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Norwegian mesh selection experiments in 1963 and 1964

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This report deals with some covered cod end experiments carried out in the Barents Sea in March 1963 from the R/V "Johan Hjort" and in February 1964 from the R/V "G.O.Sars". The experiments were planned for the purpose of obtaining more precise information about the effect on escapement of using double cod ends, and in 1964 also to provide data on the possible mesh differential of synthetic fibres made of polypropylene (Ulstron).

In both years, particularly in 1963, it proved difficult to find suitably located concentrations of fish of a sufficiently large size range for both single and double cod end experiments with the same mesh size. The number of successful hauls are therefore small, and the precision of the results is limited.

The trawl used was in both years a standard "Small Granton" trawl, and the cover applied was in 1963 a nymplex net of 70 mm mesh size, and in 1964 a knot-less nylon net of appr. 30 mm mesh size. The towing speed ranged from 3.2 to 3.5 knots and the towing time was one hour. Double cod ends were made by lacing tightly, mesh by mesh a complete extra top part to the original cod end.

Details of the different hauls and the catches taken are recorded in Table 1, and in Table 2 are summarized the results. The corresponding selection curves, drawn on freehand from moving averages of the percentages retained are shown in Figs. 1 and 2.

From the 1963 experiments a selection factor for haddock of 2.0 when using a double courene cod end, was calculated. No comparison with

corresponding single cod end experiments was possible, but during the same series of experiments a selection factor for cod of 3.7 for a single manila cod end was obtained. This compares well with the figure of 3.8 found by the present author in 1962 (Olsen 1962) in the same locality when using the same gear and methods as present. For haddock in 1962 a selection factor of 3.2 for courlene was established, and this would indicate a very marked effect on escapement from using double cod ends tightly fitted, i.e. a reduction in effective mesh size of the order of nearly 40 per cent.

The 1964 experiments were more successful as regards the quantity of data obtained. However, the localities where concentrations of fish could be found at the time of the experiments were not very well suited, because the trawl catches were to some extent obstructed by considerable quantities of large sponges. It is difficult to assess to what extent these might have biased the results.

The selection factors found for the single cod end were 3.5 for cod and 3.4 for haddock. The corresponding figures for the double cod end were 2.8 and 2.7 respectively. The 1964 experiments therefore show a reduction of the effective mesh size of about 20 per cent by doubling the cod end, i.e. a considerably lower figure than that indicated by the one estimate from the experiments conducted in 1963. It should be born in mind, however, that ^{the} numbers within the selection range was small for haddock in the single cod end experiments and for cod in the double cod end experiments.

No comparative hauls with manila were made in the 1964 experiments. The selection factors found for the single Ulstron cod end should therefore be compared with those obtained by the author in 1962 (Olsen 1962). This comparison shows for haddock a 7 per cent higher selection factor for polypropylene than for manila, while for cod an 8 per cent difference in the opposite direction is apparent. The experiments are thus inconclusive as regards the possible mesh differential of the polypropylene fibres, although it may ^{be} stated that these investigations do not give evidence of a large difference in selection between cod ends made of polypropylene and of manila.

Reference

Olsen, Steinar 1962.

Selection experiments with a courlene cod end in the Barents Sea. I.C.E.S., C.M. 1962, paper no. 36.

Table 1. Record of catches.

St. No.	Cod end	Specification of catch						Oth. spec. Tot. bask.
		Cod			Haddock			
		No. in 25-75% r.		Tot. bask.	No. in 25-75% r.		Tot. bask.	
Cod end	Cover	Cod end	Cover					
<u>March 1963.</u>								
21	manila, single	104	90	20	-	-	5	4½
22	"	101	107	15½	-	-	7	5½
31	courlene double	-	-	3	(309)	(228)	10	2½
<u>Febr. 1964.</u>								
13	Ulstron, single	201	248	15	62	234	10	4½
14	"	246	177	12	20	73	3	2½
15	"	62	35	4	8	86	3½	2
16	"	91	59	6	13	128	5	2½
18	Ulstron,+ Manila, double	41	24	5½	171	295	12	3½
19	"	14	14	3	287	549	14	3½
20	"	17	21	2	270	458	12½	1

Table 2. Summary of results.

