

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK NR33 0HT,
ENGLAND

1992 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 1

STAFF

P A Gurbutt (Scientist in Charge)

D S Kirkwood

N D Pearson (3-10 Jan)

J M Rees (3-14 Jan)

K J Medler (14-20 Jan)

W J Meadows (14-20 Jan)

J Taylor (14-20 Jan)

T Barton (JNCC)

DURATION

3-20 January 1992

LOCALITY

Irish Sea, English Channel, North Sea, Humber and Wash

AIMS

1. To recover the tetrapod and current meters deployed in the Irish Sea near St Bees Head in November 1991.
2. To collect water samples for nutrient determinations from North Sea Task Force Master Monitoring Plan stations in the North Sea and English Channel and for the MPMMG National Monitoring Plan stations in the Irish Sea.
3. To collect water samples for nutrient determinations from the off-shore JONUS stations in the Southern Bight of the North Sea, in the Wash, off the mouth of the Humber and at the Bull anchorage.

NARRATIVE (all times Greenwich Mean Time)

RV Corystes sailed from Lowestoft at 2000 on Friday, 3 January and proceeded via the Channel to the Irish Sea. On arrival on 6 January, 3 CTD stations were worked into Liverpool Bay (NMP) As the weather was unsuitable for the tetrapod recovery, a further 4 (Morecambe Bay and Solway NMP) on 7 January. It was confirmed that all the guard buoys and tetrapod were present.

At first light on 8 January, RV Corystes commenced the recover of the Tetrapod complex. The current meter mooring and one guard buoy were successfully recovered. The tetrapod recovery line had two surface buffs missing.

It was successfully hooked but, during the recovery, the line became fouled on the ship. The tetrapod was towed along the bottom; eventually, the line parted and it fell away. The backup recovery line was successfully fired but the float failed to surface. The ship's sonar was used to locate the long-life tag and a marker buoy deployed at one closest approach. The other guard buoy was then recovered.

On 9 January, the ship's Simrad SM600 sonar was used to take a number of position fixes on the tetrapod along different approaches to try to improve the estimate of its location.

On 10 January, RV Corystes was joined by the Solway Protector and a team of divers. Using a sweep line between the Solway Protector and the Corystes' SeaRider, an attempt was made to snag the tetrapod. The first snag (second sweep) failed to reveal anything on the seabed. The third sweep was successful and the divers attached a recovery line. As it was dark by the completion of this operation, recovery was postponed until the following morning. N. Pearson was transferred to Whitehaven by SeaRider.

On 11 January, after the SeaRider had cleared as much of the sweep lines as possible, RV Corystes successfully recovered the tetrapod. The backup recovery float and the shear pin on one foot of the tetrapod were broken but apart from these, the instrument was undamaged and had a full memory of data.

On route back to Lowestoft, CTD stations were worked at the NSTF/NMP stations in Cardigan Bay, Bristol Channel and English Channel. RV Corystes docked at 1500 on Tuesday, 14 January and off loaded the tetrapod and other equipment and changed some scientific staff. The ship sailed at 1630 and proceeded to the Bull anchorage at the mouth of the Humber.

On arrival, RV Corystes anchored and a 13 hour anchor station was worked during 15 January. The ship then lay over-night off-shore, ready to commence the grid of JONUS stations off the mouth of the Humber and along the Lincolnshire coast towards the Wash. On 16 January, a grid of CTD stations was worked in the Wash before RV Corystes sailed to the Thames.

On 17 January, a line of CTD and surface water stations was started running into the Thames estuary towards NSTF station 19. This had to be abandoned because of reduced visibility. The weather forecast for the area predicted similar visibility for the following day so it was decided to abandon any further work in the Thames estuary and to proceed around the remainder of the Southern Bight stations. During Sunday, the wind freshened from the north west which caused an alteration of the grid (an east/west section along $52^{\circ} 40' N$ instead of $53^{\circ} N$). RV

Corystes docked in Lowestoft on the morning tide of 20 January.

RESULTS

1. The tetrapod and current meters were successfully recovered. One current meter tape was 95% full and the other 90% full. The tetrapod had a full memory of 12.58 Mbytes of good data. Initial data analysis, done on the steam back to Lowestoft, indicates that the instrument switched into adaptive sampling mode 6 times during the course of the deployment (Figure 1). Estimates of significant wave height (Figure 2) and wave period (Figure 3) show that these events corresponded to waves greater than 1.5m amplitude and with a period of about 8 seconds. These periods also correspond to higher suspended loads as measured by the 5cm and 25cm transmissometers (Figure 4 - 0 indicates total light extinction (high suspended load) and 5 a clear path). Also, there was a general cooling over the period of the deployment (Figure 4).

2. On-board analysis was completed for nitrite, phosphate and nitrate concentrations in all water samples taken using the new Skalar auto analyser. The ammonia method supplied by the manufacturers appears to produce false positive signals at a level that precludes the reliable measurement of seawater concentrations; this will require further investigation. In all other respects the Skalar hardware performed well. Samples were taken for dissolved oxygen (Winkler method) at the NSTF sites occupied in the North Sea. Samples were also filtered for later silicate, chlorophyll and CNP determinations. Samples from the NSTF and NMP stations were collected for total nitrogen and total phosphorus determinations to be done at Lowestoft.

3. All water samples were filtered for suspended load determination.

4. New software for data acquisition from the CTD and for cruise parameters was tried. Both worked successfully. All initial data processing was completed for the CTD data.

5. Seabird observations were made by T. Barton (Joint Nature Conservation Council) as part of the on-going programme of population and distribution studies undertaken by the Aberdeen-based 'seabirds at sea' team. Records were taken on all days when the ship was underway and, thereby, data were obtained from a series of transects along the cruise track.

Concentrations of seabirds were seen at the eastern end of the Dover Straits, near Start Point, off St David's Head and, to a lesser extent, off Blackpool and the entrance to the Thames estuary. In contrast, very low concentrations were recorded for the Irish Sea, Cardigan Bay and the inner parts of the English Channel.

Fulmars were seen in large numbers off Start Point and St David's Head, but only occasionally elsewhere and almost absent from the southern North Sea. Gannets showed a similar south west distribution, the majority of them being found in the western end of the English Channel, with very few in the Irish and North Seas.

Of the gulls, Kittiwake, Herring Gull and Great Black-backed Gull were widely distributed, while Lesser Black-backed Gulls were found exclusively to the west of England and Wales, and Common Gulls predominantly to the east. The latter species accounted for the majority of sightings from the Humber and the Wash. Apart from a 750 strong group in a mixed flock of gulls outside Lowestoft harbour, Black-headed Gulls were scarce, only being seen close to land.

Just two species of Auk were recorded, Guillemot and Razorbill; the latter were largely confined to the west and rather uncommon; the former more broadly spread and concentrations to the south west and in the southern North Sea.

Other species observed were divers, scoter (two species of each all concentrate on the east coast), Mallard, Great Skua, Glaucous Gull, Blackbird, Rook and Common Dolphin (4 off the Lizard).

P A Gurbutt
(Scientist-in-charge)

20 January 1991

SEEN IN DRAFT _____ (Master)

_____ (Fishing Skipper)

INITIALLED _____

DISTRIBUTION

Basic List +
P A Gurbutt
D S Kirkwood
N D Pearson
J M Rees
K J Medler
W J Meadows
J Taylor
T Barton