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

1994 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 2b

STAFF:

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DURATION:

Left Barrow-in-Furness 0830h 8 February
Arrived Lowestoft 1700h 20 February

LOCALITY:

Irish Sea/English Channel/North Sea

AIMS:

1. To sample the sediments, benthos and fish at various NMP sites in the Irish Sea and English Channel by grab and trawl.

2. To deploy a Kasten core at suitable muddy locations.

3. To sample aggregate areas in Liverpool Bay, the Bristol Channel and Lyme Bay as part of a continuing MAFF/CEC study.

4. To sample sediments at sewage-sludge disposal sites off Plymouth and the Isle of Wight.

5. To conduct further studies at an aggregate extraction site off Hastings using underwater camera, side-scan sonar and dredges.

6. To sample a grid of stations on the Dogger Bank for a range of contaminants in sediments and benthos.

ADDITIONS:

1. To examine the distribution of the 'ross worm' *Sabellaria* at a proposed aggregate extraction site in the Bristol Channel.

2. To sample the sediments and benthos at the Lyme Bay sewage-sludge disposal site.

3. To conduct a side-scan sonar survey off Ramsgate at a location thought to have been used for illegal disposal of dredged material.

NARRATIVE:

A simplified cruise track is given in Figure 1. RV CIROLANA sailed from Barrow-in-Furness on 8 February to sample a 'National Monitoring Plan' (NMP) site off the Wyre (aim 1). Both this and a nearby site were sampled for sediments, while the latter site was also sampled for the benthic macrofauna. On completion, NMP 80 (SE of the Isle of Man) was visited in poor weather on 9 February, followed by a gravel site in Liverpool Bay, where six Anchor dredge samples were taken (aim 3). A Granton trawl was then deployed at NMP 77; grab sampling was ineffective due to the hard substrate at this site, and on 10 February a relocated site some 5 miles to the NW was successfully sampled (aim 1). RV CIROLANA then sailed for the Bristol Channel, where further grab sampling confirmed the hard nature of substrates previously encountered at NMP 61. A sandy site south of Swansea Bay was worked as an alternative. Four two-metre beam trawl tows were then made at a proposed aggregate extraction site, and processed for the benthic fauna (aim 3). Samples of shrimps were retained for stomach content analysis. On 12 February, a Granton trawl tow was made across this site, and samples of small fish collected for stomach content analysis. Six Anchor dredge samples were then collected for the benthic fauna, followed by five Hamon grabs; observations were made on the distribution of *Sabellaria* during the processing of these samples (additional aim 1).

On 13 February, work commenced at NMP 59 (SW Approaches), but the swell was too great for effective grab sampling. RV CIROLANA then sailed in worsening weather to Plymouth, where nearshore site NMP 57 was completed on the afternoon of 14 February. Sampling for sediments in the vicinity of a sewage-sludge disposal site as part of a study of temporal trends in contaminants was then begun (aim 4), but the effort was curtailed due to poor weather. After a Granton trawl tow near NMP 57 on the morning of 15 February, sediment sampling at the disposal site was completed, followed by grab and trawl sampling at NMP 58.

On 16 February, grab samples were collected for sediments and benthos at the Lyme Bay sewage-sludge disposal site (additional aim 2), followed by two Kasten cores on muddy ground nearby (aim 2). Penetration appeared to be adequate, but insufficient material was actually retained by the core. Six Anchor dredge sites were then worked for the benthos at a gravel area in the inner Bay (completion of aim 3).

NMP 49 (Selsey Bill) was successfully sampled by grab on 17 February, although in achieving this the grab failure rate was high (c. 75%) due to the coarse ground. Following a Granton trawl at this location, sampling of sediments in the vicinity of the Nab Tower sewage-sludge disposal site as part of a temporal study of contaminant concentrations was completed (aim 4), and RV CIROLANA sailed for Hastings.

The underwater camera sledge was successfully deployed across the southern edge of site Y, an aggregate dredging area on the Hastings Shingle Bank (aim 5). A new low-light intensity video camera was also briefly deployed, but there was too much ambient light to provide sharp images, and further testing of its potential in a variety of situations will clearly be required. Nine grab samples were then collected at various points over the Bank, to examine for any evidence of accumulations of silt, which had earlier been reported by fishermen. A side-scan sonar survey at and to the south of dredged site Y was then conducted, following the same design as on CORYSTES 12b/93, in order to examine for the persistence of 'out-of-area' dredge tracks which had previously been observed here. This was followed by two smaller-scale side-scan sonar surveys, to provide detail on anomalous features identified in the earlier survey.

