

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

1978 RESEARCH VESSEL PROGRAMME

REPORT: RV CORELLA: CRUISE 14

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

STAFF

M. S. Rolfe (NIC)  
R. S. Nunny )  
A. J. Murray )  
R. J. Law ) part of cruise only  
Lynda George )  
Avril Jones )  
P. R. Kiff (HRS) )

DURATION

Left Lowestoft 1030 h 19 October  
Arrived Lowestoft 2244 h 6 November

LOCALITY

English Channel, Irish Sea, Western Approaches, North Sea.

AIMS

1. "Routine" monitoring of sewage sludge disposal grounds off Exeter and Plymouth; to collect sediment samples for physical and chemical analysis and fish and benthos for chemical analysis by a programme of grabbing and trawling.
2. Initial monitoring of sewage sludge disposal ground off Falmouth: to collect sediment samples for biological, physical, chemical and microbiological analysis by a programme of grabbing.
3. To compare the performance of the HRS vibro-corer, the MAFF (Hamilton Dock) mini-corer and the Day grab in a variety of sediments in Liverpool Bay at approximately ten anchor stations. The sediment samples will also be used to evaluate various microbiological procedures and for the estimation of coprostanol (a human faecal-sterol).
4. "Intensive" monitoring of sewage sludge disposal ground in Liverpool Bay: to collect sediment samples for physical, chemical and microbiological analysis and for biological analysis of benthos and also for the estimation of coprostanol and to collect fish and benthos by trawling and grabbing for chemical analysis.
5. To retain diseased fish from all trawling stations for Dr D. Alderman (Weymouth) and to undertake additional trawling for the same purpose as necessary.
6. To study the dispersion of discharged sewage sludge in Liverpool Bay by tracking with a towed transmissometer in the wake of dumping vessels.
7. To conduct one or more 26 h hydrographic stations in the Bristol Channel, and, if opportunity arises, conduct dispersion studies in the wake of dumping vessels as in Aim 6.
8. To collect water and sediment samples in the English Channel, southern North Sea and in the vicinity of the Ekofisk oil field for hydrocarbon analysis as part of the Baseline hydrocarbon survey.

9. To collect sediment samples from the Southwold experimental ground dredging area by grabbing for biological and physical analysis.

#### NARRATIVE

On arrival at the Exeter dumping ground at 1611 h 20 October, CORELLA took up station in a slick of sewage effluent which had just been discharged by the COUNTESS WEIR dumping vessel. The slick was marked with a buoyed drogue and periodically it was necessary to alter the ship's position to remain within the same portion of the slick. Turbidity, salinity, temperature and dissolved oxygen were monitored in the surface waters using the environmental package and linked recorder. In addition, a separate transmissometer was deployed periodically through the water column. CORELLA then steamed on a grid in the vicinity of the dispersing slick, during which the transmissometer was towed at 20 m below the surface at 5 knots. On 21 October, five selected stations at the Exeter dumping ground were worked with a modified Day grab of 0.14 m<sup>2</sup> surface area; four grab hauls were taken at each station for Aim 1. CORELLA then steamed to the Plymouth dumping ground where seven stations were similarly worked but with a 0.04 m<sup>2</sup> Shipek grab because of the coarser sediments present.

Trawling at Exeter and grabbing at Falmouth (Aim 2) were postponed until later in the cruise in order to conduct a hydrographic station at the Bristol Channel dumping ground (Aim 7) while the weather was still set fair. CORELLA anchored near the dumping ground (04°04'W 51°24.5'N) and DRCM and transmissometer observations were made through the water column at half-hourly intervals for a 26 h period. CORELLA weighed anchor at 1317 h 23 October and steamed for Point Lynas, Anglesey where Mr Kiff (HRS) came aboard at 0715 h 24 October by pilot cutter. Aim 3 was then carried out on 24 and 25 October while at anchor at six different sites.

