

CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE,  
LOWESTOFT, SUFFOLK, ENGLAND

DRAFT 2007 RESEARCH VESSEL PROGRAMME

PROGRAMME: RV Endeavour: CRUISE 8/07

STAFF:

Dr Liam Fernand	Mr Paul Hudson
Mr Stuart Cutchey	Ms Helen Bates
Mr Dave Sivyer	Mr Paul McCloghrie
Ms Olga Andres	Mr Ben Kurten (Newcastle University)
Dr Rodney Forster	Ms Laura Bristow (UEA)
Dr Ruth Parker	Ms Elke Neubacher (Queen Mary College)
Dr Ole Mikkelsen (UCNW)	Ms Alida Villa (UEA)
Mr Mike Shaw	Mr Steve Milligan (first day only)
Dr Suzanne Painting (first day only)	Dr Silke Kroeger (first day only)

DURATION: Tuesday 17<sup>th</sup> April – Wednesday 25<sup>th</sup> April

Approx Sailing Time 09:00 BST (HW 09:15 GMT)

Approx Docking Time 0600 BST on 25<sup>th</sup> (HW 0430 GMT)

LOCALITY: Southern Bight, Oyster grounds and Central North Sea, Dogger Bank region

Background: This is the 2nd cruise of a series of cruises that form an essential part of a project addressing the source, cycling and fate of nutrients (i.e. carbon, nitrogen, silicon, oxygen) in UK Shelf Seas, specifically the North Sea. It will examine the relative importance of the various ecosystem components, their degree of connectivity and their susceptibility to change due to environmental or human pressures. The project combines an intensive observational programme in the North Sea, with model development and operation. Three representative sites have been selected for detailed process studies (up to 5 cruises per year for 3 years) of pelagic (water column) and benthic (seabed) food webs, with horizontal and vertical spatial sampling over a broader area being achieved using a variety of towed instruments, and the temporal range being extended using autonomous buoys and bottom landers. *In situ* observations will be supplemented by satellite imagery and data from other sources, such as the continuous plankton recorder (CPR) and Ferryboxes™.

Overall aims of this series of cruises are to investigate:

1. Pelagic food webs, water column measurements
2. Hydrography and seawater chemistry
- 3 Community structure
- 4 Phytoplankton and microbial production
- 5 Grazing impacts
- 6 Mesozooplankton secondary production
- 7 Vertical flux and budgets of carbon
- 8 Benthic food webs, sediment processes, exchanges across the interface
- 9 Sediment Profile Imagery
- 10 Advection in coarse sediments
- 11 Resuspension events

### **Specific cruise AIMS (not in priority order)**

1. Trial the use of the Plankton multinet.
2. Recover and redploy landers at the three sites and additionally the smart buoys at the north dogger site.
3. Perform scanfish tows to give the water column context.
4. Sampling at frequent intervals (approx hourly) using CTD rosette at the 3 sites with LISST
5. CTD casts for Primary productivity estimates and deck incubations using N15 uptake.
6. Underway measurements for isotopic ratio work from continuous supply.
7. Collect Plankton samples for species composition using vertical nets.
8. Deployment of SPI camera over a wide range of sites to characterize inter site variability
9. Undertake assessment of benthic flora/fauna assemblage using Jennings beam trawls
10. Collect samples for isotope analysis of fish, fauna and flora using 2m beam
11. Collect core profiles, of nutrients, oxygen, chl-a. (NIOZ corer) and sediment profiles.
12. Undertake experiments on productivity and grazing at the three sites.

### **PLAN (all times GMT):**

Weather permitting Endeavour will sail at approximately 08:00 (GMT) on 17<sup>th</sup> April and head for the Gabbard site. Work will commence here, with a CTD and water sampling. Following this trials of the plankton multinet will be undertaken on a return passage to Lowestoft. Following trials of the nets (Steve Milligan, Suzanne Painting, Silke Kroeger) will be put ashore in Lowestoft by small boat.

Work will continue at the Sean Gas field site, a full complement of water column measurements over a tidal cycle will be taken, including CTD, Plankton multinet and ring nets. Benthic measurements including coring, spi camera drops and beam trawls will be performed as well as recovery and deployment of a lander. Studies will take approximately 36 hrs, with beam trawling occurring in daylight hours.

After on transit, to the Oyster Grounds site. A scanfish section will be undertaken from the south of the area to the North (6 hours). Following this a full complement of water column measurements over a tidal cycle will be taken. Benthic measurements including coring, spi camera drops and beam trawls will be performed as well as recovery and deployment of a lander. Studies will take approximately 48 hrs, with beam trawling occurring in daylight hours.

After transit to the Oyster grounds a scanfish section will be undertaken from the south of the area to the North (8 hours). Following this a full complement of water column measurements over a tidal cycle will be taken. Benthic measurements including coring, spi camera drops and beam trawls will be performed as well as recovery and deployment of a lander and smart bouy. Studies will take approximately 48 hrs, with beam trawling occurring in daylight hours.

On passage back to Lowestoft surface sampling will be undertaken for isotope analysis, aiming to catch the morning tide on the 25<sup>th</sup>.

Liam Fernand  
(Scientist-in-Charge)  
22 Mar 2007

### **DISTRIBUTION:**

BASIC LIST+ all those on cruise.