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Charter Fishing Vessel *Fertile II*, BF 740

Cruise 1002H Part I

REPORT

5-19 August 2002

Ports

Loading: Macduff
Unloading: Peterhead
Half landing: Fraserburgh (7 August)

Personnel

R J Kynoch	(In charge)
I Penny	
P Barkel	(5-8 August)
G N Graham, IMR	
D Lilleng, IMR	

Objectives

1. To carry out underwater RCTV observations on experimental cod-ends, flexi-grid and escape panels in Scottish waters.

2. To determine the effect of cod-end circumference on the selectivity of a 120 mm diamond mesh cod-end in Norwegian waters.

Narrative

Staff and equipment joined *Fertile II* at Macduff on 5 August 2002. The RCTV and fishing gear were rigged aboard the vessel in Macduff harbour. The vessel sailed during the morning of 6 August to fishing grounds in the Moray Firth 8 miles NW of Macduff. Observations were thereafter made using the RCTV to assess the rigging of each test case (Objective 1). The cod-end, square mesh escape panel and flexi-grid specifications appear in Figure 1. Observations were concluded on the evening of 7 August with the vessel landing into Fraserburgh to offload the RCTV equipment. The vessel sailed during the morning of 8 August to commercial fishing grounds in Norwegian territorial waters 110 nmiles east of Shetland. Cod-end selectivity trials (Objective 2) were thereafter carried out with the experimental cod-ends attached to the starboard trawl and a small mesh cod-end attached to the port trawl.

During the cruise the selectivities of three 120 mm diamond mesh cod-ends each with a different number of open circumferential meshes (100, 80 and 60) were measured. All cod-ends were 100 meshes long and constructed from 5 mm diameter double high tenacity polyethylene twine. The cod-ends were fished with the same 120 mm diamond mesh extension constructed from 5 mm diameter single high tenacity polyethylene twine. The extension was 150 meshes long with 100 open circumferential meshes. The cod-ends were fished without a lifting bag or bottom chafer.

The cruise ended at Peterhead on 19 August with staff returning to Aberdeen but all equipment remaining onboard for Part II of the cruise.

Results

Initial underwater observations of the 120 mm cod-end with 100 open meshes round found that the lifting becket was not long enough and therefore could restrict the cod-end meshes for large catches. After adjustment, the lifting becket was observed to be correctly rigged running down the middle of the cod-end top sheet. When comparing footage of the cod-ends with 100 and 60 open meshes there appeared to be no obvious difference in mesh opening, however catches were very small. Observations of the flexi-grid found that the grid mounted into the lower panel of the net was not flat but curved inwards towards the top sheet of the extension. This was possibly due to the two selvedges being pulled together by the drag of the cod-end and therefore forcing the grid section to curve upwards. It was also noted that the 135 mm meshes in the top sheet of the extension directly above and behind the lower grid section were being forced open (Plate I). This would not normally be the case without the inclusion of the flexi-grid. Fish were observed escaping through these large open meshes in the top sheet of the grid section. The BECOMA square mesh panel was observed to be rigged with no obvious distortion to the surrounding diamond meshes of the cod-end. However, there did appear to be a suggestion that the cod-end was twisting slightly to starboard. It was difficult to determine if this was due to the rigging of the panel or the pull of the lifting becket, which for this case was rigged running down the starboard selvedge of the cod-end.

To minimise the risk of a net bias, on each haul the vessel towed a straight course either with or against the tide, thus ensuring that the gear fished symmetrically. Due to low catch rates the trials area extended from NE of the Frigg oil field to North of the Bergen Bank. Most hauls were of five hours duration and the towing speed over the ground ranged between 2.8 kts and 3.1 kts.

Twenty five selectivity hauls were made of which two were invalid due to debris in the test cod-end. There were sufficient quantities of saithe for 18 hauls, with most fish between 31 to 58 cm in length. Haddock catches were low for many hauls, even in the control cod-end, with only enough fish in sixteen hauls to enable selectivity parameters to be calculated. Small numbers of cod and whiting were caught throughout the trials but not in sufficient quantities for selectivity analysis.

The mean selection parameters for haddock and saithe are given in Table 1. A fuller statistical analysis will be carried out in the laboratory.

R Kynoch
10 March 2003

Table 1. Mean selection parameters for haddock and saithe for each haul.