CORELLA docked at Fleetwood at 1827 h 25 October to put Mr Kiff and the HRS gear ashore. Mr Law came aboard at 1830 h. After taking on water and provisions, CORELLA left Fleetwood at 0700 h 26 October to trawl near the Liverpool Bay main dumping ground for Aims 4 and 5. Aim 6 had to be abandoned as the dumping vessels were not in operation while CORELLA was in Liverpool Bay. A grid of 61 grab stations (Aim 4) was commenced at 1144 h 27 October and completed 1818 h 29 October. Ms George, Dr Murray and Mr Nunny were then put ashore by pilot cutter at Point Lynas, Anglesey at 0815 h 30 October and Mrs Jones came aboard before CORELLA steamed south.

Aim 8 (sampling for hydrocarbon analysis) was commenced at 2007 h 31 October at 120 miles SW Scilly Isles in an oil exploration area due to be test drilled in the near future. Sediment samples were collected in a Shipek grab fitted with stainless steel buckets and water samples were taken in special Winchester bottles opened at 1 m below surface. At the two westernmost stations, shoals of skipper (*Scomberesox saurus*) were observed at the surface at night. Sampling continued eastwards but was interrupted when CORELLA put into Falmouth for fuel and water (1934 h 1 November-1007 h 2 November) and a grid of 21 grab stations was worked in Falmouth Bay (Aim 2). A further hydrocarbon sampling station was worked off Plymouth before Aim 1 was completed in Lyme Bay by trawling over the Exeter dumping ground (0530-0930 h 3 November). The hydrocarbon survey was then resumed, samples being taken at 30-60 mile intervals through the

English Channel and up the North Sea as far as the Ekofisk and Auk oil-fields. After the 23rd and final sample had been taken (2112 h 5 November), CORELLA steamed for Lowestoft, berthing at 2244 h 6 November.

## RESULTS

In spite of high winds in many sea areas around the UK during this 20-day cruise, no time was lost to bad weather and all eight aims in a crowded programme were completed - Aim 9 was found to be unnecessary after the programme was prepared.

### Aims 1, 2 and 4

All necessary grab samples were taken. The microbiological procedures developed on previous cruises gave positive results but in Liverpool Bay counts were low, presumably because of the absence of dumping immediately prior to sampling.

100 lesser spotted dogfish, 100 whiting, 100 plaice, 100 Dover sole, 85 dabs and 38 lemon soles, taken in Liverpool Bay, and smaller samples of whiting and lesser spotted dogfish from the Exeter dumping ground, were deep frozen for chemical analysis.

### Aim 3

The Minibox corer was not used after the first station because of a bad seal at its base, allowing sediment to run out, and because in increasing swell the corer was becoming dangerous to deploy.

### Aim 5

337 plaice, 100 Dover sole, 85 dabs, 38 lemon sole, 15 brill and one turbot from Liverpool Bay were examined for disease of which only two plaice had suspected Lymphocystis and were retained for Dr Alderman. The 20 dabs, 6 Dover sole and 2 plaice taken at Exeter were all free of visible disease.

### Aim 6

Although dispersion studies in Liverpool Bay were not achieved, some observations in ideal conditions were obtained at the Exeter dumping ground.

### Aim 7

The hydrographic station was conducted successfully, the Kelvin Hughes DRCM and Partech transmissometer functioning well. No dumping vessels were seen in the Bristol Channel and consequently no dispersion studies were made.

### Aim 8

All required samples for hydrocarbon analysis were collected.

M. S. Rolfe  
13 November 1978

SEEN IN DRAFT: G. Sinclair (Master)  
R. C. Newrick (Skipper)

INITIALLED: AJL

DISTRIBUTION

Basic list  
M. S. Rolfe  
R. S. Nunny  
A. J. Murray  
R. J. Law  
Lynda George  
Avril Jones  
P. R. Kiff

CORELLA 14/78  
19 Oct - 6 Nov.

Ekofisk

Auk

Completion of  
Ann 8

Ann 3-6 (incl)

Ann 7

Ann 1

Ann 2

Start of  
Ann 8

