

CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE,  
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 OHT, UK

1999 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 14/99

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DURATION: 25 November – 8 December

LOCALITY: North Sea (IVb and IVc)

AIMS:

The main aims of the cruise were to identify species that are vulnerable to beam trawling disturbance and describe the structural and trophic changes that take place in benthic communities when vulnerable species are lost.

The main objectives of the cruise were:

1. To complete a sidescan and Questor Tangent survey in 3 boxes (each 2 x 1 nautical miles) to the south-east of the Dogger Bank.
2. To sample the benthic invertebrate and fish community at impact and control sites in these boxes using corers, grabs, dredges and beam trawls. The impact sites were trawled on Corystes 12/99.
3. To collect sediment cores at impact and control sites to investigate nutrient fluxes and changes in sediment quality.
4. To collect fish stomachs for dietary analysis and invertebrate and fish tissue for stable isotope analysis.
5. To conduct further experimental beam trawling in the 3 boxes.
6. To sample benthic invertebrates and fish communities at a series of offshore sites in IVb and IVc that are subject to different levels of fishing disturbance.

NARRATIVE: (all times are GMT)

Corystes sailed from Lowestoft at 1000h on 25 November. She proceeded to a side-scan station off the North Norfolk coast and worked a line from 52°49.06'N, 01°38.12'E to 52°47.62'N, 01°40.23'E in order to test the Datasonics side-scan equipment and to provide a description of the seabed habitat on a trawl line worked during the North Sea 4-m beam trawl survey.

The station was completed at 1500h, and Corystes sailed overnight to a box of 2 nm (N-S) by 1 nm (E-W) in the Botney Cut (NW corner at 53°55' N, 03°03'E). The northern sector of the box was side-scanned from 0600h to 0730h, but winds had increased to Force 7-8 and work had to stop. Corystes dodged for the remainder of the 26 November and made slow progress to the first of seven Silver Pit survey stations (S7) because there was no prospect of deploying the NIOZ corer in Botney Cut given the sea conditions.

Work commenced at the Silver Pit stations at 0600h on 27 November. Three beam trawl and three anchor dredge samples were collected. The work was completed rapidly as sea conditions improved and Corystes returned to Botney Cut to attempt NIOZ coring. An area suitable for the experimental work was chosen from the sidescan data. Two sites, designated A and B and defined by 50m radius circles with centres 200m apart, were selected for study. Six NIOZ cores were collected from site A and 6 from site B for the study of meiofauna, oxygen and nutrient fluxes. NIOZ coring was completed at 1425h.

Following the coring, Corystes steamed to station S6 in the Silver Pit. Three beam trawl and 3 anchor dredge samples were collected between 1640h and 1920h. Corystes then steamed to the most easterly of the Silver Pit stations (S1). She arrived on station by 0400h on Sunday 28 November, but winds had increased again to Force 7-8 (occasionally 9) and she had to dodge for the remainder of the day.

By 0600h on Monday 29 November the winds had abated to Force 5. Beam trawl and anchor dredge sampling was completed at the remainder of the Silver Pit stations (S1-S5) and Corystes returned overnight to Botney Cut to begin the 4-m beam trawling impact experiment at site A. Work began at 0430h, but winds were increasing, and work had to be abandoned at 0830h after 12 lines had been trawled, because there was no prospect of doing the sidescan or NIOZ coring work that had to follow the trawling.

With further high winds forecasted for the next 48 h, Corystes sailed slowly west to the most inshore beam trawl and anchor dredge sites in the Hills area.

By 0800h on Wednesday 1 December, winds were Force 7, but the swell was somewhat reduced due to the proximity of the coast and it was just possible to work. Three anchor dredge and three beam trawl samples were collected at three of the Hills station (H10, H11 and H13). Work finished on the last station at 1625h and Corystes sailed overnight to the Hawke Anchorage off Grimsby.

The searider went ashore in Grimsby at 0800h on Thursday 2 December for the staff changeover. Corystes sailed from the Hawke Anchorage at 0900h and arrived at station H5 in the Hills area at 1600h. Winds were already gusting Force 8-9 and were predicted to increase.

