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FRV *Scotia*

Cruise No 272, Institut für Fangtechnik, Hamburg

Report

24 August - 11 September 1989

Personnel

P A M Stewart SPSO (1-8 September)
S Reeves SO (26 August - 1 September)

Objectives

1. To investigate the effect of visual stimuli on the escape of fish from codends.

2. To observe French dredges in operation and to survey the tracks.

Narrative

The vessel reached Aberdeen from West Germany on 26 August. Gear was loaded that day and the vessel sailed overnight to the Orkney area. The vessel operated off Copinsay during most of the cruise. On 5 and 6 September the dredges were used in North Sound. On 30 August the vessel was towed into Kirkwall with a fouled propellor and on the 31st it was necessary to sail to Wick for repairs to the RCV cable termination. Staff changed in Kirkwall on 1 September. On the night of 7 September, the vessel moved south to the Aberdeen Bank and worked there on 8 September, reaching Aberdeen in the early evening. Gear was unloaded on 9 September and the vessel left for West Germany.

Results

The cruise was arranged by the staff of the Institut für Fangtechnik, Hamburg and was aimed at studying the performance of various nets and otterboards. Observations and performance measurements were made on a divided trawl, 2 balloon trawls, a pelagic rope trawl and a rockhopper survey trawl, using cambered Vee doors (4.5 m^2), Bison doors (2.6 and 4.5 m^2) and flat doors (4.5 m^2). Marine Laboratory codends were attached to these nets and observed on most hauls.

A codend with the top panel 4 meshes longer than the bottom was attached to one of the high opening balloon trawls. When observed this modification did not appear to influence how the codend fished. However, the presence of a very high concentration of fish resulted in the codend filling up completely in 10 minutes. Excellent video film of large numbers of fish escaping was obtained. Two subsequent hauls were made with this codend, the second without handling ropes which distorted the netting. Different forms of fish behaviour were seen; the distorted codend showing turbulent flow and many escapes, the undistorted codend remaining stable with few escapes. A 4 mesh hole was cut in the top of this codend to see if fish escaped actively but they did not seem to do so.

Square mesh codends on the balloon trawls were deliberately distorted to study the effect on fish escape. The codend mouth was restricted, causing the netting to lie in folds at the fore end. As the catch accumulated the codend assumed a bulbous shape and the lateral mesh bars were stretched fully. At all stages, however, fish were able to escape readily. Two diagonal ropes were attached to the netting, in the N-direction, just ahead of the lifting strap. These were shorter than the netting to cause twisting. The codend was severely distorted but still contained large areas of open mesh from which fish escaped. With the altered water flow, however, escape was taking place further forward than in an undistorted codend.

The French dredges were towed on sandy ground in water depths of around 50 m. They were observed with the RCV and good video records made. The dredges are 2 m wide and have fixed teeth, 12 cm apart, projecting 11 cm below the lower bar. Under tow the teeth were sunk fully into the sea bed. The tracks were examined using the RCV. They consisted of small parallel sand ridges which were relatively easy to find and follow. Some small fish and crustacea were seen to be feeding on damaged animals on the tracks. The catches contained *Pecten maximus* but also many stones and broken shells. A video tape summarising the observations will be produced. The tracks were also examined with side-scan sonar. Although the track depth was small, some evidence of tracks was seen on the echo traces.

Peter A M Stewart
20 September 1989