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Catch composition of the Spanish prawn (*Pandalus borealis* Kr.) fishery, and possible stock estimates

by

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Introduction

Spanish prawn fishery begun in 1974, although no estimation of the catches for this year are yet available. During 1975 a total of 20 vessels have been operating in this area and the estimated catch could be at least between 8000 and 9000 metric tons.

The Fishery

This fishery is conducted by stern trawlers of the same type which, normally operate in the squid fishery in Subareas 5 and 6, which normally freeze their catch immediately after the net comes on board, without any other previous processing.

Due to the fact that this fishery has been considered up til now as an unregulated one, not all the skippers sent the bi-monthly reports that are required for other species under regulation. Nevertheless available bi-monthly reports show that the fishing season extended from June to December in 1975.

Enquiries made among vessels' skippers indicate that the mesh size used in the codend in this fishery is about 35 mm (stretched). Figure 1 show the areas where it is known that the Spanish fishing fleet has been operating. The main fishing areas during 1975 are marked with an arrow. It seems that areas A and B have been the most important ones.

Catch Composition and Stock Estimate

In order to obtain an estimate on the length-frequency composition of the catches, a frozen sample (unsorted by length categories) has been obtained, classified by the endopodite of the first pair of pleopods, according to Rasmussen (1953), and the carapace length measured as described by Rasmussen (1953), to the nearest milimeter. The resultant length-frequency is given in Figure 2 and Table 1. No eyes were visible on the ovigerous females. The sample probably corresponds to October and area B shown in Figure 1. According to Horsted and Smidt (1956), the Spanish fishing fleet should be mainly operating on age groups III to V, being the most intensive catches on age groups IV and V, as it can be seen that the mode is on 27 mm.

Based on the log-book records of one vessel, which included data on a per tow basis, a stock estimate of the prawn stock for areas A and B shown in Figure 1 has been made, for September in area A and October in area B.

In area A a total of 138 tows were made with an average of 1,282 kg/tow. The average towing speed is about 3 knots, and the average trawling time has been reported as being 2 to 3 hours. Swept area estimates were only made for the area where the vessel has been operating without extrapolating to other areas. If the average trawling time should be 3 hours, swept area method gives a stock estimate of 5,420 metric tons. If we consider that the average trawling time was 2 hours swept area method gives a stock estimate of 8,130 metric tons.

In area B, shown in Figure 1, average catch per tow was 4,294 kg and similar estimates have been made. A total of 33 tows were carried out in this area. If we consider that the average trawling time should be 3 hours, we obtain a stock estimate of 12,153 metric tons. If the average trawling time was 2 hours, a stock estimate of 18, 230 metric tons is obtained.

Conclusions

Stock estimates made by the swept area method have been made for areas A and B shown in Figure 1. Stock estimates for area A are 5,420 to 8,130 metric tons, and for area B 12,153 to 18,230 metric tons. It has to be pointed out, that the method used has the same limitations as described by Hoydal (1976) in points 1 and 2. Also it has to be taken into account that the estimates have been based on the catches made by the Spanish fleet, that is the estimate has been made on the individuals belonging to the size groups shown in Figure 2, and the mesh-selectivity effects have not been taken into account. It has been shown that escapement through the meshes can be important (Carlsson and Smidt 1976). This last point has to be taken into account when considering the obtained estimations.

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Table 1. Length frequency distribution of the catches in the Spanish Prawn fishery.

Length Frequency (mm)	Ovigerous Females	Non Ovigerous Females	Transitional stages	Males and Juveniles	Total Measured
16				2	2
17				2	2
18				3	3
19				5	5
20	1		2	22	25
21	1		2	30	33
22	4	1	4	23	32
23	8		7	21	36
24	13	1	17	13	44
25	44	1	9	10	64
26	75	2	4	1	82
27	100	4	2		106
28	50	3	1		54
29	21				21
30	10	1			11
31	2				2
32	3				3
TOTAL	332	13	48	132	525