Open Meshes Round	Haul Number	Haddock		Saithe	
		L50	SR	L50	SR
60	2	41.3	6.2	52.9	11.1
60	9	37.0	4.5	42.1	4.8
60	10	N/D	N/D	46.1	8.0
60	11	39.4	6.3	41.8	2.1
60	17	N/D	N/D	36.4	4.4
60	18	N/D	N/D	42.6	2.2
60	19	35.3	2.52	41.5	2.2
60	20	N/D	N/D	40.5	2.3
60	22	N/D	N/D	41.3	2.7
80	3	43.3	7.7	39.3	2.1
80	4	37.9	6.0	38.5	5.0
80	5	32.7	4.7	N/D	N/D
80	12	36.1	8.3	N/D	N/D
80	13	38.2	7.5	41.5	3.0
80	23	39.2	6.3	40.9	3.6
80	24	37.6	6.6	N/D	N/D
100	7	27.0	4.7	37.3	0.9
100	8	32.2	3.1	38.0	4.4
100	14	38.4	4.9	32.0	2.8
100	15	35.0	8.3	39.4	0.1
100	16	34.5	5.7	N/D	N/D

* N/D = No selectivity data available

Plate I. Shows open meshes in the top sheet of the extension between the two grid sections.

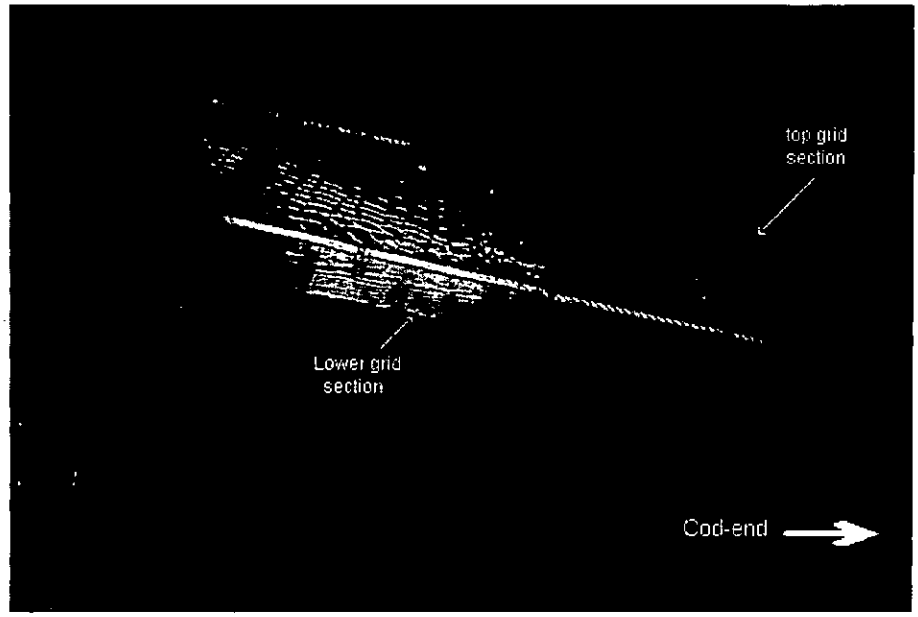
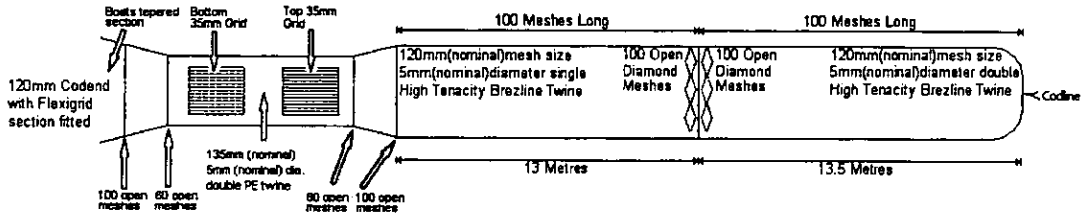
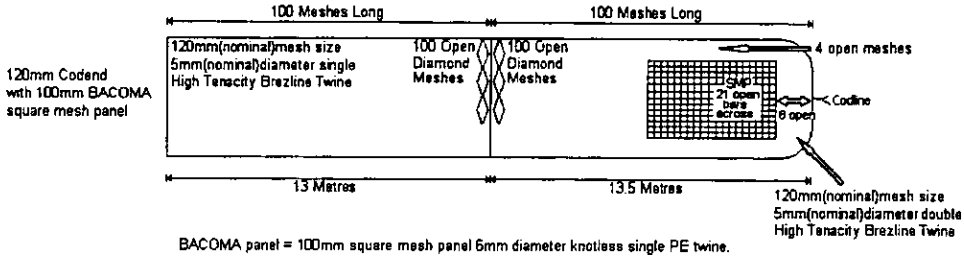


Figure 1 - Specifications of the different test configurations filmed during Objective 1.



Grids :- Upper and Lower Grids = 35mm bar spacing

:-Grid Tapered section, cutting rate = one knot, two bar, straight section = 80 meshes long



BACOMA panel = 100mm square mesh panel 6mm diameter knotless single PE twine.