Species	St. No.	Cod end	Mesh size	50% ret.	1. S.F.	25-75% ret. range
<u>March 1963.</u>						
Cod	22	Manila, single	141	51.9	3.7	7.4
Haddock	31	Courlene, double	144	29.3	2.0	-
<u>February 1964.</u>						
Cod	13-16	Ulstron, single	145	50.6	3.5	17.9
Haddock	13,16	"	145	49.7	3.4	10.7
Cod	18, 19, 20	Ulstron + manila, double	146	40.4	2.8	.-
Haddock	18,19,20	"	146	39.8	2.7	18.1

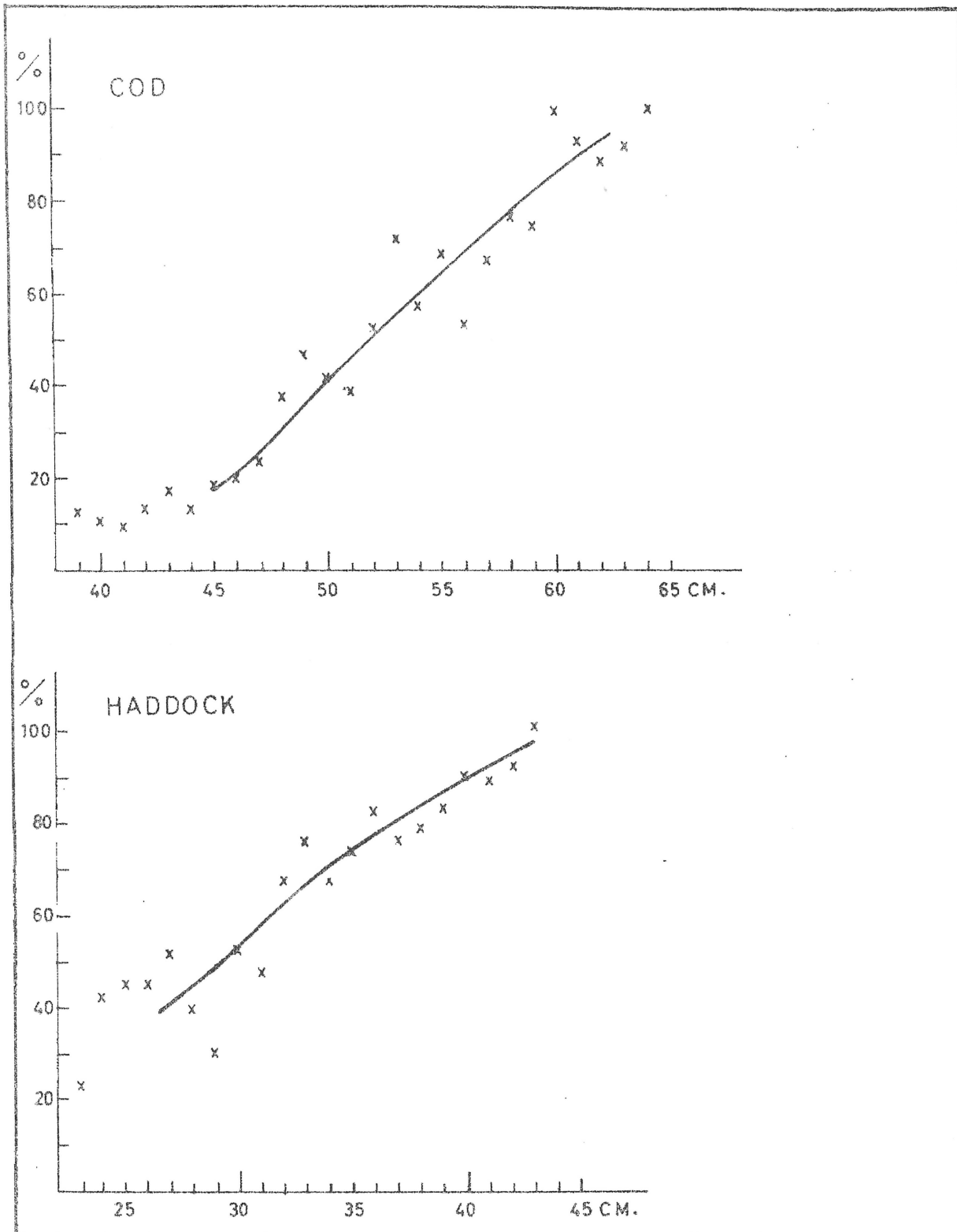


Fig. 1. Selection curves for cod and haddock obtained from the 1963-experiments.

