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FRV "Goldseeker"

9GR87

Cruise 9/87

Report

3-18 August 1987

Personnel

- J Main
- G Sangster
- W Mojsiewicz
- E Coroon
- S Hall Part Time

Objective

1. To catch fish escaping from codends using the divers' vehicle TUVII; to hold them in underwater cages and assess the survival rate.

Fish will also be taken from inside the codend and control fish will be caught by handline and held in separate cages.

2. Where spots of fish can be located on the ship's echosounder in shallow water, divers will descend to a position above them and attempt to follow and observe their reactions in the path of the advancing trawl gear.

3. The Biology Section will collect gadoid stomachs to augment data for their fish cage experiments off Badachro, Gairloch.

Narrative

Prior to "Goldseeker" arriving at Gairloch, 5 underwater cages were prepared and set up in suitable depth (20 m) and location for receiving fish. Control fish, haddock and whiting were handline caught and placed in one of the cages on 3 August. "Goldseeker" arrived at Gairloch at 2100 hours from Kyle on 3 August. The next day, 4 August, was devoted to preparing the trawl gear, loading the underwater vehicle, diving and television equipment.

The vessel worked daily from Gairloch on the Melvaig tow outside Longa from 5 August until the half landing on Monday 10 August. Dr Hall conducted 6 short tows using a fine meshed trawl close to the shore off Badachro during that evening. This work was successfully carried out and all samples were taken ashore and returned to Aberdeen for analysis.

The main programme recommenced on the morning of 11 August and was only interrupted once for bad weather on 13 August when "Goldseeker" remained in port.

"Goldseeker" unloaded the scientific gear at Gairloch on the morning of 17 August and departed for Kyle.

Results

The control handline caught fish remained in excellent condition during the whole period of the experiment.

Haddock, whiting and codling which were caught escaping from both 80 mm diamond and 80 mm square meshed codends were placed in separate cages and monitored daily by the diving team.

Haddock and whiting and codling of a similar size which had not escaped from the codend were removed underwater and taken to a fourth cage.

To investigate the regeneration of scales, handline caught haddock which had lost scales during capture were placed in a special cage which had an internal sliding panel for easy removal of single fish. These fish will be removed during September.

Cine film was shot of haddock escaping through the meshes of the codend. The film material was shot at 50 frames per second to observe the reactions of the fish in slow motion. Television film was obtained of fish in the codends and in the cages showing the results of damage of these fish by scale removal whilst in or escaping from the trawl codend. Codend meshes were measured from the TUVII using a new conical gauge whilst towing at approximately 3 knots. Starting a few meshes after the join of the codend to the net every mesh was measured in a straight line to codline. These measurements back up the direct observations that the diamond meshes are only open to a maximum of half that of the square mesh possibly reducing the visual stimulus for escape.

The following measurements were made without pressure and by just touching the mesh.

Starting a few meshes from the join to the net and measured in sequence were

80 mm	20	20	22	20	21	20	20	19	20	20	19	18	15	14	14	16	16	17	16	18	18	20	20	20
Diamond	20	20	24	26	27	28	30	30	32	32	32	30												

The measurements terminated just ahead of the fish held against the meshes, approximately 10 to 20 meshes from the codline.

80 mm	38	40	38	39	36	40	40	42	38	38	38	38	40	36	36	38	38	40	40	36	38	36		
Square	38	40	38	38	36	39	32																	

The survival results are now being analysed in detail. Fish from the codends were subjected to both dogfish abrasion and Cyanea sp. On one occasion when a large number of Cyanea were present and fish were removed from the codend there were 10 deaths within a few minutes of being placed in the cage. This is most probably due to jellyfish material getting into the gills whilst in the codend.

Results to date are -

Survival of control fish	100% after 18 days
Survival of escapes from the diamond mesh	18% after 15 days
Survival of escapes from the square mesh	79% after 12 days
Survival of non escapes from the codend	69% after 11 days

A final count will be made at the end of September, before the cages are recovered and returned to Aberdeen.

J Main

2 October 1987

Seen in draft: A Mair