DRAFT

DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS.

2003 RESEARCH VESSEL PROGRAMME

CRUISE REPORT (*C END 5/03*)

STAFF:

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DURATION:

25th July – 4th August 2003

LOCALITY:

North Sea & E. Channel

AIMS:

1. To conduct sampling at a relinquished marine aggregate extraction site at Coal Pit/Sole Pit (Area 408) using trawl, underwater TV and acoustic techniques for time series studies to establish the time required for recovery of the sea bed fauna.

2. To conduct surveys at a relinquished aggregate extraction site off Harwich (Area 222) using grab, underwater TV, trawls and acoustic techniques for time-series studies to establish the time required for recovery of the sea bed fauna.

3. To conduct a habitat mapping survey between the Varne (off Dunganess) and the Hastings Shingle Bank. The survey will employ various tools including grabs,

trawls, underwater TV and acoustic techniques with a view to further development of habitat mapping techniques.

4. To conduct surveys at the Hastings Shingle Bank (Areas X & Y) using grab, underwater TV, trawls and acoustic techniques for time-series studies to establish the time required for recovery of the sea bed fauna.

5. To conduct grab sampling within an area of the current Hastings Shingle Bank aggregate extraction licence with a view to identifying indicators of environmental disturbance.

6. To conduct grab sampling in the vicinity of the Hastings Shingle Bank in order to characterise a number of areas of seabed previously identified using various acoustic techniques.

PLAN:

RV *Cefas Endeavour* will leave Lowestoft on 25th July 2003 and sail to Area 408 where work will commence (aim 1). The ship will then sail to an area off Harwich (Area 222) to undertake a variety of surveys (aim 2). On completion of the work at Area 222, *Cefas Endeavour* will sail to the Varne (Off Dungeness).

Between the Varne and Hastings a broadscale habitat mapping survey will be carried out using a variety of tools (aim 3). Whilst at Hastings, survey work detailed in aims 4, 5 and 6 will be completed. Following this the ship will return to Lowestoft to dock on the 3rd August 2003.

NARRATIVE:

The planned sailing time of 06:30 on Friday 25th July 2003 had to be postponed as spare parts required to fix a problem with the engines were not delivered and fitted until the afternoon of the 25th July. The evening sailing was then cancelled due to high winds and the continuing possibility that the engines could cut out at low revs, a problem which was not able to be fixed prior to sailing.

The ship finally sailed at 07:30 on Sat 26th July 2003 and on leaving Lowestoft steamed to Smith's Knoll to test the trawl Scanmar gear, an additional aim carried out for the next cruise. These test were successfully completed on route with minimal time delay. *Cefas Endeavour* then steamed to the Indefatigable Bank to recover a sonar buoy for colleagues at Lowestoft. On route, engine problems reoccurred limiting the top speed for the remainder of the cruise to 10 knots.

The ship arrived at the first survey area, an aggregate extraction site, Area 408 (Coal Pit/Sole Pit) at 18:00 on the 26th July. Epifauna samples were collected, using a Jennings 2m beam trawl, within the site and at a reference box in the near vicinity.

Sidescan sonar and bathymetric surveys were also undertaken in this area. Underwater stills and video images were also collected using the camera sledge at these sites. Camera work abruptly stopped during the last camera tow as a result of winch problems. On completion of the work at this site (Aim 1) the ship sailed, around lunchtime, to aggregate extraction area, Area 222 (off Harwich), arriving around 21:30 on the 27th July 2003.

On arrival at Area 222 the site was surveyed using sidescan sonar and other acoustic techniques. The following morning macrobenthic samples were collected, using a 0.1m^2 Hamon grab, within the site and at two reference sites. During the evening epifauna samples were collected, using a Jennings 2m beam trawl, within the site and at a reference box in the near vicinity. Problems were experienced on the final tow with the twin net drum. Work at Area 222 (Aim 2) was completed late on the evening of the 28th July and the ship then sailed overnight to Soverign Harbour to allow a crew member to disembark (urgent personal reasons).

