to the endopod of the first pleopod (Rasmussen, 1953). Individuals at the changing phase stage were computed as males. The oblique carapace length (OCL) (Shumway et al. 1985) were measured with a calliper to the lower half mm. Subsamples of those hauls were frozen for further analysis of sexual status. Shrimps were weighted to the nearest 0.1 g. Females were classified into three categories according to the characteristics of the sternal spines (McCrary, 1971): immatures (first time spawners), matures (repeat spawners) and ovigerous females.

EFFORT, CATCHES AND DISCARDS

In table 1 the monthly distribution of the fishing effort, in hours fishing and in number of hauls, the monthly catches and c.p.u.e. (Kg/hours) are presented. Fishing activity have been restricted to the northwestern quarter of the Flemish Cap Bank and to depths between 200 and 500 m. This is in agreement with the distribution pattern usually found in the EU summer survey in this area (del Rio, 1996). The total catch taken by this single trawler was 38.3 tonnes.

The main fish accidental catches reported were juvenile redfish (< 10 cm) and juvenile wolfish, but in negligible amount in both cases.

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Table 1.- Fishing effort (hours fishing and number of hauls), c.p.u.e. (Kg/h) and catches (t) in the Spanish shrimp fishery in Flemish Cap in 1997.

	Effort	C.p.u.e.	Catches
March	93.4 (15)	133.7	12.5
April	138 (21)	113.3	15.6
May	86.5 (13)	117.4	10.1
TOTAL	317.9 (49)	120.4	38.3

LENGTH DISTRIBUTIONS AND BIOLOGICAL CHARACTERISTICS

The monthly length distributions of the catches by sexes are presented in table 2. Length distributions in both sexes were unimodal during the three months surveyed. Mean length of males slightly increased from March (18.5 mm) to May (19 mm), while the females one remained invariant (24.5 mm). The proportions of sex groups by length appear in table 3.

The mean weights at length in April and May appear in table 4. It can be noted that they are substantially lower, and for all the length range, than the ones reported by Del Rio (1996) in this same area during the 1996 summer EU survey.

Table 2.- Length distributions (O. C. L.) by sexes of the Spanish shrimp catches in Flemish Cap in 1997.

LENGTH (mm)	MARCH		APRIL		MAY		TOTAL	
	MALES	FEM.	MALES	FEM.	MALES	FEM.	MALES	FEM.
15	2076	0	0	0	0	0	2076	0
16	13530	0	432	0	0	0	13962	0
17	110872	1160	86290	0	25635	0	222797	1160
18	248264	2780	408995	746	134180	0	791439	3526
19	187979	9011	333889	933	150416	0	672284	9944
20	79474	9863	110072	9165	62389	0	251935	19028
21	73773	39942	75446	27984	60384	4820	209603	72745
22	36928	150463	59046	168947	29011	80222	124986	399632
23	17270	242762	8195	330909	1033	181943	26498	755614
24	5130	176744	545	286199	675	214115	6351	677058
25	2902	200644	0	250936	0	193814	2902	645393
26	855	159637	0	120821	0	102069	855	382527
27	2565	105069	0	77555	0	55063	2565	237687
28	0	52078	0	31872	0	30566	0	114517
29	0	31259	0	17706	0	18849	0	67814
30	0	18958	0	12409	0	17857	0	49223
31	0	5598	0	0	0	5798	0	11396
32	0	0	0	0	0	670	0	670
33	0	0	0	0	0	0	0	0
34	0	0	0	0	0	351	0	351
TOTAL	781618	1205968	1082910	1336182	463723	906137	2328251	3448285
No. Sampled	875	1392	1711	2165	722	1409	3308	4966
No. Samples	11		18		10		36	
Samp. catch (t.)	9.5		15.6		10.2		38.3	

Table 3.- Proportion of sex groups by length.

LENGTH (mm)	MARCH				APRIL			
	Males	Immature females	Mature females	Ovigerous females	Males	Immatur e females	Mature females	Ovigerous females
16.5	1	0	0	0	0	0	0	0
17	7	0	0	0	3	0	0	0
17.5	3	0	0	0	0	0	0	0
18	14	0	0	0	13	0	0	0
18.5	5	0	0	0	7	0	1	0
19	6	0	0	0	12	0	0	0
19.5	8	0	0	0	14	0	0	0
20	2	0	0	0	4	0	0	0
20.5	3	0	0	0	2	0	0	0
21	2	2	0	0	1	0	0	0
21.5	3	1	0	0	0	2	0	0
22	3	14	1	0	0	4	0	0
22.5	2	4	0	0	1	3	0	0
23	0	12	4	0	1	14	1	0
23.5	0	4	3	0	0	5	2	0
24	0	8	3	1	0	3	0	0
24.5	0	2	2	0	0	3	1	0
25	0	1	7	0	0	3	4	0
25.5	0	1	2	5	0	2	6	0
26	0	0	5	6	0	0	6	0
26.5	0	0	3	3	0	0	3	0
27	0	0	3	4	0	0	8	0
27.5	0	0	2	0	0	0	1	1
28	0	0	1	3	0	0	2	0
28.5	0	0	3	1	0	0	2	1
29	0	1	0	0	0	0	0	0
29.5	0	0	0	1	0	0	2	0
30	0	0	1	1	0	0	0	0
30.5	0	0	0	1	0	0	1	0
31	0	0	0	1	0	0	0	0
31.5	0	0	0	1	0	0	0	0
33	0	0	1	0	0	0	0	0
	34 %	28 %	23 %	15 %	42 %	28 %	29 %	1 %

Table 4.- Mean shrimp weight at length in 1997.

LENGTH	MARCH	APRIL
16.5	2.2	-
17	2.7	2.8
17.5	2.8	-
18	3.0	3.2
18.5	2.8	4.3
19	3.5	3.4
19.5	3.4	3.3
20	3.9	3.7
20.5	3.9	4.5
21	4.7	4.5
21.5	4.9	5.0
22	5.6	5.5
22.5	5.5	5.3
23	6.4	6.7
23.5	6.4	6.3
24	7.2	7.4
24.5	7.5	6.8
25	8.1	7.6
25.5	8.0	8.2
26	9.9	8.7
26.5	9.8	8.3
27	10.7	10.8
27.5	10.8	10.5
28	11.7	11.7
28.5	11.7	12.1
29	6.6	-
29.5	13.0	13.5
30	15.7	-
30.5	14.9	14.7
31	15.4	-
31.5	18.9	-

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