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SELECTIVITY IN CODENDS WITH SHORT LASTRIGDE ROPES

By

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INTRODUCTION

Since 1985, the Institute of Fishery Technology Research has been working on projects aiming at reducing the catch of small and undersized fish in codends with the regulated meshsize of 135 mm.

During 1985-1987, several experiments were conducted onboard Norwegian trawlers, where the selective properties in codends with long/short upper panels, codends with square meshes, and codends with mixed square/diamond meshes, were compared to standard codends (Isaksen and Valdemarsen 1986, Valdemarsen and Isaksen 1987). General conclusions from these trials are that any codend construction that secures that the meshes just in front of the accumulated catch stay open when the codend fills up, will possess better selective properties than standard codends. A natural way to follow up these results was to open the meshes both in the upper and the lower panel of the codend by means

of lastridge ropes. Experiments with such codend design started in June 1988, with underwater observations, and were continued in October/November 1988 by comparative fishing experiments.

MATERIALS AND METHODS

Periods:	June 1988	Oct/Nov 1988
Ship:	M/Tr "Anny-Kraemer"	M/Tr "Langvin"
L.o.a:	50.75m	56.0m
Engine:	2400 hp	4000hp
Towing speed:	3.5-4.0 knots	4.5-5.5 knots
Fishing gear:	Two panel bottom trawl (Euronete)	Two panels bottom trawl (Alfredo)
Codends:	Trouser trawl (Fig. 1)	Trouser trawl (Fig. 1)
Investigation:	Underwater observations	Comparative fishing
Area:	Finnmarken coast	Barents Sea, Bear Island
Depth:	50-100 meters	150-350 meters

RESULTS

The underwater observations of the "roped" codend showed that the meshes were open in the whole length of the codend. The panels were slack, resulting in an undulating movement of the webbing, and these movements seemed to influence the fish to try to escape. Unfortunately, there were few fish in the area, and the codends were therefore only observed with small to moderate catches.

Comparative fishing trials with and without lastridge ropes resulted in a much lower catch of small and undersized cod in the experimental codend. This was particularly evident in the standard length codend of 59 1/2 meshes (Fig. 2). In long codends (99 1/2 meshes) with heavy chafer of polyethylene (more bouyant), the difference in size distribution between the two codends were less (Fig. 3).

Experiments conducted to establish selection curves for cod resulted in a rise in selection factor (S.F.) from 3.9 for standard codend to 4.3 by using 12-15% shorter lastridge ropes (Fig. 4). This S.F. corresponds to a mesh size of 149 mm in a standard codend.

The data from the comparative fishing trials further suggest that "roped" codends maintain their selective properties better as the codends fill up (Fig. 5). The reason is probably that the shorter lastridge ropes keep the meshes open in front of the accumulated catch as the codend fills up. The selectivity results from the "roped" codend are comparable to those earlier obtained for square meshed codends (Fig. 6).

DISCUSSION

At the end of the 60's and at the beginning of the 70's, it was quite common to use lastridge ropes when fishing for cod, saithe and haddoch. However, as both scientists and fishermen got a better knowledge and understanding of the factors affecting the selection in codends, it became evident that many fishermen cut away the lastridge rope, and thereby affected the selective properties of the codends. Some trawlers still use "roped" codends, but the ropes are of the same or greater length than the codend itself, and are used to save the codend/extention piece of polyamid in case of heavy damage of the trawl belly.

To suggest an obligatory use of "roped" codends is therefore by no means an introduction of a new element in the trawl fishery. Fitting existing codends with lastridge ropes will cost very little, and can easily be done by the crew onboard the trawlers.