Three beam trawl samples and three anchor dredge samples were collected before work had to be abandoned. Corystes then sailed inshore to anchor in the lee of Flamborough Head.

On Friday 3 December, Corystes remained at anchor in the lee of Flamborough Head. Throughout the morning, winds were consistently Force 8-10 and gusting to Force 11+.

By 0600h on Saturday 4 December, winds had abated to Force 6-7, and Corystes left the shelter of Flamborough Head to steam to Hills site H6. The conditions were workable by 1430h, and three 2-m beam and three anchor dredge samples were collected at H6, H7, H8 and H2. Work finished at H2 at 1930h, and with the prospect of winds decreasing to Force 5 on Sunday, Corystes steamed East overnight to the box of 2 nm (N-S) by 1 nm (E-W) in the Botney Cut (NW corner at 53°55' N, 03°03'E). On arrival, the sea conditions were the best yet encountered. From 0430h, 25 4-m beam tows were made through site A to create a trawling impact. These tows were completed at 1000h, and three lines were side-scanned to check that the impact was correctly targeted on site A. The impact was acceptable, and six NIOZ cores were collected from site A and 6 from site B for the study of meiofauna, oxygen and nutrient fluxes. NIOZ coring was completed at 1530h.

With the NIOZ coring complete, Corystes steamed to the south of the Botney Cut experimental box to collect water samples. She then sailed for the Western Mud Hole (a box of 1 nm E-W and 2 nm N-S with NW corner at 53°37'N, 03°23'E). Four NIOZ cores were taken from two sites, designated A and B. Site A had been impacted by trawling on Corystes 12/99. Coring was completed at 2140h, and with poor weather approaching, Corystes steamed west to the remaining Hills sites.

She arrived on station at Hills site H4 at 0700h on Monday 6 December, but winds had increased to Force 8-9 and work was not possible until 0930h. Winds abated to Force 7 later in the day and three 2-m beam trawl and three anchor dredge samples were collected at H1, H3 and H4. These were completed at 1700h. Corystes steamed south overnight to Hills station H9.

Corystes began beam trawling at H9 at 0600h on Tuesday 7 December. Three 2-m beam trawl and three anchor dredge samples were collected at this station and H12. Work was completed at 1030h, and Corystes sailed for Lowestoft.

Corystes docked in Lowestoft at 0800h on Wednesday 8 December.

## RESULTS

The aims of this cruise were not met in full since 130 working hours cruise were spent dodging bad weather. However, in the circumstances, we made excellent use of short breaks in the weather and these allowed us to complete around two-thirds of the proposed work. The studies based in the Silver Pit and the Hills areas were completed in full, but the other studies were reduced or abandoned. The Officers and Crew made considerable efforts to work in the difficult conditions. Even when the weather 'improved', winds rarely fell below Force 6-7. The failure to meet all the objectives on this cruise was compounded by the previous loss of cruise time to bad weather on Corystes 12/99.

The following progress was made in relation to the stated objectives (page 1) of the cruise:

Objective 1. Survey completed in Botney Cut. Priority was given to other activities during brief improvements in the weather.

Objective 2. Repeat sampling was conducted in the Botney Cut and Mud Hole boxes.

Objective 3. Cores were collected successfully in the Botney Cut box both before and after experimental trawling. Repeat coring was conducted at the Western Mud Hole.

Objective 4. Samples collected as planned.

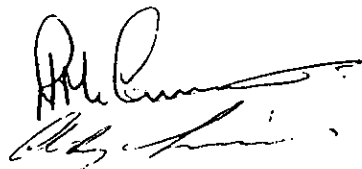
Objective 5. Trawling was conducted in Botney Cut only.

Objective 6. Sampling was completed at all seven sites in the Silver Pit, and at all 13 sites in the Hills area.

It is not possible to speculate on the results of this work until the samples have been processed in the laboratory and the data have been analysed.

Simon Jennings  
Scientist in Charge  
14 December 1999

SEEN IN DRAFT: R. McCurry (Master)  
A. Lincoln (Senior Fishing Mate)



INITIALLED:



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