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

1977 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 5/77.

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

STAFF

P A Ayres
R S Nunny
R A Eagle
P A Hardiman
Dr Lindsay Murray
E Shreeve (21 April onwards)

DURATION

Left Lowestoft 0800h 14 April
Arrived Lowestoft 1045h 26 April

All times are Greenwich Mean Time

LOCALITY

North Sea

AIMS

1a. To collect sediment samples from the Barrow Deep dumping ground for benthic, physical, chemical and microbiological analysis (B1.4, 1, 7, 2.4)

1b. To collect benthos and fish from the Barrow Deep for chemical analysis (B1.1, 2.1, 1.6).

2a. To collect sediment samples by Shipek grabbing off the Humber/Mablethorpe area for benthic, physical and chemical analysis. (B.1.4, 1.7).

2b. To collect benthos and fish from the Humber and Mablethorpe areas for chemical analysis. (B1.1, 2, 1, 2.6).

2c. To conduct a 26hr hydrographic station in the vicinity of the Humber Dumping Ground (B1.4).

3a. To delimit the areas of fly-ash and colliery waste disposal by sector scanner (B.1.4).

3b. To collect benthos and fish from off the Northeast coast for chemical analysis. (B1.1, 2, 1, 2, 6).

4. To conduct a sedimentological/topographical survey in the Tees Bay area using the sector scanner. (B.1.4).

5. To conduct a short E.coli/coliform survey off the Tyne (B1.4, 2.4).

NARRATIVE

CLIONE sailed from Lowestoft at 0800h 14 April and steamed to the Barrow Deep where a series of stations were sampled using the Day grab. during 14 and 15 April. Samples were retained for laboratory analysis of benthos, sediment particle size. Microbiological examination of sediments for E.coli and coliform bacteria was carried out as each grab station was completed. On 16 April 3 hauls were made with the Granton trawl to obtain fish and epibenthos for chemical analysis and further stations sampled with the Day grab. Grabbing was completed at 17 April with stations in Middle Deep and CLIONE steamed north to the Humber dumping ground. On arrival Shipek grab samples were taken over an extensive network of stations surrounding and including the dumping ground. All samples were retained for sediment particle size and heavy metal analysis. A 26h hydrographic station using DRCM and shear velocity tetrapod commenced early on the 19th near the dumping ground. On completion a single Shipek grab station remaining from the 17 April was sampled and CLIONE steamed south to carry out a Day grab survey for benthos and sediment samples off Mablethorpe. 2 Granton trawl hauls in this area completed the day's programme. On 21 April a further tow off Mablethorpe and one near the dumping ground were made before CLIONE left for the Tyne area and further grab sampling of sediments for microbiological analysis. 4 hauls were made with the Granton trawl off the Tyne and samples of epibenthos and fish retained for chemical analysis before the CLIONE berthed at Sunderland at 1510hrs 22 April. Here the sector scanner was domed, Mr Shreeve joined the cruise and fresh water was taken on. CLIONE sailed at 0730h 23 April and after a period of setting up the scanning equipment, sector scanning commenced. This was carried out continuously for 2 days over flyash, colliery waste, and spoil disposal areas between Blyth and the Tees. CLIONE docked at Sunderland 0725h 25 April to remove the scanner dome and then left for Lowestoft, arriving 1045h 26 April.

RESULTS

1a) A total of 117 stations in and around the Barrow Deep were sampled with the 0.1m^2 Day grab. Samples of benthos and sediment from each were preserved for laboratory analysis. Microbiological examination of sediments for E.coli/coliform bacteria yielded overnight results enabling modification of the sampling programme as necessary. Major concentrations of faecal bacteria were identified and the distribution of the organisms in bottom sediments contoured.

1b) Samples of fish and epibenthos from trawl tows in Kings Reach, Barrow Deep were deep frozen for chemical analysis.

2a) 42 stations were sampled by Shipek grab in and around the Humber dumping ground. Sediment samples were taken at each station for particle size and heavy metal analysis. 16 stations were sampled by Day grab in the Mablethorpe area and samples taken for analysis of benthos.

2b) Fish and epibenthos from 3 trawl tows off Mablethorpe and one on the Humber dumping ground were deep frozen for chemical analysis.

2c) A 26h hydrographic station was worked on the site of a proposed Humber current rig (53°32.6N 00°31.7E) near the dumping ground. Observations of shear velocity using the tetrapod rig, current speed and direction (DRCM) and water samples for suspended particle analysis were taken at 30m intervals. The salinometer/thermometer developed a fault which persisted but a fault with the shear velocity cables was repaired and good readings obtained for the majority of the 26h period.

3a) and 4) A two day survey using the sector scanner covered the major dumping areas of flyash, colliery waste and spoil between Blyth and the Tees. The results suggest that gross features associated with dumped colliery waste (ie heaps of waste, and gravel waves developed in waste) and to a degree, the extend of the waste could be identified. Overall however, sector scanning did not appear to give the tonal differentiation necessary for mapping sediment types in water depths greater than 25M or where subtle textural characteristics, known from side scan data, were anticipated. Flyash boulders could not be distinguished using sector scanner. In future it would seem reasonable to compare side and sector scanning together or look at known features before a final choice was made.

3b) Fish and epibenthos from 4 trawl tows off the Tyne were deep frozen for chemical analysis.

5) 15 Day grab stations were examined off the Tyne out to an area of a proposed dumping ground. Major concentrations of E.coli and coliform bacteria appear to be limited to inshore sediments under the influence of the Tyne.

ADDITIONAL ITEMS

1) Two diseased fish (one plaice from the Barrow Deep and one sole from Mablethorpe) were deep frozen for Mr Walker. (F.D.L. Weymouth)

2) Samples of whelks (Buccinum undatum) from Thames and Humber areas were deep frozen for Mr D Kirkwood (MEPD, Burnham) for arsenic analysis.

3) The position of the sub-surface current meter rig off the Tyne ($55^{o}04.5N$ $01^{o}15.7W$) was located using sector scanner and marked with a surface float for Mr Baxter (MAFF Lowestoft).

Peter A Ayres
29 April 1977

SEEN IN DRAFT: Capt Sinclair
Mr G Lee
R C Newrick

INITIALLED: AJL

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