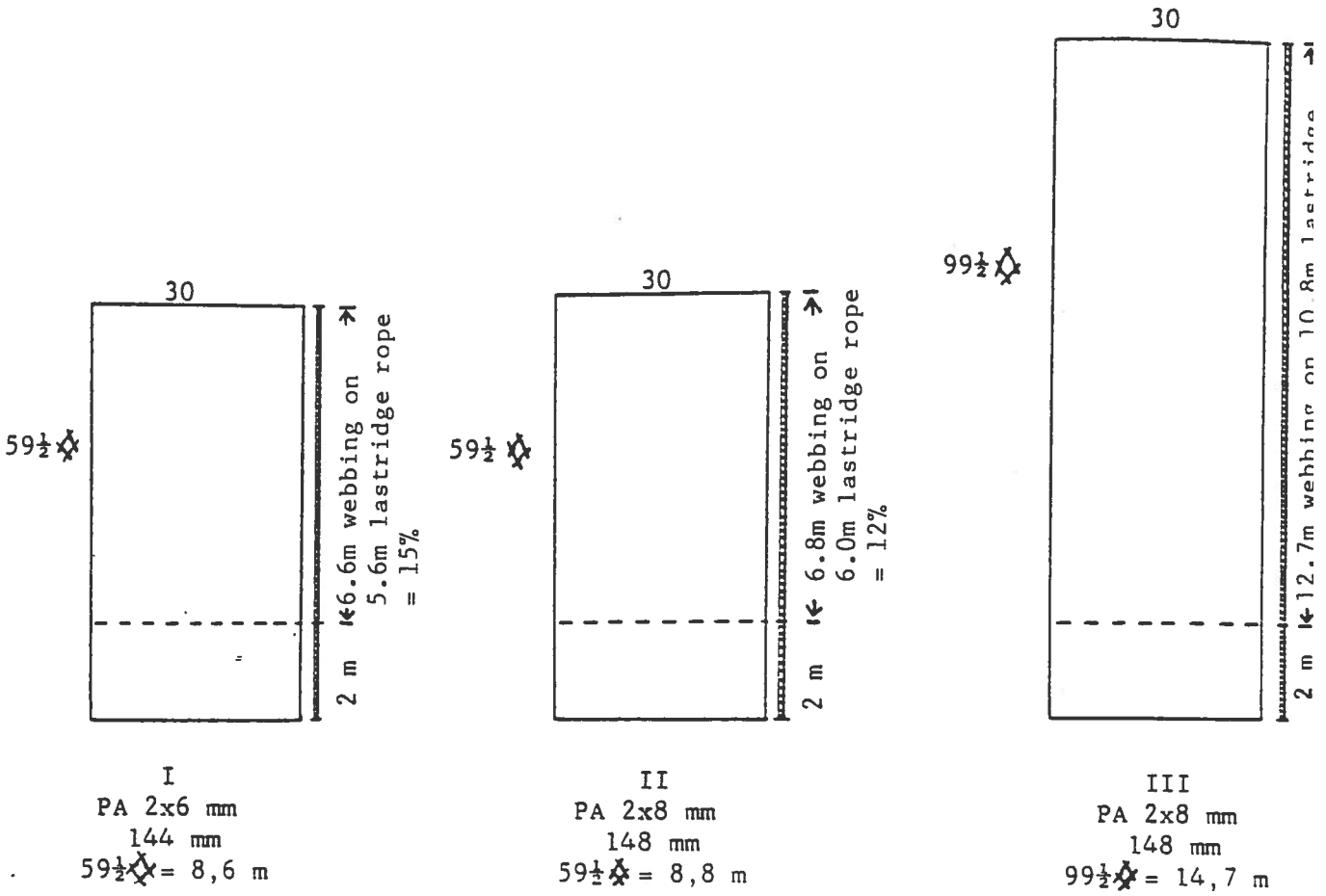
An obligatory use of lastridge rope will be easy to check and enforce. Measurements of the lastridge rope and the knot-to-knot mesh size together with counting the meshes, are the necessary control parameters.

Anyhow, these experiments with "roped" codends clearly demonstrate that a simple change in rigging of the codend can greatly affect the selectivity of standard codends. It is therefore necessary in future experiments, not only to look at the mesh size and mesh configuration, but also at the rigging and construction of the codend as well.

REFERENCES

Isaksen, B. and J.W. Valdemarsen 1986. Selectivity experiments with square mesh codends in bottom trawl. *Coun.Meet.int.Coun.Explor.Sea, 1986*/B:28.

