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Charter Vessel *Carina* (BF 803)

Charter Cruise 0603H

REPORT

1-20 October 2003

Ports

Loading: Macduff

Unloading: Aberdeen

Personnel

R J Kynoch	In charge
I Penny	
M Burns	1-5 October
K Summerbell	10-20 October

Objectives

1. To compare water flow measurements within a standard cod-end cover and modified cod-end, using self-recording flow meters.
2. To measure the selectivity of a 120 mm and 130 mm diamond mesh cod-ends, using the hooped cod-end cover method.
3. To determine the effect of twine resistance on the selectivity of a 120 mm diamond mesh cod-end.

Narrative

Staff and equipment joined *Carina* at Macduff on 1 October 2003. Staff commenced rigging of fishing gear and instrumentation aboard the vessel along side Macduff harbour. The vessel sailed during the early hours of 2 October to fishing grounds in the Moray Firth after which flow meter trials were carried out to measure the relative water speeds through the front meshes of both the standard and modified cod-end covers (Fig. 1). These trials were concluded during the evening of 3 October due to poor weather conditions.

Selectivity trials using the hooped cover method were thereafter carried out on fishing grounds 16 miles east of Aberdeen. During the cruise the selectivity of three different 120 mm diamond mesh codends constructed from low tenacity, high tenacity and compact twines were measured. It should be noted that compact twine has the highest tenacity of all the twines tested during these trials. The selectivity of a 130 mm diamond mesh cod-end constructed from high tenacity twine was also measured for a comparison.

The cruise was due to end on 19 October, however due to time lost during a north westerly gale between 4-10 October the cruise was extended by one day to 20 October. Therefore the cruise ended at Aberdeen on 20 October with staff and fishing gear off loaded at Aberdeen harbour.

Results

Five flow meter instrumentation hauls were carried out two with the old cover design and three with the modified cover. The haul procedure was the same for all five hauls and consisted of blocks (15 minute periods while towing at constant rpm) at systematically varied speeds. The reciprocal tow method as recommended by ICES was used to allow for tidal changes. A full statistical analysis will be carried out in the Laboratory.

During the selectivity trials there were sufficient quantities of haddock and plaice on the grounds for every haul but there were no whiting above 100% retention length (>40 cm) and very few cod. Haul duration ranged between 90 to 200 minutes and towing speed over the ground from 3.2 kts to 4.0 kts. Thirty-two hauls were made of which three were invalid due to twists in the gear.

The mean selection parameters for haddock and plaice for each cod-end are given in Table 1.

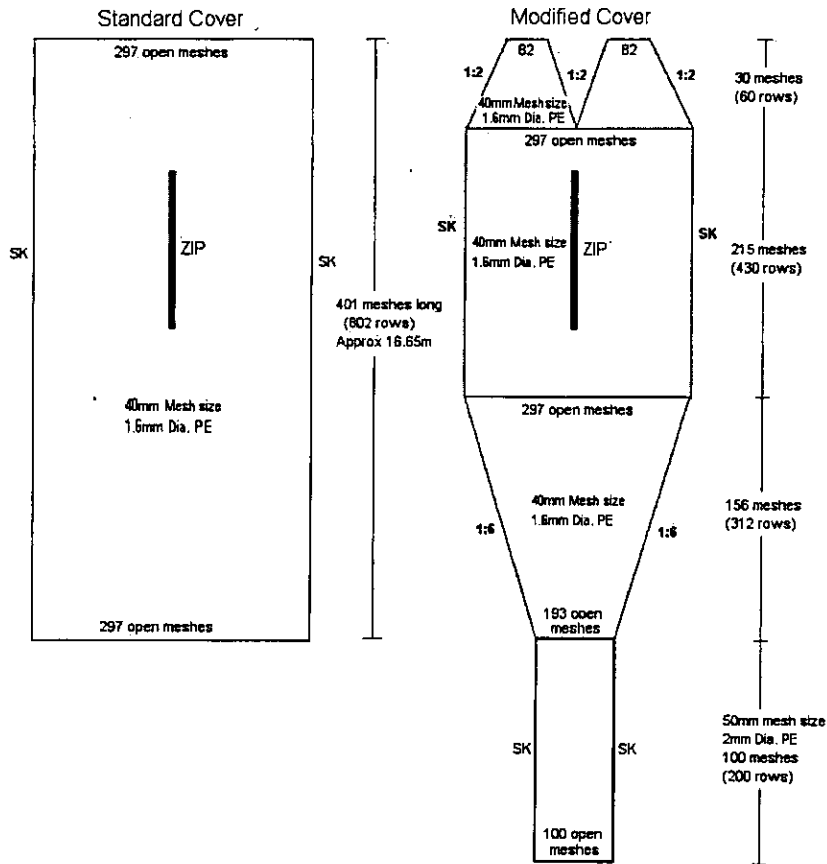
Preliminary analysis shows that an increase in mesh size from 120 mm to 130 mm increases the selectivity for both haddock and plaice by 3.4% and 8.8% respectively. The different tenacity of the three twines appears not have an effect on the selectivity of plaice. However for haddock there is a ~6.5% reduction in selectivity for compact twine compared to the high and low tenacity twines. A fuller statistical analysis will be carried out in the Laboratory. Further measurement trials on netting samples taken from the three 120 mm cod-ends to quantify mesh resistance to opening are to be made in the Laboratory.

Table 1. Mean selection parameters for each codend test case.

Codend description	Number of valid hauls	Haddock			Plaice		
		L50	Selection range	Selection factor	L50	Selection range	Selection factor
130 mm High tenacity	9	36.4	4.6	2.8	32.0	2.2	2.5
120 mm High tenacity	5	35.2	3.9	3.0	29.4	1.8	2.5
120 mm Low tenacity	8	35.4	4.5	3.0	29.1	1.7	2.4
120 mm Compact	7	33.0	4.3	2.7	29.1	2.1	2.4

R J Kynoch
23 April 2004

Figure 1. Standard and modified cover specifications.



Note - For each covers top/bottom panels identical only 1 panel shown.