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Northern prawn (*Pandalus borealis*) stock in Flemish Cap

by

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INTRODUCTION

During June-July, 1991 the fourth EEC survey in Flemish Cap was realized on the R/V "Cornide de Saavedra". Technical characteristics of this survey are similar to those of the previous ones (Vazquez, 1992).

As in preceding years, during the survey samples of northern prawn (*Pandalus borealis*) were frozen for further analysis at the laboratory. In this paper we collect the results of this analysis and we compare them with those of the previous three surveys.

MATERIAL AND METHODS

For northern prawn's treatment, we followed the same procedures as in previous years (Mena, 1991). From every haul with significant amounts of prawn, samples of 0.5-1 kg were frozen. Once at the laboratory samples were thawed out one by one. All individuals were classified by sex, using as criterion the characteristics of the endopod of the first pleopod (Rasmussen, 1953). Individuals changing sex, according to this criterion, were included with the males, as in previous years.

Once sexed, individuals were measured to the lower millimetre. We used the oblique caparace length (CL) described by Horsted and Smidt (1956), from the base of the eye to the posterior lateral edge of the caparace. As was commented last year (Mena, 1991), the most commonly used oblique caparace length is that described by Rasmussen (1953) from the base of the eye to the posterior dorsal edge of the caparace. Both measurements have a good linear correlation (Teigsmark, 1983).

Sampling length data were used to obtain an estimate of population length distribution in all the area and to compare it with the estimates of the other years.

Some of the samples were subject of more intensive analysis: Females were separated in two groups: primiparous (first time spawners) and multiparous (spawned previously) according to the condition of sternal spines (McCrary, 1971) and all the individuals were weighed to the nearest 0.1 gr. after a little draining time.

With these data, and using BMDP-6D program, we calculated the length-weight relationship, as in previous years.

Unlike in previous surveys, we have not found any ovigerous females this year. This must be due to the earlier date of the survey (1 month approximately). We think that the spawning period in Flemish Cap begins near the end of July-beginning of August (Mena, 1991).

RESULTS

BIOMASS. In Table I is collected the northern prawn's biomass estimated by the swept area method in the four consecutive years 1988, 1989, 1990 and 1991. We point out that biomass estimated for 1991 is much higher (approximately four folds) than that of the previous years.

LENGTH DISTRIBUTION. Figure 1 shows the length distribution in 1991 for males and females. In figure 2 we compare the length distribution in the four years studied. All the data are estimations of total population based on sample data.

In 1991 length distribution we can distinguish 3 modal classes, as in the previous years. Last year (Mena, 1991) we proposed that this distribution agrees with a population constituted mainly by three age classes. First modal class would be composed by one-year old males, with a CL mean of 20-21 mm in July (in 1991 CL averages 19-20 mm in this class due to the earlier date of the survey, mentioned above). Second modal class, averaging 24-27 mm in July, would be made up by two-year old males and females. The proportion between males and females varies very much according to years. It seems that changing sex is not determined by age, but by length reached (Rasmussen, 1953). In figure 1 it is clear that smaller individuals of the second modal class remain as males, while larger individuals become females. The third modal class, with a CL mean of 29-30 mm, would be composed by three-year old females. Prawns older than three years constitute a small proportion of the total population.

In figure 2 we can see that in 1990 a specially abundant class appears. As we expected, the second modal class is the most abundant in 1991.

LENGTH-WEIGHT RELATIONSHIP. Table II shows the values obtained for the regression of weight to the expression $W = a \times L^b$

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TABLE I: Biomass

year	average catch by mile	estimated biomass
1988	1.54 kg ±0.28	2164 MT
1989	1.37 kg ±0.24	1923 MT
1990	1.53 kg ±0.21	2139 MT
1991	5.83 kg ±0.71	8211 MT

TABLE II: Length-weight relationships

	a	b	r	p	N
MALES	.00057	2.89	.987	<.001	217
PRIMIPAROUS FEMALES	.00081	2.79	.949	<.001	164
MULTIPAROUS FEMALES	.00061	2.88	.990	<.001	184
TOTAL FEMALES	.00061	2.88	.987	<.001	348
TOTAL	.00046	2.96	.994	<.001	565

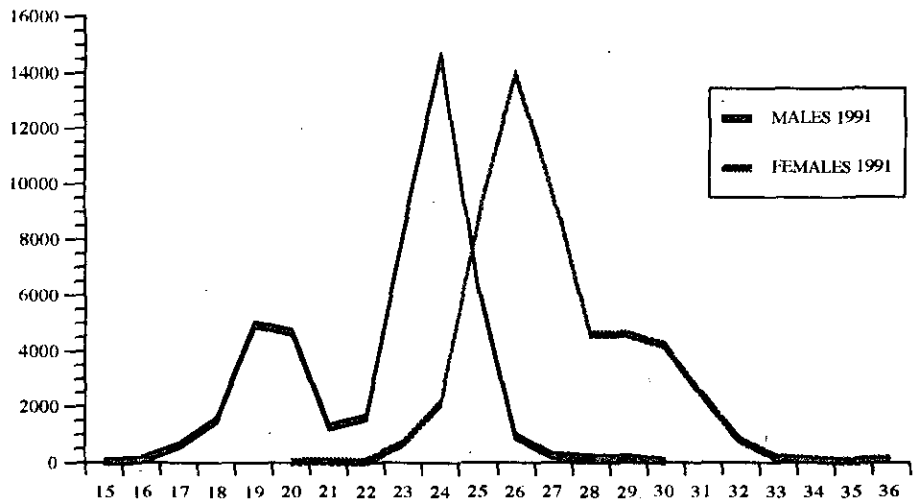

Figure 1: Length distribution in 1991.

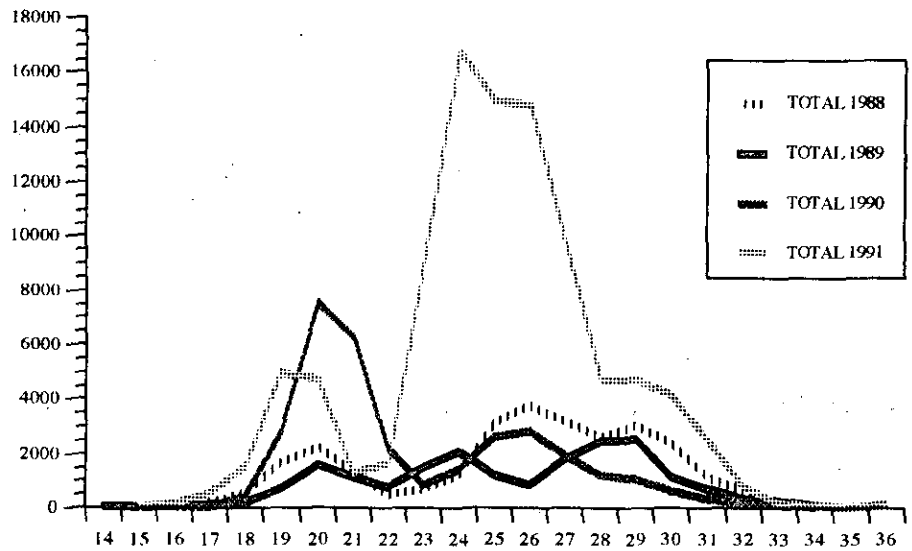

Figure 2: Length distibution in the four consecutive years.