On 19 February, grab samples were successfully collected at NMP 48, which was relocated to just outside the shipping channel. The predominant substrate type was shelly sand, but stones frequently jammed in the jaws, resulting in a high failure rate. On arrival at Ramsgate, a side-scan sonar survey was conducted at a location suspected to have been in receipt of illegally dumped dredgings (additional aim 3). Following this, grab samples were collected at NMP 47. On the morning of 20 February, NMP 39 was successfully sampled, and RV CIROLANA then sailed for Lowestoft, docking at 1700h.

RESULTS

Aims 1-5 were successfully achieved (excepting NMP 59), along with three additions. There was insufficient time to address aim 6, which will be pursued in a later (May, 1994) cruise.

Results from grab sampling of the sediments and fauna await the outcome of laboratory analysis.

The 'SEXTANT' navigational package was deployed for the first time on RV CIROLANA during this cruise. This was particularly important for the sampling of closely-spaced stations (some 250m apart) at NMP sites, and the ship's staff quickly became adept at manoeuvring the vessel to achieve a high standard of accuracy.

Sampling at a number of NMP sites revealed expected difficulties due to the mixed or coarse nature of the bottom deposits, especially inshore. (It should be noted that most NMP sites can be effectively sampled by grab, but these were not the main target of this cruise). In some cases, samples from relocated sites nearby should provide an acceptable platform for repeated sampling in future years, if required. However, in other cases, further investigation of options for sampling would be desirable in order to ensure both an acceptable rate of return on effort, and greater consistency in the size or quality of environmental samples. An appraisal of the experiences of MAFF and the NRA at jointly-sampled intermediate (inshore) sites following the current round of sampling will be useful prior to deciding on the most appropriate locations for any permanent monitoring stations.

Dabs were either present in insufficient numbers or were absent in trawl samples collected at NMP sites during this cruise. A ripped net at NMP 77 (N of Anglesey) provided further confirmation of the unsuitability of the original location for monitoring using traditional soft-sediment samplers.

In the Bristol Channel, a total of six Anchor dredge samples were taken to evaluate the distribution and abundance of the 'ross worm' *Sabellaria spinulosa* in a proposed gravel extraction site. *Sabellaria* was present in all samples, although not in the large densities typically associated with 'ross reef'. In five of the six samples, the growth was reduced to small clumps attached to individual stones. Yet one sample, taken in the north east corner of the licensed area, had much larger clumps, often binding several stones together. The ubiquitous presence of *Sabellaria*, along with relatively high densities found in one sample, would suggest that 'ross reef' may exist locally within the boundary of this site.

Sampling of the benthos of gravel deposits in Liverpool Bay, the Bristol Channel and Lyme Bay by Anchor dredge completes the survey objectives of a regional assessment of the gravel fauna around the England and Wales coastline (A Kenny).

Underwater camera work at Hastings provided good images of the sea bed in clear-water conditions (in contrast to those encountered in December 1993). There were no clearly discernible dredge tracks to the south of site Y, and the sea bed surface was relatively smooth, compared with the markedly undulating profile within the dredging site itself. Shipek grab samples collected at various locations over the Bank provided no visual evidence of any accumulations of mud.

Side-scan sonar images to the south of the dredged site showed a similar disposition of 'out-of-area' dredge tracks to those previously observed. Most appeared to be 'weathered' and infilled to some degree, suggesting that no significant dredging activity beyond the southern boundary had recently taken place. Beam trawl tracks were much in evidence towards the southern edge of the Shingle Bank. A finer-scale survey of a previously-noted anomalous feature which resembled a dumped load suggested that this was in fact the dispersing remains of a charted wreck. Centred on this location were a number of rectangular objects which were also identified some distance to the south. These were initially thought to bear some similarities to dredger outwash screens, but now appear to be too large (some 4 x 2m); their true identity remains something of a mystery and will repay more detailed examination in the laboratory.

A side-scan sonar survey off Ramsgate identified natural zones of sand ripples and hard ground, but provided no evidence of the presence of illegally-dumped dredged material, which had been reported during December, 1993. However, confirmation must await more detailed examination of the sonar traces back at the laboratory.

