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Charter Fishing Vessel *Serenity* (BF24)

Charter Cruise 0601H (1400H)

REPORT

7-30 March 2001

Ports

Loading: Fraserburgh
Unloading: Fraserburgh
Half landing: From 17 to 18 March (staff returned to Aberdeen)

Personnel

R J Kynoch		(In charge)
A Kingston	Seafish	(7-16 March)
I Penny		(12-30 March)

Objectives

1. To determine the effect of the position of a 90 mm square mesh panel on the selectivity of a 100 mm diamond mesh cod-end, constructed from 5 mm diameter double twine, attached to a commercial whitefish trawl.

2. To measure the selectivity of the same cod-end with no square mesh panel.

3. To measure the selectivity of a 100 mm diamond mesh cod-end constructed from 4 mm diameter double twine with a 90 mm square mesh panel.

4. To measure the selectivity of a 110 mm diamond mesh cod-end constructed from 4 mm diameter double twine with a 100 mm square mesh panel.

5. To measure the selectivity of a 100 mm diamond mesh cod-end, constructed from 5 mm diameter twine, with the lifting bag removed.

Procedure

Staff and fishing gear joined Serenity at Fraserburgh on 7 March 2001. The fishing gear was rigged aboard the vessel in Fraserburgh harbour. During the evening of 7 March the vessel sailed to fishing grounds 60 - 70 miles NE of Fraserburgh. Cod-end selectivity trials 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 3 m long square mesh panel was tested at three different positions in the gear (Fig. 1). The effects of the panel at all three positions were tested for the 100 mm cod-end constructed from 5 mm twine. The same cod-end without a panel was also tested to give a

comparison. Due to the limited numbers of haddock and whiting >30 cm on the grounds only the 100 mm cod-end constructed from 4 mm twine with the panel inserted at position 3 was tested. No data was collected for the 110 mm case.

Because all the above cod-ends were rigged with lifting bags or covers it was decided to extend the cruise to allow for tests to be carried out to assess the effect of the lifting bag (objective 5). The lifting bag was therefore removed from the 100 mm cod-end constructed from 5 mm twine. However after only one haul the weather deteriorated to a northerly gale and fishing operations were suspended. Because there was to be little change in the weather over the following days the decision was taken to end the cruise.

The cruise therefore ended at Fraserburgh on 30 March with the staff and fishing gear returning to Aberdeen.

Results

There were few haddock and whiting on the grounds above marketable sizes though there were large quantities below 30 cm. Forty one selectivity hauls were made of which four were invalid due to debris in the gear or strong cross tides. The performance of each cod-end/panel configuration is given in Table 1. The percentages are expressed in terms of the total numbers of juveniles or marketable fish entering the codend. This is made possible because the use of a small mesh cod-end on one side of the twin trawl provides information on the total population of fish passing through the gear.

Table 1 - Performance of the cod-end/panel combinations in retaining fish above and below the minimum landing size (30 cm for haddock and 27 cm for whiting).

Panel position from codline	Cod-end twine diameter	Haddock		Whiting	
	(mm)	% juveniles retained	% marketable caught	% juveniles retained	% marketable caught
No panel	5	87	101	88	79
3 – 6m	5	39	100	44	51
6 – 9m	5	24	103	19	29
9 – 12m	5	21	101	21	40
9 – 12m	4	13	107	6	20

Preliminary analysis shows that the cod-end without a panel fitted retains 87% of the juvenile haddock (<30 cm) entering the cod-end but also retains 100% of the marketable fish. When a square mesh panel is fitted, there is a large reduction in the number of these fish retained with no loss of marketable fish. A reduction in cod-end twine diameter from 5 mm to 4 mm double twine reduces the retention of juvenile haddock further by 8%.

For all test cases there is no loss of marketable haddock. However, the figures do indicate that the net with the test cod-end attached did catch slightly more marketable fish than the 40 mm cod-end on the other net.

A similar picture is seen for whiting where the % of retained juveniles drops from 88% to 44, 19 and 21% when the panel is fitted. The retention rate is reduced by an extra 15% for the cod-end constructed from 4 mm twine. With whiting however, there is a significant loss of marketable fish. This is partly due to the lower minimum landing size of 27 cm for whiting, compared to 30 cm for haddock. Previous trials have shown that more small fish escape from the gear as the square mesh panel is moved closer to the codline. In these trials this is not the case and the 3-6 m position is less selective for both haddock and whiting than the other two positions further forward. During the trials it was noticed during shooting that the hammerlock and shackles of the lifting becket caused the back of the cod-end to rotate 90 degrees so that the panel was no longer at the top but the side of the cod-end. It appears that the panel may not have been fully effective in the aftmost position, possibly because of this twisting. A fuller statistical analysis will be carried out in the Laboratory.

R J Kynoch

3 September 2001

Figure 1 - Position of the 3 m square mesh panel for each test case.