

R1/3

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Charter cruise vessel *Rival*

## REPORT

Part 1      10-21 June 1991      - 0057H  
Part 2      24 June-5 July 1991      - 0058H

### Personnel

Part 1      J Main  
              G Sangster  
              R Kynoch

Part 2      J Main  
              G Sangster  
              R Kynoch (24-28 June)  
              P Barkel

### Objectives

To compare the selection characteristics for roundfish in 90 mm cod-ends with 90 mm square mesh windows using two types of small mesh cover.

To study a trawl modified to retain whiting separated from haddock using 90 mm square mesh window panel fitted to the top side of a 90 mm meshed cod-end and part of the extension; small mesh covers will also be fitted.

### Narrative

The scientific equipment and trawl gear were transported to Buckie on Friday 7 June and loaded onboard the *Rival*. On Sunday 9 June the scientific staff travelled to Buckie where they joined the vessel.

On Monday morning the trawls were rigged and the crew instructed in the handling of the hooped covered cod-ends before sailing for the fishing grounds. Unfortunately, the sea conditions were unfavourable for diving and this had to be postponed to a later date. Fishing commenced a few miles off Buckie but the catches were small for both haddock and whiting. With these poor catches the length of the hauls were increased from three hours to between five and six hours. This necessitated altering course during the tow to return along the same path to avoid rough ground. In the act of turning, the hoops probably came into contact with the sea bed and put turns into the extension. This, in turn, prevented fish entering the cod-end. Unfortunately we were unable to observe the nets during the turning procedure. The 2.5 m hoops were replaced with 2 m ones and this eliminated the twisting. The diameter of the cover was not reduced because only the strops between hoops and cover required shortening. The crew quickly became familiar with the technique for handling the hoops and were able to fit them to the cover within two minutes.

During the week, hauls were conducted along the south side of the Moray Firth. On Thursday 13 June the nominal 90 mm (81 mm actual) square mesh window was replaced with knotted 90 mm diamond mesh turned onto the square which had a larger opening than the heavy knotless material. After only two hauls the knots slipped and the windows had to be replaced yet again. A larger meshed knotless material, still nominally 90 mm (90.5 actual), was obtained from the Laboratory in Aberdeen and fitted. On Friday 14 June the *Rival* fished off Macduff where haddock were of a suitable size, but again in insufficient numbers for selectivity measurements.

The scientific staff returned to Aberdeen for the weekend rejoining the vessel on Sunday night.

On Monday 17 June the weather was greatly improved allowing diving observations and video recording of the trawls to be obtained. The vessel then sailed for the fishing grounds in the Skate Hole area, some 60-80 miles off Buckie where the remainder of the cruise was conducted. Here the fish were of a better size and quantity with the best hauls being achieved during the early morning and evening tows. During the daytime large quantities of pout were encountered with reduced numbers of haddock and whiting.

The second objective was not carried out due to a lack of large quantities of both haddock and whiting in shallow water where the RCTV could be used to make direct observations. The cruise ended in Buckie on 5 July where the trawls and equipment were off loaded and returned to Aberdeen.

## Results

Twenty four valid hauls were made with the twin trawl, having identical cod-ends on each side. On most hauls a standard cover was used over one cod-end and the new design of cover with the supporting rings over the other cod-end. Haddock were caught in sufficient quantities in all hauls to calculate the selection parameters of at least one of the two cod-ends. Whiting were caught in smaller quantities and only 22 valid hauls were achieved. The rings supporting the covers were switched between sides after every haul.

A preliminary analysis of the haddock data suggests that the 50% retention length (L50) of the standard 90 mm diamond mesh cod-end is greater, when measured using the cover with rings, by approximately 4 cm. Similarly the L50 of the square mesh window cod-end seems larger when using the cover with rings by approximately 2 cm.

Furthermore, the haddock results suggest that insertion of the square mesh window increases the L50 of the standard cod-end by about 2.5 cm.

