

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

1979 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 3
(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

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DURATION

Part A: Left Lowestoft 1000h 27 February
Arrived Lowestoft 1115h 1 March

Part B: Left Lowestoft 1114h 2 March
Arrived Lowestoft 1000h 15 March

LOCALITY

North Sea

AIMS

- Part A:
1. To service the JONSIS current meter stations.
 2. To collect 25 L seawater samples from each JONSIS station.
- Part B:
1. To assess water quality in the vicinity of a major chemical (liquid) disposal ground off R Tees by bioassay using embryo development of the oyster, Crassostrea gigas. Water samples to be taken at intervals while steaming over a grid (2-3 days).
 2. To monitor, over the same grid, pH, dissolved oxygen, salinity, temperature and turbidity in surface waters using the environmental package and also salinity, temperature and turbidity through the water column at intervals (2-3 days concurrently with Aim 1).
 3. To study the dispersion of waste discharged from pipelines off Boulby, North Yorkshire and off Horden, Durham, by means of a towed transmissometer (1-2 days).
 4. To study, by grabbing, the distribution and abundance of colliery waste in sediments in the vicinity of the proposed sewage sludge dumping ground off the R Tyne (1 day).
 5. To collect, by grabbing and/or Agassiz trawling, benthic organisms for chemical analysis from colliery waste disposal areas and from off the R Tyne ($\frac{1}{2}$ day).

6. "Routine" monitoring of sewage sludge disposal grounds (a) off R Humber (Spurn Head) and (b) in the outer Thames Estuary (Barrow Deep); to collect sediment samples from a limited number of stations for physical and chemical analysis and benthos and fish for chemical analysis by grabbing, dredging and/or trawling (4 days).
7. To conduct additional trawling off R Humber and also off Mablethorpe to collect fish for chemical analysis for the UK monitoring programme.
8. To conduct a 26 h hydrographic station at the Roughs Tower dumping ground (off Harwich).
- *9. To investigate, by grabbing, a designated disposal site off Amble.
- *10. To collect surface and bottom water samples and sediment samples for hydrocarbon analysis from selected sites near rigs and wellheads in the Indefatigable Field.

NARRATIVE

Part A

RV CLIONE sailed from Lowestoft at 1000 h 27 February and steamed to the JONSIS 1 current meter station, arriving there at 2310 h. The rig was recovered and relaid by 0040 h 28 February, when RV CLIONE steamed to the position of JONSIS 2. No sign of the current meter rig could be seen when RV CLIONE arrived on station at approximately 0600 h and at 0820 h an acoustic search began. When no contact had been made by 1100 h dragging at the station position commenced and continued into the afternoon. This being unsuccessful the JONSIS 2 station was relaid at 1642 h and further dragging at positions close to JONSIS 2 continued until 1845 h, when an acoustic search at positions 3 miles from JONSIS 2 began. No contact was made with the missing rig and at 2300 h the search ended and CLIONE steamed for Lowestoft, docking there at 1115 h 1 March.

Part B

After leaving Lowestoft, CLIONE steamed to Tees Bay. Although no dumping had taken place there on 3 March, Aims 1 & 2 were commenced at 1042 h as the sustained condition oysters could not be guaranteed. (It was feared that the ship's vibration might cause premature gamete release). At 2245 h, after completing the grid, CLIONE anchored close inshore and the collected water samples were inoculated with fertilized Crassostrea gigas embryos.

As dumping in Tees Bay was not to occur until late on 4 March, part of Aim 3 was completed off Boulby. The towed transmissometer unfortunately broke down but interesting results were obtained with the HIAC particle counter and environmental package. At 1630 h CLIONE rendez-voused with the dumping vessel HAWES WATER and continued Aims 1 & 2 in her wake during discharge and subsequently through the dispersing waste. Again on 5 March a further transect of water sampling stations was worked in the area of discharge. On both 4 & 5 March CLIONE anchored overnight close inshore so that satisfactory microscopic examination of the developing embryos could be achieved. Grabbing was commenced off the Tyne (Aim 4) at 0830 h 6 March but was halted by bad weather at 1250 h, when CLIONE returned to the shelter of Tees Bay to complete the embryo examination. On 7 March Aim 4 was completed off the Tyne,

some stations being reworked with a Shipek grab where previously only poor samples had been obtained with the Day grab because of the hardness of the ground. Aim 9 was commenced off Amble at 1825 h 7 March and completed 1149 h 8 March but the increasing southerly winds prevented any Agassiz trawling for Calocaris off the Tyne (Aim 5) and CLIONE steamed south to complete Aim 3 off the Durham coast. With gale force southerly and south westerly winds and poor forecasts, it was decided to spend a further day (9 March) off Horden and Boulby rather than waste time waiting for good weather off the Humber.

On 10 March, the winds having moderated, trawling was commenced near the Spurn Head dumping ground at 0600 h. Not unexpectedly, catches were poor and no samples could be taken. A grid of 20 stations was then worked in the vicinity of the dumping ground using a Shipek grab on account of the hard sediments encountered (Aim 6(a)). Trawling was continued at 0600 h 11 March off Mablethorpe and a good sample of cod was obtained for chemical analysis (Aim 7). This was followed by repeated grabbing at five selected stations, worked the previous day, to furnish larger sediment samples for analysis.

CLIONE arrived at the Indefatigable Field at 0600 h 12 March and Aim 10 was achieved in spite of a heavy swell. CLIONE then steamed to the outer Thames Estuary and trawled in the East Swin on the morning of 13 March (Aim 6(b)). After 12 grab stations had been worked in the Middle and Barrow Deep, CLIONE proceeded to the Roughs Tower dumping ground, off Harwich, and dropped anchor at 2355 h 13 March. However, in increasing NE winds CLIONE was forced to dodge from 0530 h 14 March and throughout the day. With the NE winds unabated, Aim 9 was abandoned and CLIONE docked at Lowestoft at 1000 h 15 March.

RESULTS

- Part A: (1) Only one of the two JONSIS stations was recovered, but both stations were relaid.
- (2) 25L water samples were collected at each JONSIS station.
- Part B: 1. Results from the large grid indicated that water quality may impair C. gigas embryo development both within the dumping ground and towards the mouth of the Tees. Results from samples collected during and after discharge were more varied and indicated that the time between water sampling and embryo inoculation may be critical. Overall, the work indicates that this bioassay method can be successfully used at sea to provide immediate (24 h) results providing that a sufficiently steady working platform is available for the necessary microscope work.
2. The Environmental package worked well, the pH monitor clearly indicating the presence of discharged chemical waste.
3. The transmissometer broke down and could not be repaired on board but the HIAC particle counter provided useful surface water data from both areas.
4. 27 sediment samples from the area were obtained.
5. Not achieved.
6. 20 and 5 x 12 sediment samples were obtained from the Humber and Thames areas, respectively. A sample of >50 cod was obtained from the East Swin for chemical analysis but none was obtained from the Humber dumping ground area.

7. A sample of >50 cod was obtained from off Maplethorpe for chemical analysis.

8. Not achieved.

9. 21 samples for benthos (1/10m²; 1mm sieve) and 21 sediment samples for physical and chemical analysis were obtained from the area.

10. Water and sediment samples were obtained from eight stations. The newly acquired oceanographic water sampling bottles worked well (these open under water by means of a pressure switch and are closed by messenger).

M. S. Rolfe

K. J. Medler

19 March 1979

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

INITIALED: AJL

DISTRIBUTION:

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