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FRV *Clupea*

Cruise 0704C

## REPORT

26 April – 7 May 2004

### Personnel

R J Kynoch (In charge)  
M Stewart  
M Burns 26-30 April  
I Penny  
C Hall 2-3 May  
P Barkel 3-7 May  
G Dunlin (Seafish) 30 April – 7 May

**Out-turn days:** 12 days – MF06q

### Objectives

1. To use the Seabat multibeam sonar and low light camera to make an assessment of possible areas where fish escapes occur through the large mesh top sheet of BT187. The Seabat sonar will be mounted onto the RCTV.
2. To use self-recording ccd cameras attached to BT187 to assess *Nephrops* escapes through three different belly sheet rigging configurations all 2 m wide by 8 m deep; reduced number of meshes back from bosom section, replace 80 mm with 160 mm diamond meshes and flexi-grid panel with 30 mm bar spacing.
3. To assess the feasibility of attaching a 40 mm collection bag bellow the belly of BT187 to collect escapees through the 2 m by 8 m modified belly sheet.
4. To observe the rigging and fish escapes over the cut back headline of a modified Stuarts *Nephrops* trawl supplied by Seafish.
5. To observe the rigging and fish reactions to an inclined separator panel rigged with a small mesh collection bag inserted into the trawl between the end of the last tapered section and straight extension.

### Narrative

The fishing gear and RCTV equipment was loaded aboard *Clupea* at Fraserburgh on 21 April. Staff joined the vessel on 26 April and thereafter completed rigging the fishing gear, RCTV and Seabat multi-beam sonar equipment for the remainder of the day alongside Fraserburgh harbour. The vessel sailed on 27 April with the RCTV – Seabat systems tested *en route* to

fishing grounds approximately 20 miles NW of Fraserburgh. On arrival at the fishing grounds Seabat sonar data collection began for objective 1. Fishing continued until the morning of 29 April when due to a NW gale fishing operations had to be abandoned and the vessel sailed to shelter in Fraserburgh harbour. During this down time the opportunity was taken to rig the flexi-grid into the trawl belly sheet for objective 2. Due to personnel reasons Mr Burns left the cruise and return to Aberdeen on 30 April. The vessel sailed from Fraserburgh on 1 May to the same fishing grounds NW of Fraserburgh. During the first RCTV deployment of the day the TV winch guiding on gear failed and damaged the umbilical cable. The Fishing gear was recovered and the vessel sailed back to Fraserburgh harbour to enable repairs to be made to the TV winch and have the umbilical cable inspected. However on inspection it was decided that the umbilical cable required re-termination and therefore this system was replaced by the handheld system which joined the vessel along with Mr Hall on 2 May. The RCTV was re-rigged during the afternoon of 2 May. The vessel sailed on 3 May to fishing grounds NW of Fraserburgh. Thereafter further RCTV/Seabat hauls were made to collect observation, sonar and fish catch data for objectives 1, 2 and 3 until 4 May. For the remainder of the cruise hauls were made to assess the performance of the inclined separator panel (objective 5). Two further port calls were made before the end of the cruise the first on 3 May, where Mr Barkel replaced Mr Hall and on 4 May to allow Mr Dunlin to receive medical attention to an injured hand. Due to lost time during the cruise it was only possible to partially complete Objective 2 and Objective 4 had to be dropped all together. The cruise ended at Fraserburgh on 7 May with all staff and equipment returning to Aberdeen.

## Results

Five hauls were made with the Seabat multi-beam sonar to assess areas of fish escapes along the top sheet of the trawl. During each haul the RCTV was held above the trawl at four different positions approximately 0 m, 2.3 m, 8 m and 16 m respectively from headline centre. Sampling period at each position was 10 minutes. Preliminary analysis suggests that the main area of fish escapes appeared to occur at position 2, which was slightly behind and above groundrope centre. It was also noted that further back in the trawl many fish were observed on the sonar image swimming close to the belly sheet within the sand cloud generated by the trawls groundgear. Due to poor water clarity it was not possible to obtain species identification using net mounted cameras of any escapees through the top sheet.

A 2 m x 8 m flexi-grid with 30 mm bar spacing was the only case assessed for Objective 2. The grid was inserted into the middle of the rear section of the belly sheet (Fig. 1). A 30 mm diamond mesh collection bag was rigged below the grid to collect any escapees. A total of four hauls were made with this rig but due to the sand cloud generated by the ground gear it was not possible to observe the grid. No significant fish or *Nephrops* escapes were found passing through the grid into the collecting bag. However it was noted that after the second haul the hollow tubes used in the grids constructed were becoming blocked with mud therefore making the grid very heavy. It was possible that this additional weight caused the belly sheet to drop closer to the seabed, thereby masking the grid. Another problem noted was slippage of the lacing twine which joined the grid to the surrounding belly netting thereby causing the grid to distort.

The final 3 hauls of the cruise were made with the Seafish inclined separator panel (Objective 5). The panel was pre-rigged into a tapered 4-panel section, which was then inserted between the end of the trawls taper and straight extension/codend. A 40 mm diamond mesh collection bag was attached to the vent hole at the top of the inclined panel to retain any fish or *Nephrops* escapees. During normal fishing operations this vent hole would allow fish to escape

from the trawl. When observed during all three hauls the 4-panel section was very stable and the inclined panel maintained its shape and angle even with significant catches retained in the collection bag. A fuller statistical analysis of this catch data is to be carried out by Seafish.

R J Kynoch  
21 January 2005

Seen in draft: A Nicol, OIC *Clupea*

Figure 1 Position of the flexi-grid in the trawls belly sheet

