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Field Report Gairloch MV *Stella*

30 July to 19 August 1989

Personnel

| | | |
|---|---|---|
| J Main | SSO | |
| G Sangster | HSO | |
| I Leaver | ASO | |
| C Stewart | Craftsman | 30 July to 12 August |
| R Dickson | Storeman | 13-19 August |
| C Shand | HSO | 1-11 August |

Objectives

1. To study the behaviour of haddock and whiting escaping from both diamond and square mesh codends.

2. To combine the investigation of the physiological condition of fish at various stages of the trawling process by measuring the lactic acid and glycogen levels before, during and after total exhaustion in the codend.

3. To recover all the cages from the sea bed and return them to Aberdeen.

Narrative

During the first day, the fish held in the underwater cages were visited, fed and counted. Staff set up the experimental apparatus for towing the codend and prepared *Stella* for work.

*Stella* worked daily in the loch towing the codend arrangement and moored in Shieldaig Bay each evening.

Visits were made daily to the underwater cages for feeding and counting the fish.

The cages were lifted between 14 and 17 August and all the fish were released including the tagged controls.

All the experimental equipment, diving gear, mobile laboratory, *Stella* and staff returned to Aberdeen on 19 August.

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Results

Tows with both 90 mm diamond and square mesh codends were conducted at 3 knots. Haddock used for the experiments were rested for a minimum of 12 hours before being introduced to the codend. These fish had previously been measured for length circumference and diameter at maximum body girth. When a fish escaped from the codend, that mesh was measured for the actual opening. Using the measured diameter of the escaped fish, the conical gauge was pushed into the mesh to that size to give an indication of

the force used by the fish to escape; the conical gauge is fitted with a calibrated tension spring for the purpose. Haddock were killed when they appeared exhausted and were trapped against the back of the codend. Muscle samples were taken and frozen for lactic acid level measurements. These samples have been returned to the Laboratory for analysis.

It was interesting to note that no haddock attempted to escape by selecting a mesh to escape through during any of the tests. The fish held station a short distance in front of the codline until they tired and fell back against the rear of the codend.

With diamond mesh, all the fish were retained in the codend. With the square mesh with the meshes at the rear wide open, fish would tire, and having fallen against the meshes, the head of the fish would enter a hole and the body would slip out through the mesh. It was observed that these fish swam away after escape. All the fish in the square mesh tests escaped by this method, none were retained. Detailed analysis of the video tapes will be conducted in the Laboratory.

During the last 17 days of the cage experiment no fish died and the experiment was terminated.

Results of survival after at least 38 days in 12 cages.

| | | Percentage survival |
|---|---|---|
| Control fish cages | 1 | 100 |
| | 2 | 100 |
| | 3 | 100 |
| Escapes from diamond 90 mm mesh | 1 | 60 |
| | 2 | 83 |
| | 3 | 80 |
| Escapes from diamond 100 mm mesh | 1 | 93 |
| | 2 | 83 |
| | 3 | 97 |
| Escapes from square 80 mm mesh | 1 | 90 |
| | 2 | 97 |
| | 3 | 86 |

All deaths occurred during the first 12 days except for one which died on the 22nd day.

One tagged control fish died after a few days in captivity. It was noted that it had a bad hook wound in the roof of its mouth.

J Main
7 September 1989