During the following day (29th July 2003) and overnight a number of acoustic survey lines were run between the Varne and Hastings and across the Hastings Shingle Bank. (Aims 3 & 4). On the 30th July a number of 0.1m^2 Hamon grab samples were collected from within Hastings Area Y and at a reference site to the south. During the afternoon further acoustic survey lines were run across the Hastings Shingle Bank. At dusk effort switched to camera work within the Area X, Area Y and current licence areas. On completion a number of 2m beam trawl samples were collected from the Area Y Ref Box. Again, winch problems were experienced with the twin net drum winch. During the night multibeam infill lines were run across the Hastings Shingle Bank. The following morning the cable from the twin net drum was rewound onto the single net drum to allow trawling to continue. Beam trawl samples were collected from Area Y High and Low boxes. An attempt was made to collect beam trawl samples from Area X but the trawl was damaged and a decision was made to abandon this site. Parts of this area have recently been dredged which may have made it unsuitable for sampling using this gear. On completion of this work grabbing at Area X was undertaken from the stern gantry of the vessel.

The following morning (1st August 2003) a further Varne-Hastings Broadscale acoustic line was run after which time work began on the Varne-Hastings ground truthing survey which was designed to help interpretation of the collected acoustic data. A problem with the camera tow forced camera operations to be suspended. During the 2nd August work on the ground truthing survey was completed with last remaining Varne-Hastings acoustic line being run during the early afternoon.

Six Hamon grabs were collected from an area of gravel to the south of the Hastings extraction licence. These samples are designed to help characterise this acoustically distinct area. A number of Shipek grabs were also collected in order to investigate the apparent discrepancies between sidescan and the acoustic ground discrimination (QTC) data collected from across the Hastings Shingle Bank. This grabbing work was completed around 01:30 on 3rd August. Overnight the remaining multibeam lines were completed finishing around 06:30. Further groundtruthing of this study were carried out using underwater TV. Survey work was completed at 12:00 on the 3rd August and the ship set sail; for Lowestoft and docked at 02:00 on the 4th August.

RESULTS:
Full reporting of results for all surveys will only become available following laboratory analysis of samples and processing of acoustic and photographic records. All cruise aims with the exception of Aim 5 were successfully realised. Cruise Aim 5 had to be dropped as a result of the lost time due technical problems with some of the ships equipment. Two additional aims of testing Scanmar trawling gear and the collection of an acoustic buoy were also completed.

Sediments and samples of the benthic macrofauna from areas where dredging has ceased ('Area 408, Area 222, Hastings Area X and Area Y') were successfully sampled using a $0.1m^2$ Hamon Grab. The sampling strategy was designed after reference to information recorded on board dredgers ('black box' data) on the location and intensity of dredging activity. The design consisted of two treatment groups varying in the level of dredging intensity and three reference areas located away from the impacts of extraction activity. Data arising from this design will ultimately provide a comparative evaluation of the effects of dredging intensity on the biological and physical recovery of extraction sites on cessation of dredging and will contribute to a time-series of information.

A mulibeam survey of the Hastings shingle Bank was successfully completed (see Figure 2). The data collected from this survey shows considerable potential for improving our understanging of the physical environmental conditions across the area.

GEAR:

Gear details can be provided by the SIC on request.

K M Cooper

15.07.03

INITIALLED:

DISTRIBUTION:

Basic list +
M Waldock
L A Murray
D Morris
S Malcolm
C Vivian
H Rees
K Cooper

D Limpenny
B Meadows
S Boyd
R Kilbride
A Smith
P Whomersley
J Eggleton
A Kenny
N Lyman
A Nichols
J Rees
B Greenaway (DEFRA)
P Leonard (DEFRA)
R Emmerson (DEFRA)
G Boyes (DEFRA)
A Murray (Crown Estates Commission)
R Orpin (ODPM)

