

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

**1991 RESEARCH VESSEL PROGRAMME**

**REPORT: RV CIROLANA: CRUISE 6**

**STAFF:**

R J Law	(SIC)
P M Hudson	
J E Thain	(20-29 June; 8-14 July)
A D Fagg	(20-29 June)
C R Allchin	(20 June-8 July)
D A Sheahan	(20 June-8 July)
Carole Kelly	(20 June-8 July)
Rebekah Laslett	(20 June-8 July)
Katherine Ling	(20 June-8 July)
Sorrel Bifield	(20 June-8 July)
M J Waldock	(8-14 July)
P Matthiessen	(8-14 July)
M A Blackburn	(8-14 July)
Julia Osborne	(8-14 July)

**DURATION:**

Left Lowestoft 1500h, 20 June.  
Arrived Lowestoft 2345h, 14 July.

All times are Greenwich Mean Time.

**LOCATION:**

North Sea, English Channel and Irish Sea.

**AIMS:**

1. To conduct biological effects monitoring studies and associated physical measurements and chemical analyses at stations established by the North Sea Task Force in the North Sea and English Channel (MMP), and under the associated National Monitoring Programme (NMP) in the Irish Sea and Bristol Channel.
2. To evaluate a Microtox sediment bioassay technique.
3. To collect water column samples for PAH analysis along a transect across the Dover Straits as part of the FLUXMANCHE programme.
4. To investigate the distribution of lindane, triazines and related compounds in the vicinity of the Humber, Mersey, Tees and Tyne estuaries.

5. To collect samples of suspended particulate material for chlorobiphenyl analysis from coastal and estuarine areas.
6. To collect water samples from the English Channel for lindane analysis, as part of the ongoing study following the loss of MV Perintis in 1989.
7. To collect water samples for the analysis of volatile 'Red List' substances in coastal and estuarine waters.
8. To carry out an anchor dredge survey of dredged and non-dredged areas within the Thames/Harwich region.
9. To conduct trials of a prototype Marine Position Recorder.
10. To collect sediment samples from stations along the cruise track not previously sampled for the JMG baseline survey.

(Note: Aims 9 & 10 are additional aims not on the original cruise programme).

#### **NARRATIVE:**

CIROLANA left Lowestoft at 1500h, 20 June, and steamed towards the River Humber. Work on repairs to one of her drive motors continued during this passage and until 23 June, seriously disrupting the scientific programme over that period. On 22 June samples were collected in the Humber both from the ship and the Searider, and on 23 June the engineers who had carried out the repairs were put ashore and CIROLANA left the Humber at 1000h. Two water stations were worked *en route* to the River Tees, where samples were collected on 24 June. On subsequent days samples were collected from the ship and using the Searider from the Wear and Tyne, and Tweed estuaries, sampling in the Tweed being completed by lunchtime on 26 June. CIROLANA then headed southeast and, on 27 June, samples were collected from joint Task Force stations on the Dogger Bank and off the Dutch coast, before returning to sample in the Silver Pit. On 28 June samples were taken in the Wash and off the Norfolk coast, continuing on 29 June to the outer Thames estuary, where the Searider put into shore at Bradwell. Two scientists were put ashore and a fresh supply of shrimps for the larval bioassay obtained from the Burnham laboratory. Further samples were taken in the outer Thames estuary and off the Kent coast, before visiting the NSTF station at the South Varne at 1209h on 30 June. Sampling in the Channel began in poor weather, which improved to the west. CIROLANA arrived at the reference station in the Western Approaches at 0757h on 2 July, and after completing water and sediment sampling proceeded northwards towards the Celtic Deep, thence into the Bristol Channel, where the NMP station was occupied at 2050h on 3 July. CIROLANA then proceeded via Swansea Bay, Carmarthen Bay, and Cardigan Bay, arriving in the Irish Sea on 5 July. Two offshore NMP sites were sampled at 1710h and 1916h before CIROLANA went to anchor off the Mersey. Searider stations were sampled in the Dee and Mersey on 6 July, and in Morecambe Bay on 7 July. CIROLANA then steamed to Holyhead, where an exchange of scientists was made on the morning of 8 July. Delays during this changeover meant that CIROLANA did not reach the Mersey again until late afternoon, by which time

the wind had increased and the sea was too rough to deploy the Searider. Next morning was much rougher and further sampling in the Mersey was abandoned. CIROLANA made for Plymouth, where she anchored in the Sound at 1420h on 10 July. Sampling both from the ship and from the Searider was undertaken in the Sound and the Tamar on 10 and 11 July, and in the River Dart on the morning of 12 July, after which a series of grab stations offshore in the Channel were sampled for the JMG baseline survey. On 13 July samples were taken from an anchor site in the Solent, and from 4 sites in Southampton Water by use of the Searider. Sampling on the Straits of Dover transect (Cap Gris Nez to Folkestone) began at 0158h on 14 July, and was completed by 0900h, after which CIROLANA steamed for Lowestoft, docking at 2345h.

## RESULTS :

Aim 1. All sampling was carried out as planned. Analysis of mercury in seawater was carried out on board, as were algal, shrimp larval and oyster embryo bioassays. Supplementary water samples were taken from the majority of sites for tributyltin analysis, and sediment samples were collected from a number of estuarine sites for the analysis of dibenzo-*p*-dioxins and dibenzofurans. Duplicates of the latter samples were collected for BMT Ceemaid, who plan to carry out similar analyses. CTD profiles were taken at all MMP and NMP stations, and at the reference station in the Western Approaches, and salinity and nutrient samples were also taken for subsequent analysis.