Valdemarsen, J.W. and B. Isaksen 1987. Selectivity of codends with different mesh configurations. *ICES FTFB W.G. Meeting in Hamburg 1987.*



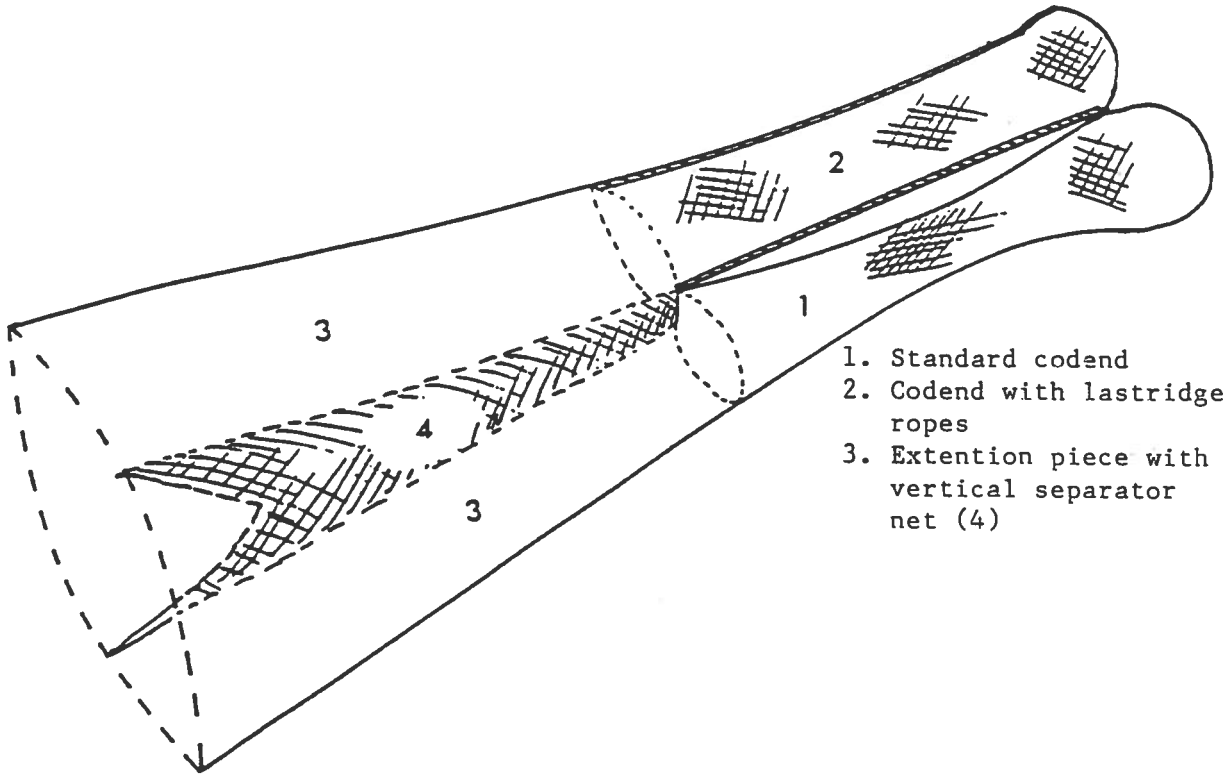


Figure 1. Illustration of experimental codends and extention piece.