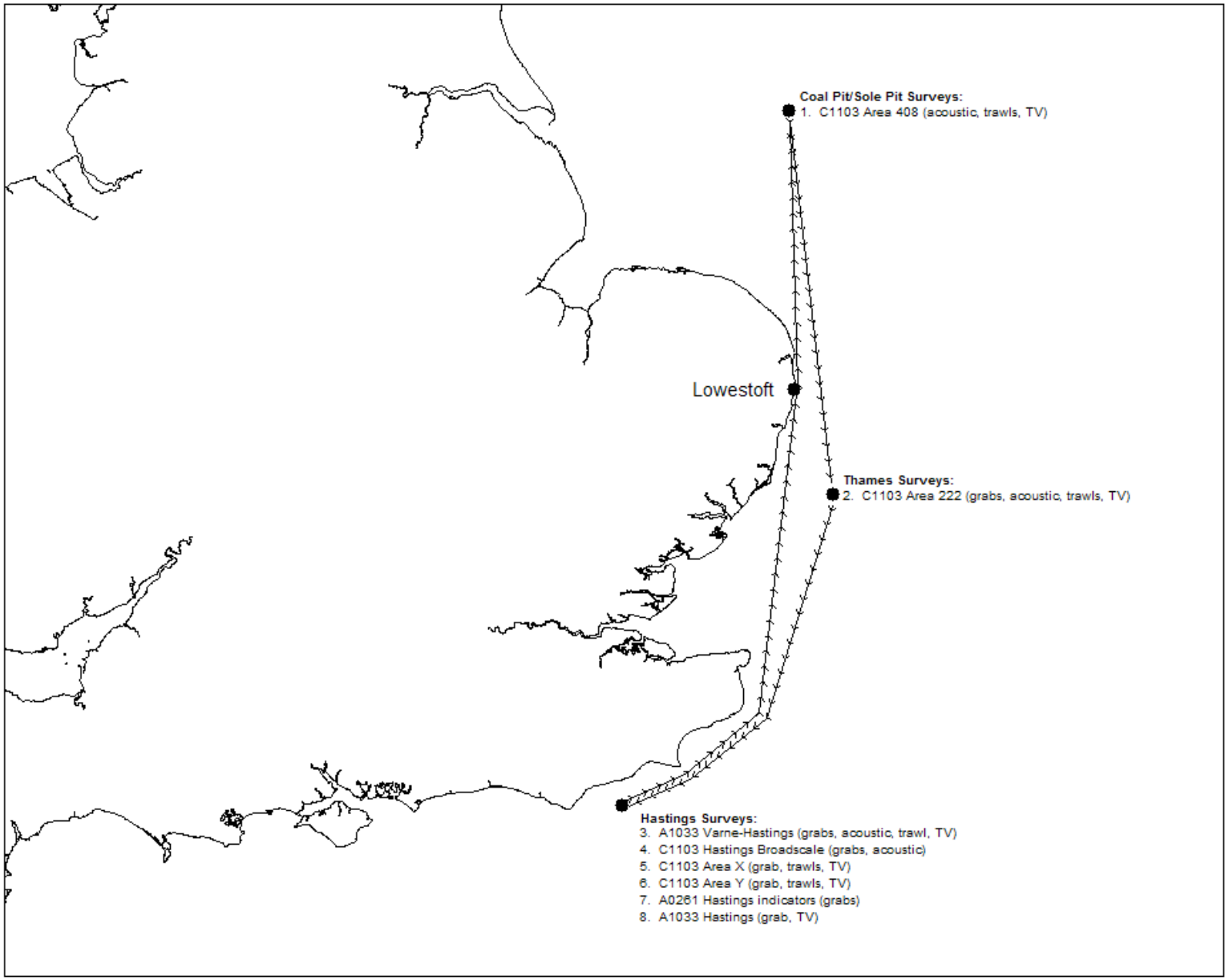

Figure 1. Route of *RV Cefas Endeavour* during the research programme C End 5/03.

