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10GR88

FRV 'Goldseeker'

Cruise 10/88

REPORT

22 August-10 September, 1988

Personnel

- R S T Ferro
- R B Mitchell
- C W Shand
- S A Reeves
- R Greer (Pitlochry) (24-26 August)
- A Shine (Visitor) (24-26 August)

Objectives

1. To investigate the variations in water flow within trawls and codends.
2. To sample specific fish populations in Loch Ness using a pelagic trawl.

Narrative

The fishing gear, television equipment and instrumentation were loaded aboard 'Goldseeker' at Fort Augustus by the evening of 23 August after her passage from Corpach. During the following three days a small mesh trawl was used to sample fish populations near the surface (<30 m depth) and on the loch bed at a depth of 200 m. Problems were encountered in deploying the television sledge in the deep water and no useful film was obtained. All trawling took place in the area between Invermoriston and Fort Augustus.

On 27 August the sledge was changed for the remote controlled television vehicle for use in midwater and calibration of the flow meters was attempted. Strong winds prevented steady towing but the following day conditions improved and the calibration was completed before the vessel steamed to Muirtown for the first half landing on 29 August.

From 30 August to 8 September measurements of water flow in trawls and codends were made, working daily from Fort Augustus. A second half landing was taken on 5 September. 'Goldseeker' was unloaded at Fort Augustus on the evening of 8 September and sailed for Corpach the following morning.

Results

One of the aims of the programme was to confirm the presence in the loch of two subspecies of charr - a darker pelagic form and a benthic type with a larger eye and blunter head. ~~Sampling by pelagic trawl with a 12 mm mesh codend produced a range of sizes of pelagic~~ charr from 7 cm to 30 cm. The catches were lower than might have been expected from the acoustic targets seen on the echosounder, pointing to possible avoidance of the net which was towed on 50 m of warp at 2 to 2.5 knots with a vertical mouth opening of approximately 6 m. In these shallow depths the fish may also have reacted to the towing vessel. The only other fish to be caught were sticklebacks. A single haul on the loch bed in 200 m of water caught mainly small (<10 cm) charr of the benthic type. Quantities of leaf litter were also taken. Adult charr up to 30 cm long were caught by gillnet in 220 m of water during the same period. Further analysis is being carried out in collaboration with Stirling University.

A total of twenty hauls were made during which flow was measured using flowmeters with 50 mm diameter propellers at various points along the central axis of the nets. The

towing speed was measured independently well ahead of the net at the net depth. Two pelagic trawls with different mesh size in the body and codend were used. Flow along the axis of a net was found to reduce towards the codend. In the case of a 12 mm codend attached directly to a sharply tapered (1N4B cut) 30 mm mesh body the reduction was 70% in the codend. For a 20 mm codend attached to more gradually tapered (3N2B cut) 20 mm mesh body the reduction was only 10-15%. When a 40 mm mesh section of the same taper was substituted there was a greater reduction in the codend of approximately 30%. Flow conditions were varied in the codends by introducing 'artificial fish' (water filled plastic bags or bundles of netting) to induce the bulge created by a catch. A slight further reduction in flow was evident. In a 90 mm diamond mesh codend, towed on a rigid ring, the flow was reduced by more than 50% near the aft end. An alternative method of tying the codline did not produce a significant change in flow. On each haul the RCTV was used to check that the meters were not snagged and to identify their position. Using the TV in conjunction with a laser a new system of measuring the distance of objects and their size was assessed.

R S T Ferro

14 November 1988

Seen in draft: S Clark