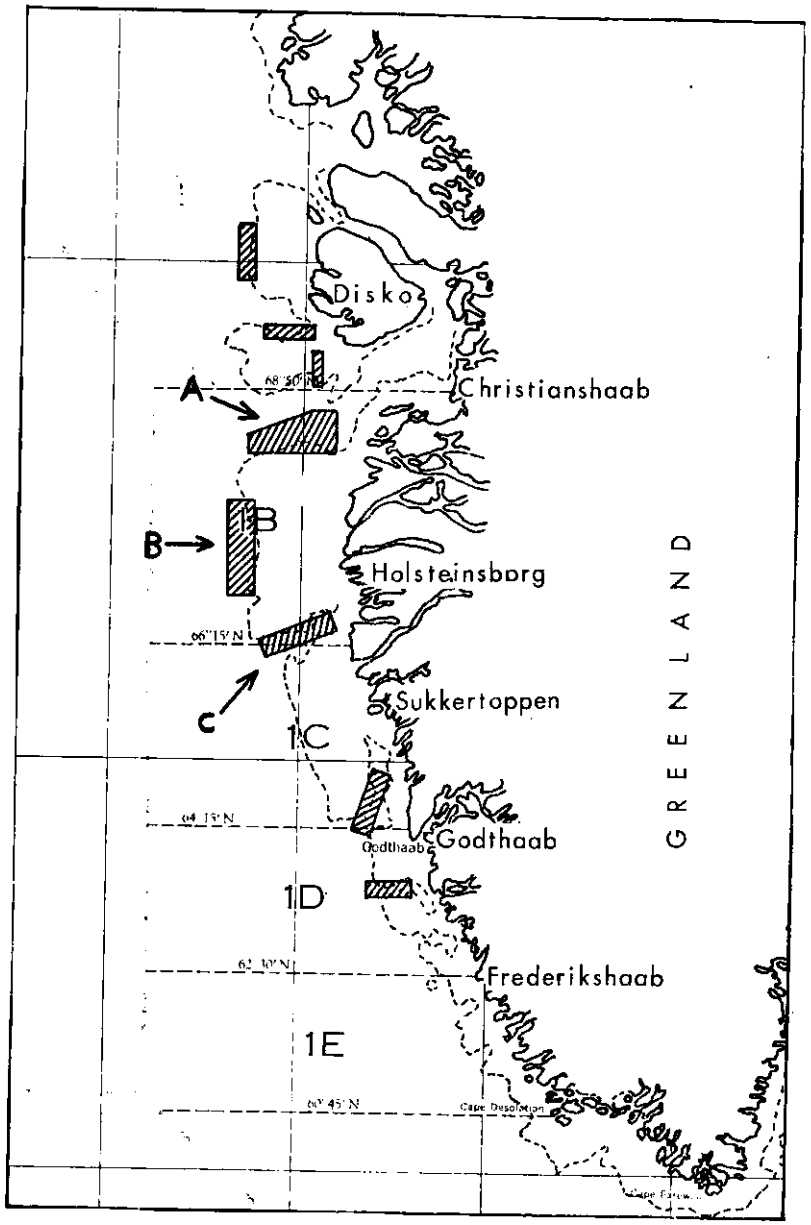

Fig. 1. Fishing areas of the Spanish prawn fleet during 1975

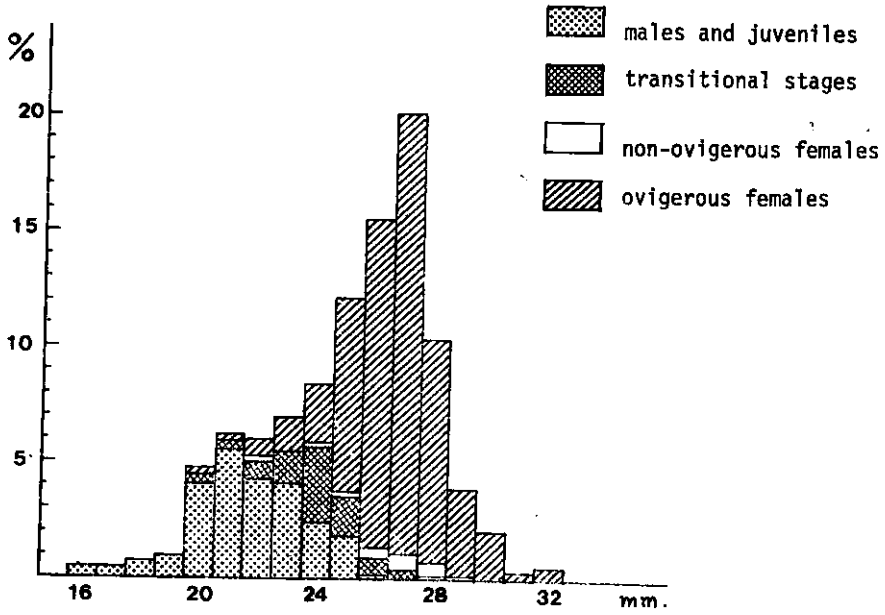

Fig. 2. Length frequency distribution of the catches in the Spanish prawn fishery.

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