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FRV 'CLUPEA'

CRUISE 8/79

REPORT

JUNE 18 - JULY 12, 1979

Aims

To develop and use new techniques to observe and record the behaviour of fish in the region of fishing gears on commercial grounds.

Narrative

The new remote controlled TV vehicle uses Magnus effect rotors to give vertical and lateral position changes and this cruise was the first test of this vehicle used alongside towed targets. During the first week working in Dornoch Firth a number of design alternatives were tested and selected and a major fault in the TV camera was located and repaired. A control system was developed and tested and on the 21 June the vehicle was successfully steered alongside a 2 beam scallop dredge on two separate hauls and long term observation of any part of this gear was found practical. During the second week fishing tows between 20-30 fathoms were selected for tests with longer cables in Sanday Sound (Orkneys). While fishing the 40ft Aberdeen trawl successful TV observations were made of the trawl board but the available lateral motion was insufficient to guarantee staying with a board when the ship's course altered; vertical control was adequate. Further tests showed that the vehicle could move alongside either side of the trawl and could be pressed against the meshes to look into the net but a greater degree of freedom of the lateral movement was required when the ship's course varied. After the second week the more sensitive SIT camera was collected from Lerwick airport and eventually fitted on a longer vehicle cable (1000ft). This was then tested with the vehicle on an inner Balta tow ranging between 30 to 50 fathoms. The weather became very cloudy and although the camera could be towed alongside the gear at 40 fathoms only during the brightest part of the day was picture quality sufficiently good. After further tests it was realised that with the existing temporary cable, cloudy weather and limited lateral movement we could not work deeper than 30 fathoms and the vehicle and camera were successfully used to make video tape recording of the reaction of fish to the groundgear on the Smiths Bank and off Todd Head. These will be analysed particularly for size selectivity effects.

Bioluminescence measurements were made in various areas between Aberdeen, Buckie, the Orkneys and Shetlands. A netting panel was observed. While mounted at 45° to the water flow on the vehicle in front of the SIT camera. The netting was clearly visible as a black silhouette against the water which glows after it leaves the back of the netting forming a light behind the netting. This effect was lost when the ship was stopped and when viewed from the turbulent outside or back of the panel the glow was seen but not the netting.

Conclusions

The results of this cruise showed that this type of simple remote towed vehicle can be used for gear and fish behaviour observations and can be piloted and used to observe complicated targets through a single TV observation camera. The temporary cables were a handicap also man-handling was tedious and a careful selection of the correct single dual purpose towing conducting cable together with a suitable winch under the control of the 'pilot' will give forward and backward control. The vertical control was adequate to 300ft with 1000ft of cable and fine control was still available. The horizontal control should be increased to a surplus to allow full control even when the ship is not on a perfectly straight course. Observation will then be practical to the limit of light sensitivity of the TV camera about 300ft depth in good conditions.

Bioluminescence was shown to make netting panels visible as relatively high contrast silhouettes in darkness.

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2.4.80

Seen in draft
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