DEPARTMENT FOR ENVIRONMENT, FOOD AND RURAL AFFAIRS.

2003 RESEARCH VESSEL PROGRAMME

PROGRAMME: *RV CEFAS ENDEAVOUR*: CRUISE 4a

STAFF:

Part 1 :
D Limpenny (SIC)
W Meadows
S Boyd
E Garnacho
K Cooper
R Kilbride
A Hewer
P Whomersley
M Schratzberger
C Limpenny
J Eggleton
M Cassap
N Lyman (from 1st June)

Part 2 :
S Boyd (SIC)
D Limpenny
W Meadows
P Whomersley
C North
S Bolam
K Cooper
R Kilbride
R Coggan
H Bates
N Lyman
M Curtis

DURATION:

Part 1 : 25th May – 5th June (approx.)
Part 2 : 5th June (approx.) – 17th June

Changeover at sea off Thames or Lowestoft

LOCALITY:

North Sea/English Channel

AIMS:

1. To survey dredged material disposal sites at the Souter Point (Tyne), North Tyne (Tyne), Tees Bay, Inner Gabbard (outer Thames estuary), Roughs Tower (off Harwich), Nab Tower (Isle of Wight), and Rame Head (off Plymouth) and Falmouth for benthos and for trace metal and organic contaminants in sediments, using grabbing, coring and acoustic methods.

2. To apply a range of sampling methodologies at a number of dredged material disposal and aggregate extraction sites, to assist in the development of environmental indicators for these activities.

3. To sample representative NMMP locations using grabbing, coring, acoustic and trawl methods for trace metal and organic contaminants, litter and the epi-, macro-, meio-, and micro fauna.

4. To sample surface waters at representative offshore and intermediate NMMP locations for salinity, nutrients and chlorophyll.

5. To sample the benthos and sediments for time-series studies using the Hamon grab, in the vicinity of aggregate extraction sites off the Isle of Wight and Lowestoft.

6. To conduct time-series studies at gravelly locations following cessation of aggregate dredging, using grabbing, trawling, photographic and acoustic (including multibeam bathymetry) techniques.

7. To sample horse-mussels from the Humber/Wash area for later analyses of contaminants in flesh.

8. To sample the sediments and benthos off the Tyne for time-series studies using grab, core and beam trawl and continuation of sampling within a temporal box.

9. To conduct habitat mapping surveys at a range of sites impacted by anthropogenic activities using grabbing, coring, trawling, photographic and acoustic (including multibeam bathymetry) techniques.

10. To carry out a short sidescan sonar survey at an aggregate extraction site in the outer Wash.

11. To undertake a broadscale survey of an area of seabed between Dungeness and Hastings using acoustic, photographic and biological sampling techniques.

12. To acoustically survey and collect samples from a western English Channel site for comparison with existing samples from the eastern English Channel.

PLAN:

Part A:

Endeavour will leave Lowestoft on the evening tide on 25th May and, in the event of fine weather, will sail immediately for NMMP 345 in the vicinity of the outer Silver Pit, where a range of sampling techniques will be employed (Aim 3). On completion of this work the vessel will sail to NMMP 245 off the Tyne where a similar programme of work will be undertaken. A number of aims will then be carried out in the Tyne area, at the North Tyne and Souter Point dredged material disposal sites, the historic sewage sludge disposal site and at an inshore NMMP site (Aims 1, 2, 3, 4, 8 and 9). Work under Aim 1 will be conducted at the Inner Tees Bay dredged material disposal site *en route* to an aggregate extraction site close to the Coal Pit (Aim 6). On completion of work at this site, *Endeavour* will collect water and sediment samples at an NMMP site south of the Humber (Aims 3 and 4) and also seek to collect a sample of Horse Mussels from the historic Humber sewage sludge disposal site (Aim 7).