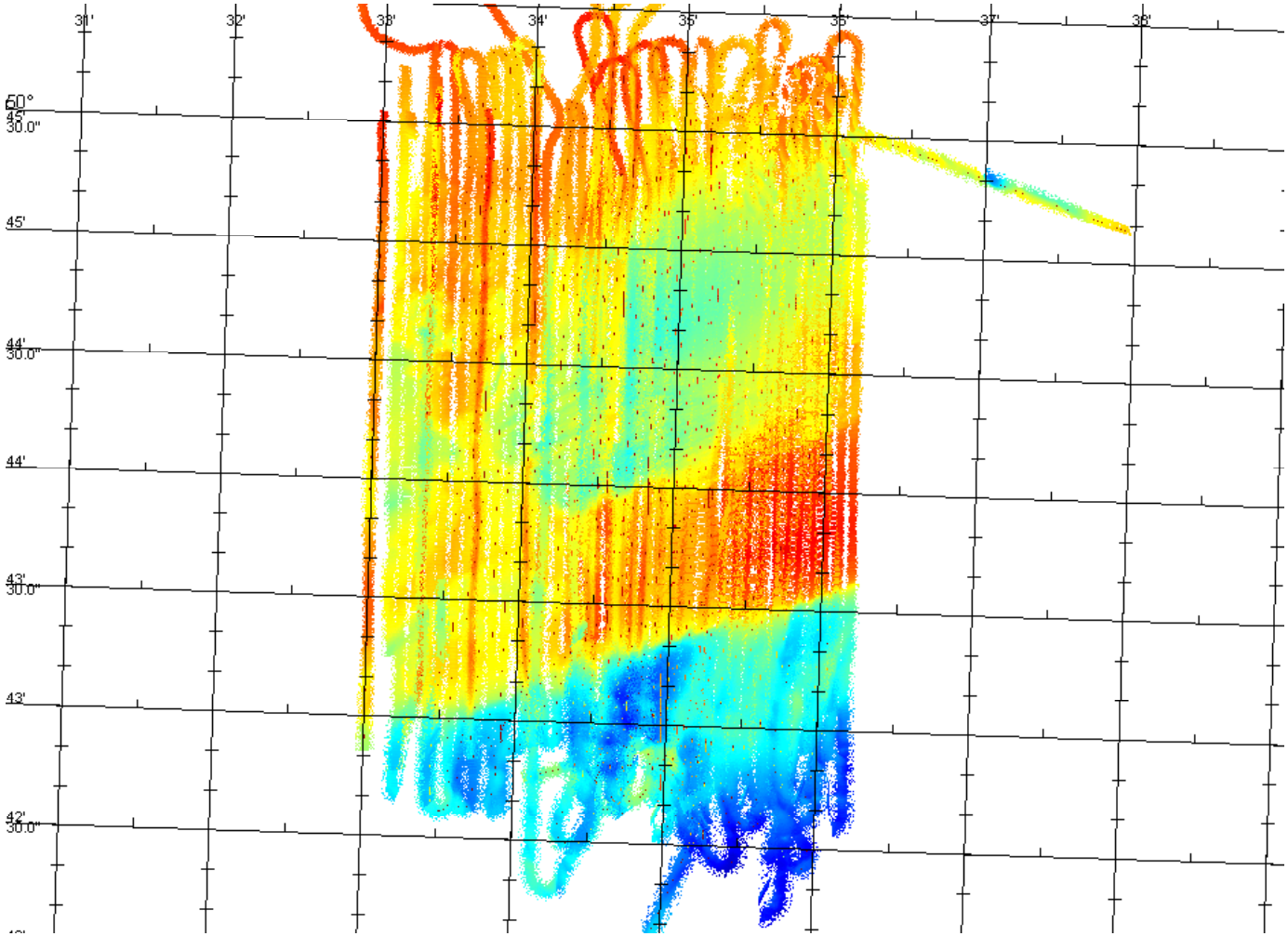

Figure 2. Bathymetric data collected using Simrad multibeam system at the Hastings Shingle Bank during C End 5/03.