Aim 2. The new Microtox sediment protocol was evaluated on 23 sediments taken from coastal, estuarine and offshore sites, which were chosen so as to include clean and contaminated sediments. Tests were conducted on both whole sediments and elutriates. The apparent toxicity as measured by the Microtox technique appeared to be correlated with the turbidity of the samples, and further investigations were then conducted with filtered samples. It was concluded that the current sediment protocol was inadequate, and this will be discussed further with the manufacturers.

Aim 3. Samples of subsurface and near-bottom water were collected at each of the six stations of the FLUXMANCHE transect.

Aim 4. Samples were collected from 52 stations for lindane analysis, in addition to those under aim 6 below, and from 35 stations for the analysis of triazine herbicides (atrazine and simazine).

Aim 5. Samples were collected from 14 stations on both the east and west coasts, and the particulates frozen for laboratory analysis.

Aim 6. Samples were collected from 14 stations along a transect between Newhaven and Plymouth.

Aim 7. Samples were collected at 10 stations for laboratory GC/MS analysis.

Aim 8. Because of the time lost to engine repairs this aim was not achieved.

Aim 9. The prototype marine position recorder was tested throughout the duration of the cruise, and the results obtained will be analysed in detail in the laboratory.

Aim 10. Sampling was conducted at 44 stations, samples of sediment were obtained from 31 of these.

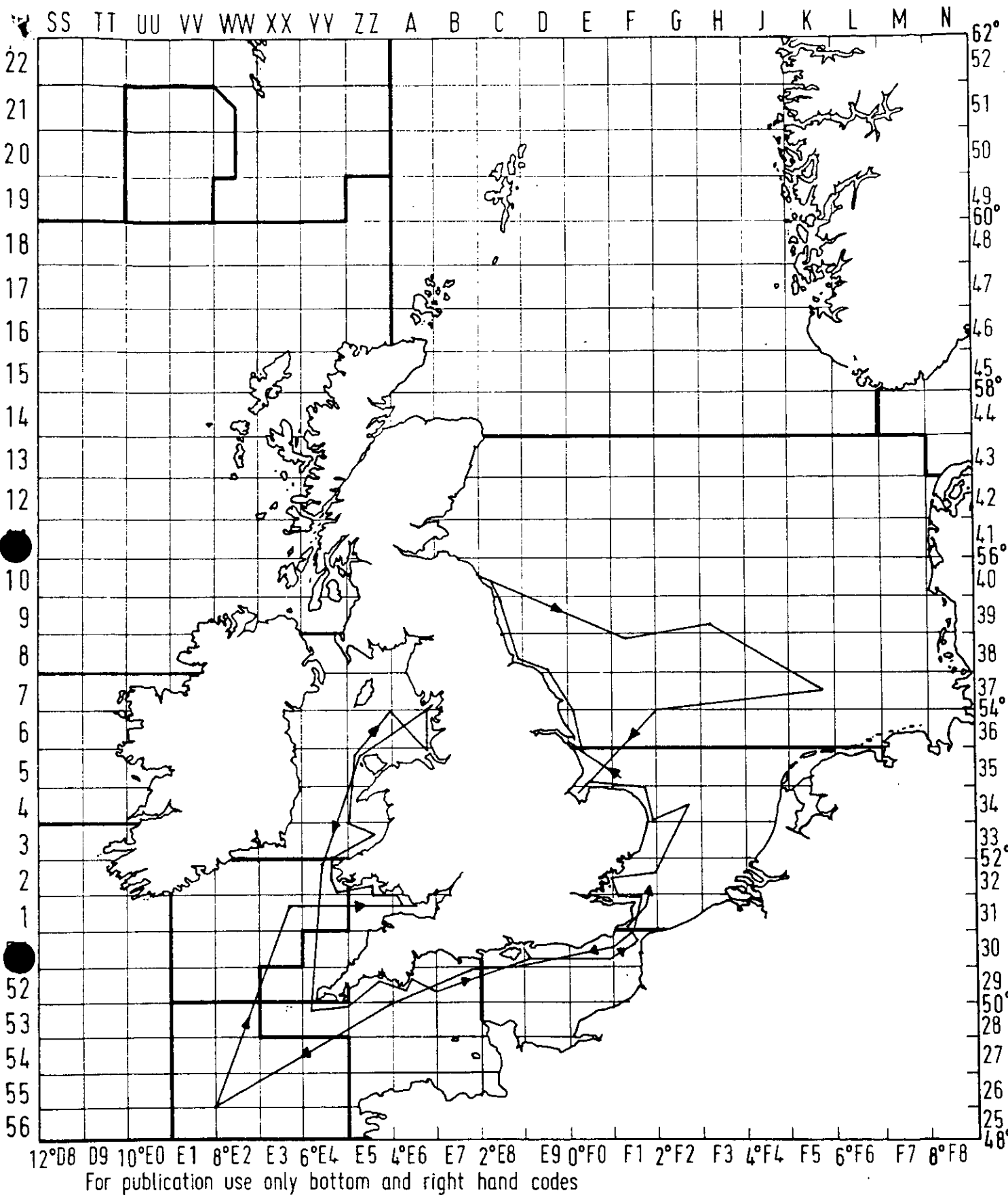
Robin Law  
14 July 1991

**Seen in draft:** B A C (Master)  
J H (Senior Fishing Mate)

**Initialled:** C E P

**Distribution:**

Basic list +  
R J Law  
P M Hudson  
J E Thain  
Sorrel Bifield  
C R Allchin  
D A Sheahan  
Carole Kelly  
Rebekah Laslett  
Katherine Ling  
A D Fagg  
M J Waldock  
P Matthiessen  
M A Blackburn  
Julia Osborne  
R A A Blackman  
J E Portmann  
A Franklin  
S M Rowlatt  
J M Davies (SOAFD)  
L Cabioch (Roscoff)  
P C Reid (DoE)



CIROLANA 6/91 cruise track