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Selection in Shrimp Trawl

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Introduction

In July 1989 a preliminary selection experiment with the commmercial shrimp trawler "Qaasiut II" was conducted in Holsteinborg Deep, a west Greenland shrimp fishing area. The objective was to estimate the selectivity of 43 mm and of 60 mm mesh size and to compare the selectivity of trawls of the square mesh type to those of the diamond shape.

Data and Material

The commercial shrimp trawler "Qaasiut II" is 716 GRT built in 1987. The trawl used was a "BASTARD II" commercial trawl, which is of the trouser type with two cod-ends. The trawl was for this experiment operated with one bag covered by a small mesh net inside a standard 43 mm cod-end. Two samples of approximate 3 kg was taken from the catch in each cod-end altogether four samples from each haul. These samples were frozen for later measurement. Shrimp was not sexed. Carapace length measurement was used. Table 1 gives some basic data for the four hauls.

Results

No significant difference between the two samples taken from the same bag could be seen. Data were therefore pooled and the ratio by length group between the number found in bag A and bag B (with net cover) was calculated. Fig. 1 gives the observations for the three experiments.

Calculation of a selection factor based on these data is haphazarous, but the standard commercial trawl type (fig.1a and fig.1b diamond mesh) seems to have a selection factor of 0.25-0.30, while the selection factor of the square mesh is approximately 0.40. This result is in accordance with the findings of Thorsteinsson (1989).

The covered bag was slightly more effective than the uncovered bag in the experiments using a commercial diamond mesh. Assuming that no selectivity is seen above 23 mm CPL the ratios in numbers are

Haul no	Mesh mm	No in covered bag/ No in uncovered bag
14	43	1.02
11	60	1.16
12	60	1.06
15	43 (square)	0.96

This suggests as have been found elsewhere that the flow in the trawl in not unaffected by the net cover and that some panel to overcome this problem might have been appropiate.

Reference

Thorsteinsson G. 1989 Icelandic Experiments with Square Mesh Netting in the Shrimp Fishery. ICES C.M. 1989/B:49

Table 1. Some basic data for the four trawl haul analysed. The position were in all cases in Holsteinborg Deep app. 66 30 N 54 30 W and all hauls were made during day time.

Haul no	Mesh Bag A mm streched	Total Catch kg	Duration h:mm	Depth m
11	60	690	3:10	360
12	60	1042	1:20	315
14	43	2538	3:00	375
15	43 (square)	n.k.	3:30	355

Table 2. Percentage of number of shrimp retained in uncovered bag relative to covered bag.

mm CPL	43 mm diam	60 mm diam	60 mm diam	43 mm squar
7.5	0	0		
8.5	0			
9.5		0		
10.5	33	0		
11.5	131	0		
12.5	64	69		
13.5	94	47	0	
14.5	105	48	32	104
15.5	67	85	29	69
16.5	85	65	40	40
17.5	76	73	50	41
18.5	106	64	70	44
19.5	94	64	81	42
20.5	125	74	79	87
21.5	101	83	109	85
22.5	123	88	76	115
23.5	145	116	136	104
24.5	127	106	75	87
25.5	88	96	110	118
26.5	100	72	79	118
27.5	100	97	118	75
28.5	153	180	142	75
29.5		138		
30.5				

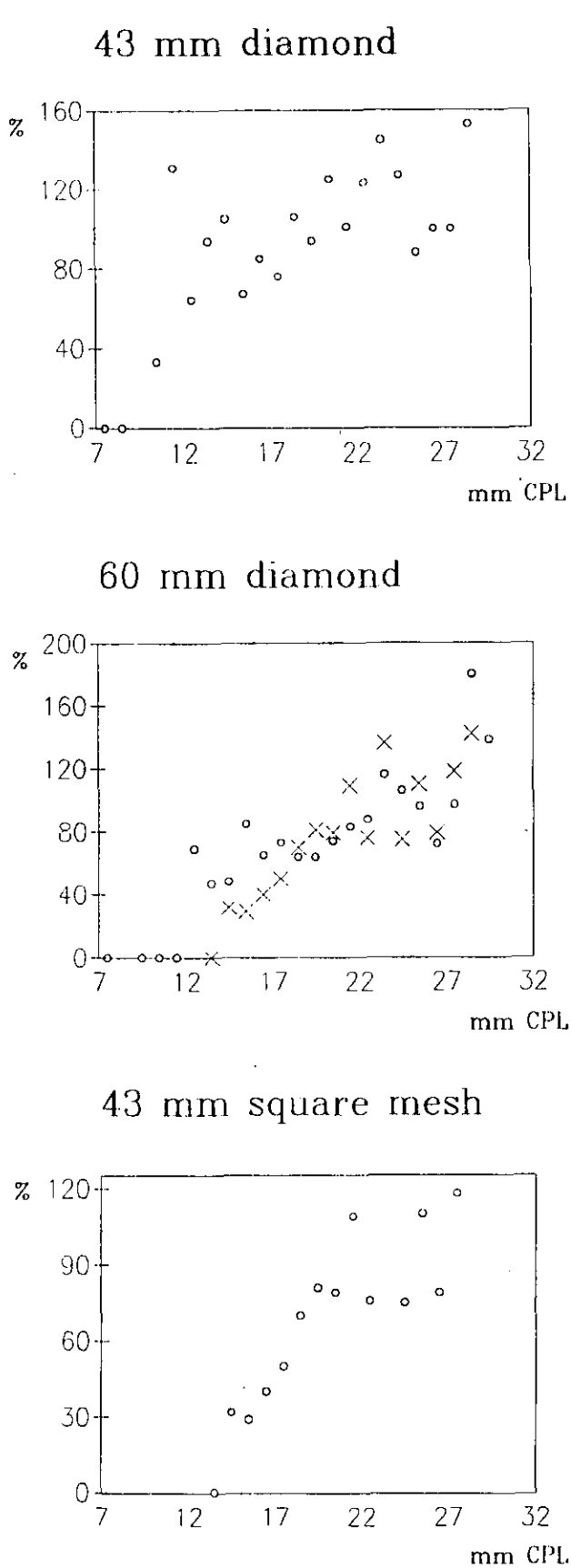

Fig. 1 Percentage in uncovered bag relative to catch in covered bag. Data from Table 2.