MR BATE

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

1975 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 6

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

STAFF

M Greer Walker
G P Arnold
P G Griffiths
I L Davies
J Horwood
C Garrod
G Baxter (17 April only)

DURATION

Left Lowestoft 1230 h 17 April

Arrived Lowestoft 1130 h 30 April

All times are G.M.T.

LOCALITY

Southern North Sea

AIMS

1. To track acoustically tagged cod.

2. To investigate tidal currents in the tracking area.

3. To test the modification to the QSM 2400 spectroradiometer.

4. To test experimental tags.

NARRATIVE

CLIONE sailed at 1230 h 17 April and the first current meter rig (A) was laid by 1607 h at 52°22.75'N, 1°48.4'E. The second rig (B) was laid by 1711 h east of the first at 52°22.3'N and 2°3.2'E. At 2000 h CLIONE docked at Harwich. The scanner dome was fitted and Mr Baxter disembarked while Mr Horwood embarked. Rig A was located at 0900 h the following morning and an acoustically tagged fish was released in a cage at 1050 h for adaptation. During the afternoon thick fog made navigation difficult and CLIONE anchored close inshore. Tests were made with the spectroradiometer and an effort was made to improve the scanner display. In addition, a DRCM station was maintained for a tidal cycle. The fog having lifted the cod was released from the cage at 0715 h 19 April. This fish was followed with difficulty for a few hours but was then lost. A second cage was laid close to rig A at 1746 h and shortly afterwards the scanner transmitter broke down completely. During repair a DRCM station was maintained for a tidal cycle at 52°22.2'N, 2°12.4'E. Cod 1 was released from the cage at 0630 h 21 April and tracked until 1845 h, 22 April (38 h). Cod 3 was placed in deep water further offshore (2°13.4'E and 52°22.4' N). Dense fog postponed the release of this fish from the cage until 1250 h, 24 April. During the intervening period further tests were made with the spectroradiometer.

Cod 3 was tracked until 0815 h 26 April (43½ h) when, as with cod 2, the tag batteries ran out. Spectroradiometric measurements were made in the area (Smith's Knoll) before steaming to cod release position 4 (52°21.6'N 2°19.5'E). The cage was laid at 1718 h and the fish released at 1519 h, 27 April. Tracking was terminated after 29 h at 1930 h 29 April. A final DRCM station was completed at 1200 h 29 April and the dome was removed in Harwich that evening. CLIONE steamed overnight to Rig B which was recovered by 0540 h. Rig A was similarly recovered by 0747 h. Passage was then made to Lowestoft via the South Channel.

RESULTS

1. Four cod were tracked for periods of up to 43½ h. When these results are taken with those from CLIONE 6B/74 it is apparent that those fish released west of 2°15'E (in the Southwold area) showed an easterly movement remaining in midwater during both northerly and southerly tides. Fish released or tracked east of 2°15'E (due south of Smith's Knoll), however, moved northwards in a similar way to plaice by swimming in midwater during northerly tides and remaining close to the bottom and nearly stationary during southerly tides. Two cod were tracked northwards for 30 miles (to 2°47'N) one going to ground on the eastern side of the Smith's Knoll Bank and the other continuing northwards some 10 n miles east of this point. These tracks may indicate the paths and manner of movement taken by migrating cod moving out from the East Anglian coast at this time of year.

2. Two current meter rigs and three DRCM stations were deployed along the easterly component of the movement to gain information on the orientation and rate of movement of the fish.

3. The modified QSM 2400 spectroradiometer was tested on four stations and after some problems with defective batteries in the underwater unit was found to be working satisfactorily. The automatic event marker recording the beginning and end of the spectral scan at 400 and 700 nm worked perfectly and the wavelength readout proved invaluable. The figure shown on the digital voltmeter was however found to be very sensitive to battery voltage, so that it was not always possible to set 300 equivalent to 700 nm. There was also some mechanical slip on the potentiometer drive so that a variable figure was registered on the digital voltmeter at 400 nm; some improvement is needed in this system. One other remaining problem is that the output still occasionally goes negative at the highest amplification, despite careful adjustment of the amplifier trim, and this affects the integrator.

The rig was used on stations 15 (52°44.5'N, 02°20.0'E) and 18 (52°19.8'N, 01°53.7'E) to measure spectral irradiance, total irradiance (400-700 nm) and illuminance at selected depths. Peak transmission at these stations was between 555 & 560 nm. At station 18 between 1018 & 1100 GMT with 10/10 cloud cover total irradiance ranged from 40 x 10^{12} quanta . S^{-1} . cm^{-2} at 5 m depth to 2 x 10^{10} quanta. S^{-1} . cm^{-2} at 12 m depth. Repetitive scans from 400-700 nm were made at one depth on each of stations 15 and 18 to determine the error involved in the spectral irradiance measurements. Irradiance was also measured at a number of set wavelengths to give an independent check on the scanned curves.

4. This aim was not attempted.

The Equipment

4 Acoustic tags were used. Future work would be facilitated if the battery life was extended.

The new scanner worked well after some initial difficulties were resolved.

M Greer Walker
5 May 1975

SEEN IN DRAFT: JRF
WG

INITIALLED: AJL

DISTRIBUTION:

Basic List

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