Following sampling at an NMMP site in the Wash (Aims 3 and 4) and a short sidescan survey close to the Docking Shoal, further sampling for Horse Mussels will be conducted at a site near the Inner Dowsing (Aim 7). Hamon grab samples will then be collected from a number of temporal sites in the vicinity of the Cross Sand aggregate extraction licence block (Aim 5). Endeavour will head south to conduct multidisciplinary surveys at a number of locations in the vicinity of the Inner Gabbard under Aims 1, 3, 4 and 6, before carrying out acoustic and sampling surveys at the Roughs Tower dredged material disposal site (Aim 1). An NMMP site in the Warp (Thames Estuary) will then be sampled.

At a convenient point in the programme a changeover of scientific staff will take place, on or about 5th June, in the southern North Sea either at Lowestoft, or at a suitable location in the Thames Estuary.

Part B:

Endeavour will sail into the English Channel and carry out sampling at an NMMP site off Dungeness (Aims 3 and 4). A sidescan sonar line will be run between Dungeness and Hastings and further sidescan lines, followed by biological and photographic sampling, will be conducted in the area as part of Aim 11. The aggregate extraction component of Aim 2 will also be undertaken at the Hastings site. The vessel will continue westwards and carry out survey work east of the Isle of Wight, at the Nab Tower dredged material disposal site (Aim 1) and at a number of temporal sites sampled during previous surveys (Aim 5).

NMMP 536 in Lyme Bay will be undergo routine sampling, before a comprehensive survey of the Rame Head dredged material disposal site is conducted using a wide

range of remote survey and sampling techniques. An inshore survey will also be carried out at Rame Head using *Endeavours* small boat. An area of gravelly substrata known to exist to the west of Rame Head will be surveyed and sampled *en route* to Falmouth, to provide a comparison with existing samples collected from similar substrata in the eastern English Channel (Aim 12). Finally, a survey of the Falmouth dredged material disposal site will be conducted before *Endeavour* begins passage back to Lowestoft, docking late on 16th or early on 17th June.

GEAR:

- 3 x 2m Jennings type Beam Trawls fitted with cod end liner and supplied with 2 spare nets. Enough wire to deploy in up to 100m of water.
- 3 x 2m Burnham type wooden Beam trawls with cod end liners, 2 x spare nets, and 2 x spare beams
- 3 x fine mesh Newhaven type Scallop dredges from Burnham. 3 dredge beam from Lwt with spare tooth bars.
- Rock dredge.
- 1 x swinging arm Anchor dredge.
- Two large blue plastic containers for deck storage of sample buckets (supplied from Burnham).
- Two mini Hamon grabs, both with double weight trays. Grabs modified to fit digital video camera with data overlay. All grab weights.
- Large Hamon grab with all weights
- 3 x Day grabs from Burnham
- Shipek grab with buckets/handle/frame from Burnham
- Drop camera frame with digital stills camera capability (with manual firing option) and digital video camera with data overlay 10 x 1hr SVHS video films and 30 digital video tapes.
- Video sledge with digital stills and digital video capability.
- Bathymetric survey capability using Simrad EM3000
- SD 200 or equivalent for SOS measurement
- Local tide gauge and tidal prediction software
- Hi Pap positioning system
- Benthos SIS 1500 sidescan system with acquisition and post-processing software
- EG+G sidescan system patched into Triton as backup
- 50 KHz QTC with Impact.
- RoxAnn
- Sextant and Tower software
- Continuous flow water supply and autologging of data to network
- 15 x 10l containers of 30% buffered formaldehyde solution in chemical container.
- Suspended load equipment to be supplied by Jon Rees
- Nutrients sampling equipment supplied by Naomi Greenwood
- NIOZ box corer with core boxes and shoes etc
- 2 x 1.7litre Niskins with messengers and weight to deploy from hydro wire
- 3 x Hand-held VHF radios ideally with hands free option.
- Rest of gear to come from Burnham

D S Limpenny

S E Boyd
15.5.03

INITIALLED:

DISTRIBUTION:

Basic list +
All scientific cruise personnel
M Waldock
S Malcolm
L Murray
D Morris
J Hunt
R Jolliffe
A Handley
R Law
C Kelly
H Rees
C Vivian
J Thain
J Rees
D Sivyer
J Jones

Figure 1. Proposed route of *CEFAS Endeavour* during the research cruise Endeavour 4A/03.