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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1979 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 6

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

- F R Harden Jones
- M Greer Walker
- G P Arnold
- B Holford
- B F Riches
- N D Pearson
- D G Hughes (2 June only)

DURATION

Left Lowestoft 0830 h 23 May
 Arrived Lowestoft 0600 h 6 June
 All times are Greenwich Mean Time

LOCALITY

Southern North Sea

AIMS

1. To track plaice fitted with acoustic transponding compass tags in the Orford Ness - Southwold area.
2. To track plaice and cod fitted with acoustic transponding tags off Texel and to the north east of the Norfolk Banks.

NARRATIVE

RV CLIONE left Lowestoft at 0830 h 23 May and as the weather was unsuitable for work relating to Aim 1, steamed to Den Helder to enter port at 2205 h. The sonar dome was fitted and RV CLIONE left at 0150 h 24 May and steamed to Markhams Hole where work on Aim 2 started at 1400 h and continued until 0030 h 31 May. After steaming towards the Norfolk coast where the sonar dome was removed in sheltered waters, RV CLIONE steamed south to the Orford Ness sea area where work relating to Aim 1 started at 1430 h and continued until 0230 h 2 June. RV CLIONE then steamed to Lowestoft and at 0750 h picked up Mr Hughes by motor boat. Under his direction two current meter arrays were laid in the Orford Ness area. Mr Hughes was returned to Lowestoft at 1930 h. RV CLIONE anchored for the night in Pakefield Roads, and returned to the working area off the Suffolk coast the next morning. Trials with the quantum irradiance meter were made during the day as Decca chain 5B - essential to the tracking work - was not being transmitted. Transmissions were resumed during the afternoon and tracking was resumed and continued until 1030 h 5 June. The current meter arrays were then recovered, and after making further observations on a plaice fitted with a compass tag, RV CLIONE returned to Lowestoft to tie up at 0600 h 6 June.

RESULTS

Aim 1. Two plaice fitted with the new acoustic transponding compass tags were tracked for 34 h and 55 h respectively. The tags appeared to work well when the fish were on the bottom and in midwater and problems relating to the recording of the extra information (fish depth and heading every $2\frac{1}{2}$ minutes) were soon overcome. Particular attention was given to making observations which could be used to show that the heading of the fish as deduced by its movements (for example: with respect to sandwaves whose alignment could be established from the sector scanner display) was consistent with that indicated by the compass tag. These tests showed that the tags were giving reliable information: and that they gave it very clearly. A substantial amount of data was collected to be worked up in detail in the laboratory. But a preliminary inspection of the results shows that at night, plaice in midwater - and so both out of sight and out of touch with the bottom - maintain and swim along a consistent heading for periods up to at least 2 hours. These observations are consistent with the hypothesis that the heading maintained in midwater is controlled by inertial detectors in the ear; is related to the heading adopted by the fish when on the bottom immediately before ascent; and is reinforced by tactile clues received by the fish when making occasional excursions from midwater onto the bottom.

Aim 2. Work was restricted to the south side of Markhams Hole and two plaice fitted with conventional acoustic transponding tags were released and tracked. The first plaice - followed for 48 h - came off the bottom for a few hours after sunset on the day of release but after returning to the bottom did not change position again. The second plaice gave a splendid track, coming off the bottom for a few hours after sunset each night for four successive nights (the fish was kept under surveillance for 84 h) and remaining on the bottom with little or no change in position between these bursts of activity. This behaviour pattern - diurnal rather than semi-diurnal (tidal) - has already been suggested as a possibility on a feeding ground where the directionality of the tidal streams was low.

Tagged cod were released from an improved design of swimbladder adaptation cages and one fish was tracked in Markhams Hole for several hours after being left for 135h at a depth of 70m. The cod did not come into midwater and moved slowly along the bottom at the release depth. Further improvements should be made to the cages before they are used in any programme for which fully adapted cod are required.

Other Activities

The new integrator unit for the quantum irradiance meter, which integrates simultaneously the output of a surface and two subsurface quantum cells, was tested and found to work well. A series of measurements was made to determine the total quantum attenuation coefficient using a range of integration periods.

F R Harden Jones
7 June 1979

INITIALED: AJL

SEEN IN DRAFT: Master - J R French
Fishing Skipper - G F Lee

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