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FRV *Clupea*

Cruise 11/90

11CR90

REPORT

24 September-12 October 1990

Personnel

J Main	SSO
G Sangster	HSO
P Barkel	PTO
I Leaver	SO
R Kynoch	ASO 24 September-1 October

Objective

To investigate novel methods of improving escapes of juvenile fish from the cod-end.

Narrative

The scientific staff travelled by minibus to Buckie on 24 September and joined the *Clupea* where the trawl, diving equipment and RCTV were prepared for operation.

The vessel sailed for Noss Head at 0615 on Tuesday 25 September but with northerly winds and a big swell the vessel continued onto Copinsay where the trawl was shot that afternoon producing suitable quantities of both haddock and whiting.

The bulk of the fishing was conducted off Copinsay where the fishing remained steady for both species.

During the cruise the opportunity was taken to carry out some free diving on the trawl to obtain some dye flow patterns in the cod-end and covers.

An attempt was made to obtain some video material of pout in the mouth of the trawl using the RCTV in deep water 15 miles off the Noup, but unfortunately the cable was damaged and the attempt was abandoned.

Mr Kynoch returned to Aberdeen on 1 October. The half landing was in Kirkwall on 2 October.

The weather deteriorated towards the end of the cruise preventing fishing on both 7 and 9 October. On 10 October one haul was obtained off Copinsay in continuing poor weather conditions and with a bad forecast it was decided to move south to a position off Sarclet Head where again one haul was obtained before proceeding to Buckie for the night.

On 11 October fishing continued off Lossiemouth where large quantities of 15-21 cm haddock were observed passing through the trawl and cod-end.

Observation of haddock and whiting in almost all of the 27 hauls have been recorded for further detailed examination in the Laboratory.

Results

Using the RCTV direct observations were made in the area of the extension and the cod-end of the Jackson trawl where small haddock and whiting were expected to break out through the netting.

Observations showed that the extension ahead of the cod-end was narrow and the meshes closed which prevented a good flow of water into the cod-end and certainly could not permit fish to escape. This panel was removed which increased the water flow and improved the shape of the net and cod-end. A small section of netting was then introduced just ahead of the cod-end made of square mesh netting on the top and diamond on the bottom; both 80 and 90 mm square mesh panels were used. The water flow in this additional section was measured as 1.8 knots inside and 2.2 knots outside the cod-end when towing at 3 knots.

After some initial hauls a series of devices were fitted into the net below the square mesh windows. These were introduced in an attempt to increase the number of escapes through the window. Mobile and passive devices were used including spinners, sloped panels of netting, cones of netting, mushroom shaped devices and ribbons of material. None gave a dramatic increase in escapes but fish did react to them by slowing down as they approached, panicking and eventually passing the obstruction and swimming in the dead water behind, before slowly dropping back to the cod-end.

A small mesh cover was fitted over the square mesh window and held up by a small half hoop, this prevented masking of the window meshes. It was confirmed using the video that the same fish reactions occurred with and without the cover.

Eventually an additional small mesh cover was fitted over the main cod-end and this was held open by 2.5 m hoops which were designed for easy handling and again showed no interference with the cod-end or the fish escapes.

Samples of fish were measured from the cod-end, cover and window covers. The data from both the measurements and video tapes are now being written up as a working paper.

J Main

27 February 1991

Seen in draft: George B Calder