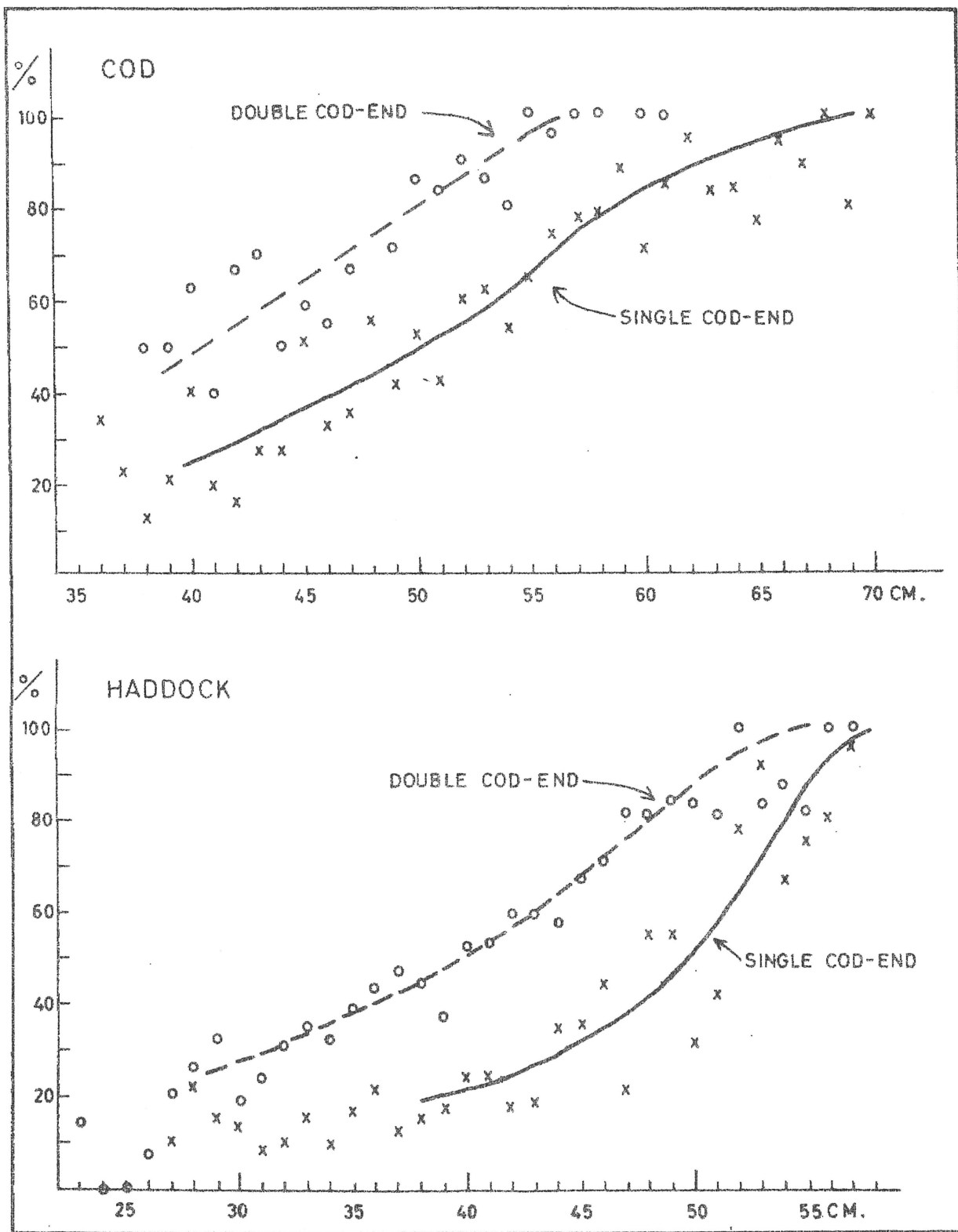


Fig. 2. Selection curves for cod and haddock obtained from the 1964-experiments.