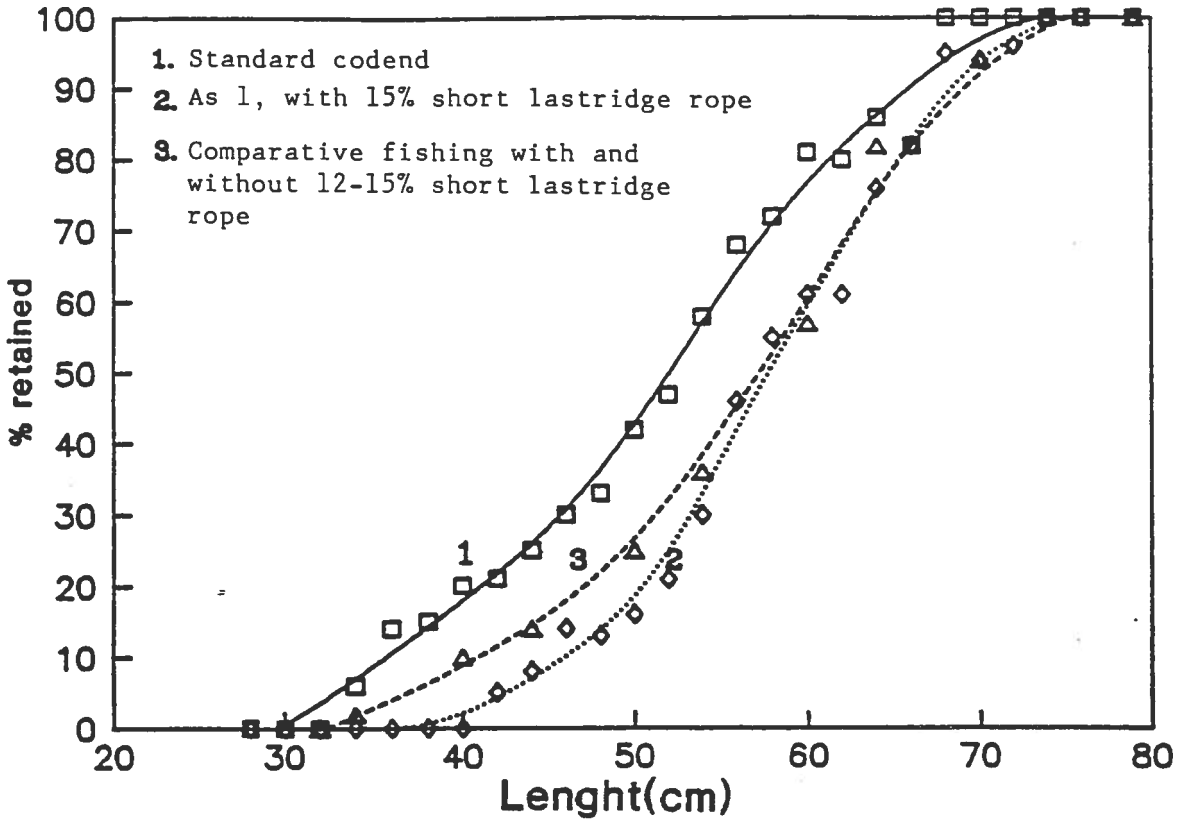


Figure 4. Selection curves for cod in 135 mm codends with and without lastridge ropes.