During three hauls one of the cod-ends was left uncovered to allow comparison of the cod-end catch with and without a cover. It was found, however, that there were appreciable differences in the quantities of fish entering the two trawls and this comparison may not be valid.

Further detailed analysis of these data will be done in the Laboratory when the significance of the differences between trawls and between sides will be determined.

John Main  
12 December 1991

Haul No	Duration of haul (hrs)	Cod-end type	Description of covers		Total catch cod-end baskets		L50 (P)	Haddock L50 selection range			L50 (P)	Whiting L50 selection range		
			(P)	(S)	(P)	(S)		(S)	(P)	(S)		(P)	(S)	
3	6	1	C+R	C	4	4	27.3	24.2	8.7	8.3	-	29.1	-	7.2
4	6.25	1	C	C+R	5	4	25.0	-	6.5	-	35.0	-	7.9	-
5	6	1	C	C+R	4	4	20.7	28.8	7.0	8.9	23.5	35.2	4.7	7.6
6	6	1	C+R	C	4.5	4	28.6	28.9	8.7	6.5	-	-	-	-
8	6	2	C+R	C	3	5.5	32.3	25.5	9.7	7.7	-	29.6	-	5.0
9	6	2	C	C+R	4	3	29.9	34.9	9.8	11.3	-	-	-	-
10	5.25	3	C	C+R	3.5	3	28.3	34.2	8.6	15.8	-	40.1	-	11.8
11	6	3	C+R	C	4	3	30.0	26.8	11.2	7.8	43.7	49.0	11.5	20.1
12	6	3	C	C+R	5	4	28.0	38.6	9.1	20.4	35.4	-	9.0	-
13	6	3	C+R	C	8.5	14	28.4	24.9	6.3	4.9	33.2	27.9	6.1	3.1
14	5	4	C	C+R	10	7	20.1	26.5	9.9	7.7	26.1	28.9	8.0	5.7
15	5	4	C+R	C	3	4	30.7	28.1	23.1	22.7	30.0	23.6	8.0	10.1
16	5	4	C	C+R	15	7.5	21.7	25.6	7.3	6.3	26.0	29.0	5.5	6.6
17	5	4	C+R	C	7	15	27.4	23.8	4.8	7.3	30.7	30.0	5.3	5.2
18	5	4	C	C+R	8.5	7	24.3	27.2	8.0	8.2	28.3	28.1	6.7	5.0
19	5	4	C+R	N/C	6.5	4.5	34.2	-	14.6	-	32.9	-	6.8	-
20	5	4	N/C	C+R	4	9	-	25.9	-	4.4	-	29.5	-	3.9
21	5	4	N/C	C+R	4.5	8	-	27.1	-	6.2	-	30.4	-	5.2
22	5	3	C+R	C	4.5	5.5	31.0	25.2	7.7	6.9	-	32.0	-	5.8
23	5	3	C	C+R	10	6.5	37.3	28.5	4.8	4.7	38.5	32.9	9.8	4.4
24	5	3	C+R	C	5	8	27.7	25.4	6.9	5.8	40.1	29.3	11.4	11.2
25	5	3	C	C+R	7	6	30.1	27.7	11.6	6.9	-	34.1	-	6.5
26	5	3	C+R	C	6	10	30.1	29.5	6.1	8.5	36.8	34.2	6.9	7.4
27	5	3	C	C+R	4	4	26.4	25.5	15.6	17.4	32.6	36.3	9.4	9.2

C = Cover only

C+R = Cover with rings

N/C = No cover (hence no selection parameters)

Cod-end type

- 1 = 90 mm diamond mesh cod-end with 80 mm sq mesh knotless window
- 2 = 90 mm diamond mesh cod-end with 90 mm sq mesh knotted window
- 3 = 90 mm diamond mesh cod-end with 90 mm sq mesh knotless window
- 4 = 90 mm diamond mesh