H L Rees
23 February 1994

SEEN IN DRAFT: B A Chapman (Master)
J Harper (Senior Fishing Mate)

INITIALLED: JEP

DISTRIBUTION:

Basic list +
J E Portmann
J A Campbell
S M Rowlatt
A Franklin
I R Napier
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M A Pendle
J Osborne
A J Kenny
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P Hudson
A J Murray (Crown Estates Commission)

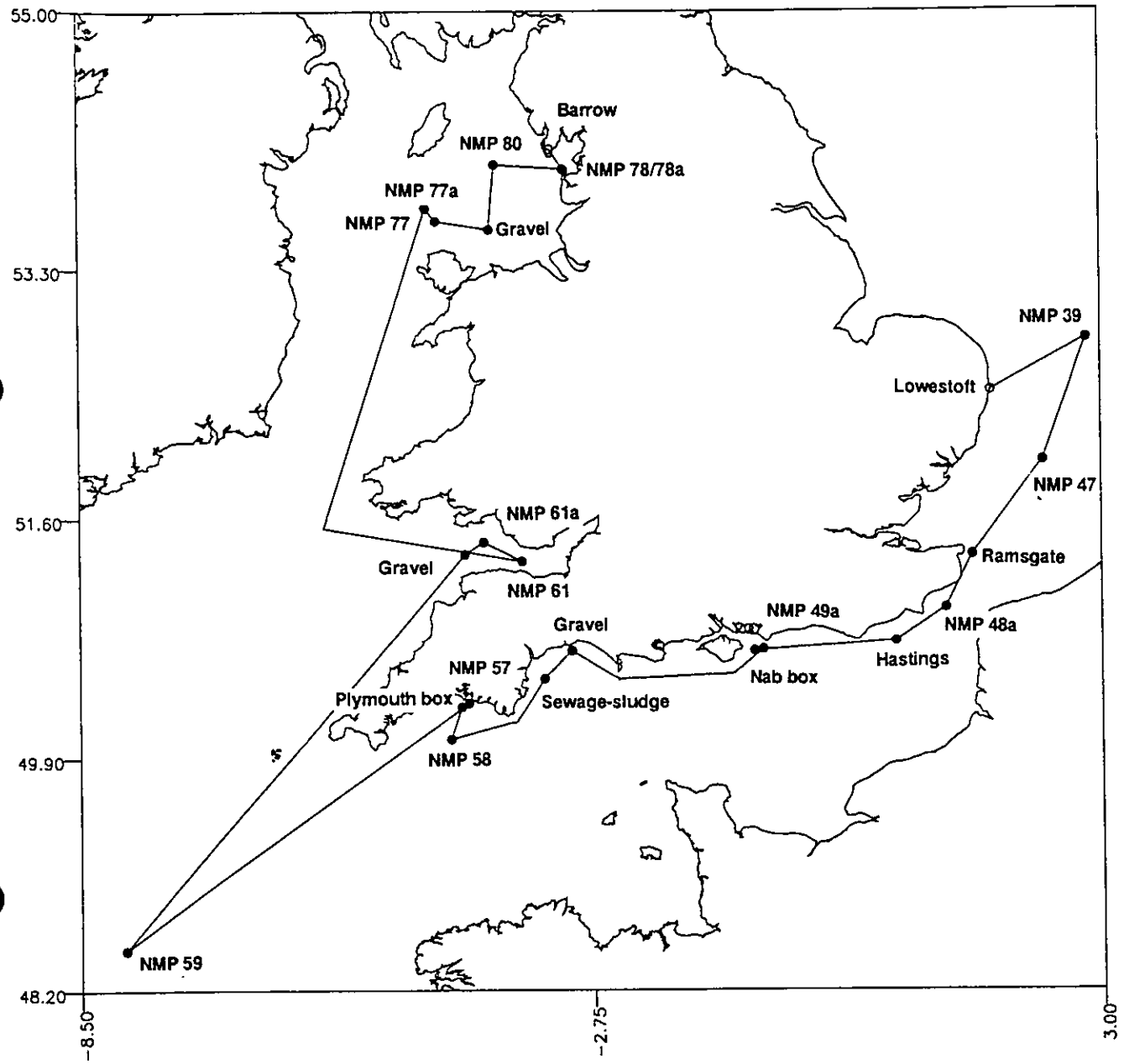

Figure 1. Simplified cruise track : *Cirolana* 2b/94