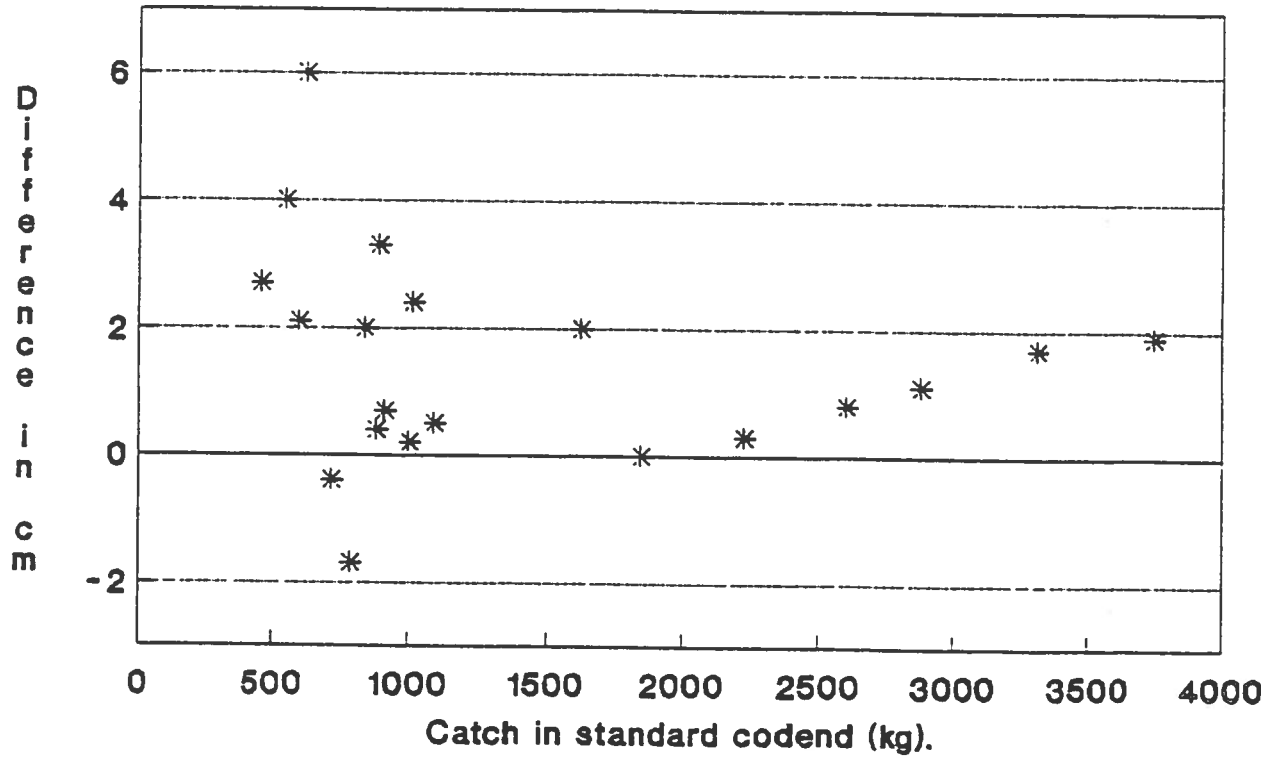


Figure 5. Difference in mean length of cod in codends with and without short lastridge ropes (12-15%) as a function of catch.

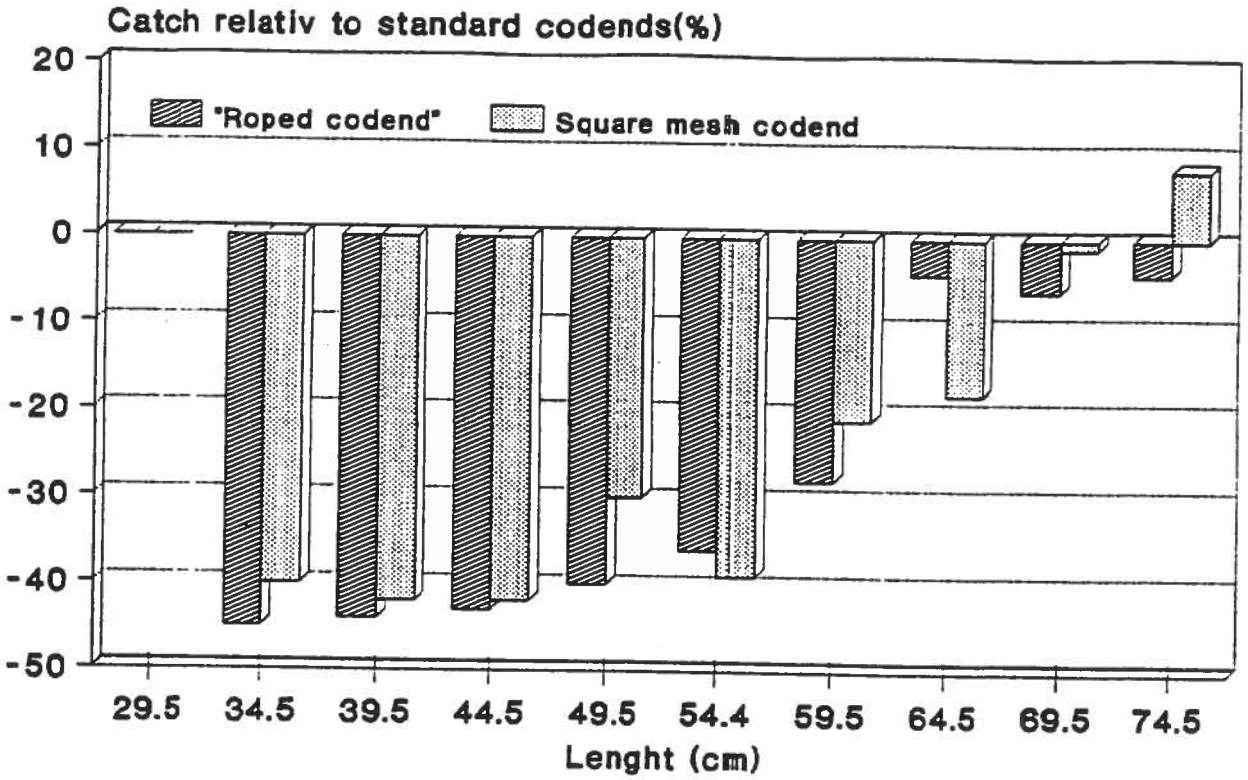


Figure 6. Comparison of length/catch distribution of cod caught in roped/ square mesh codend (zero line = catch in standard codend).