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FRV "Clupea"

Cruise 6/86

PB

## REPORT

30 April - 20 May 1986

### Personnel

J H B Robertson HSO (30 April - 14 May)  
R D Galbraith HSO (14- 20 May)  
W R Mojsiewicz SO  
P J Barkel PTO  
J T M Hunter PTO (6-20 May)  
A MacDonald PTO (14-20 May)  
W Phillips Visitor (30 April - 6 May)

### Objectives

- 1 To compare the separation between codend and cover when using diamond and square mesh covers.
- 2 To film the effect on small mesh codend cover shape of speed changes between 2 and 3.5 kts to ascertain possible codend selection variation caused by codend and cover separation.
- 3 To measure the mesh opening of a codend with half the normal number of meshes on its circumference.
- 4 To film and measure the engineering performance of a twin trawl with a view to using it for comparative fishing experiments.
- 5 To film a tapered square mesh codend.

### Narrative

Staff joined ship in Buckie at 1100 hrs on 30 April. Essential repairs to the RCTV vehicle needed to be done at local repairers in Buckie before the cruise could proceed. "Clupea" sailed at 0100 hrs on 1 May to make for Strathy Point on the north coast where television work commenced at 1200 hrs. At the start of the first haul the television cable broke down and since the fault was irreparable a replacement cable was requested from Aberdeen. "Clupea" collected the new cable on 2 May in Scrabster and over 3-5 May worked on the east and west side of Orkney.

The half landing of 6 May was spent in Kirkwall. Bad weather prevented TV work on 7 May. On the 8, 9 and 10 May "Clupea" worked at Sandside on the north coast. During this period an intermittent fault developed in the TV cable making observations difficult but not impossible. "Clupea" proceeded to Buckie on 11 May arriving at 1430 hrs. A half landing was taken on 12 May in Buckie and during this period net alterations were carried out ashore on the twin trawl. One haul was accomplished on 13 May before returning to Buckie to take delivery of another TV cable. Two TV hauls were conducted on 14 May in the South Deeps. A staff changeover took place in Buckie on the evening of the 14th with Mr Galbraith and Mr MacDonald joining ship and Mr Robertson disembarking. "Clupea" left Buckie on 15 May to continue TV observations of the twin trawl south east of Orkney and commence engineering trials in the Moray Firth. The cruise terminated in Buckie on 20 May when fishing gear and instrumentation were transported to Aberdeen.

## Results

1. The separation between the codends and covers was observed through 'windows' in the cover made from small mesh multimono-filament nylon netting. At the same speed of 2.8 knots the separation was greater with the square mesh cover than with the diamond over most of the length of the codend. However, convolutions at the front end of the square mesh cover were touching and apparently blocking the front 3-4 rows of meshes of the codend.
2. Again the diamond and square mesh covers were compared. The diameter of the diamond mesh cover decreased noticeably as speed increased. The separation between cover and codend therefore reduced. This may have a detrimental effect on codend selection. The diameter of the square mesh cover stayed much the same over the speed range 2-3 knots. As the cover filled with fish (in this case not more than 3-4 baskets) the square meshes opened wider at the back end of the cover. This had the effect of opening the meshes forward along the length of the cover which in turn increased the diameter of the cover at its front end. The separation between codend and cover was thus increased and under these circumstances the masking effect of covers may be reduced.

A comparative fishing trial would now be beneficial to ascertain whether the improved separation with the square mesh cover will give better codend selection than the normal ICES approved diamond mesh cover.

3. Two codends were compared, both of the same length and mesh size with one having 120 (wide) and the other 60 (narrow) meshes on its circumference. A 12 metre extension piece was placed between the tapered body of the trawl and the test codend to emulate normal commercial practice. The meshes in the narrow codend were noticeably wider open. The lateral mesh opening measured from still photographs was 0.12 for the wide and 0.35 (times the mesh size) for the narrow codend. This difference in mesh openings explains the selectivity result described in Working Paper No 7/85 which showed that a narrow codend released more juvenile haddock and whiting.
4. The first twin trawl design had too long a headline. The headline netting was pushed back distorting the top of the trawl. The side panels were too shallow causing the headline and footrope to take up a vee shape. Alterations to the net corrected the problems although the altered side panel forward edge needs further alteration to remove loose netting. Five fully instrumented hauls were made, 3 in deep water (South Deeps) and 2 in the shallower Bellans grounds. "Net-Tec" doors were used during the cruise and these worked well in deep water but required rigging alterations before performing satisfactorily with the shorter warp lengths. The engineering data is being further analysed in the Laboratory.
5. The tapered square mesh codend was joined to a long extension which had a small aperture at its aft end. As a consequence the front end of the square mesh codend was constricted on its circumference causing the meshes to close up. Due to time constraints it was not possible to attach the codend further up the extension at a point where the larger circumference would have opened the square meshes more.

All the video tape and still photographs are being analysed further in the Laboratory. Short demonstration tapes will be produced to illustrate the various topics investigated, especially the comparison between wide and narrow diamond mesh codends.

J H B Robertson  
R D Galbraith

16 July 1986

Seen in Draft: W Smith