

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

DRAFT 2007 RESEARCH VESSEL PROGRAMME

PROGRAMME: RV Endeavour: SURVEY 19/07

STAFF:

Dr Liam Fernand	Mr Paul Hudson
Dr Naomi Greenwood	Mr Ben Kurten (Newcastle University)
Mr Dave Sivyer	Ms Laura Teal (Aberdeen)
Dr Ruth Parker	Ms Elke Neubacher (Queen Mary College)
Dr Ole Mikkelsen (UCNW)	Ms Alida Villa (UEA)
Dr Martien Baars (NIOZ)	Ms Holly Drake
Dr Inmar Frutos (CSIC)	Ms Helen Lees
Dr Andrew Kenny	Mr Stewart Cutchey
Dr Rob Wittbard (NIOZ, tbc)	

DURATION: Friday 26<sup>th</sup> October – Friday 2<sup>nd</sup> November

Approx Sailing Time 21:00 BST (HW 21:25 GMT)

Approx Docking Time 1530 BST on 25<sup>th</sup> (HW 1552 GMT)

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

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

### PLAN (all times GMT):

Weather permitting Endeavour will sail at approximately 21:00 (GMT) on 26<sup>th</sup> April and head for the Gabbard site. Work will commence here, with a CTD and net sampling.

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, beam trawls and benthic sledge 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 scunfish 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, beam trawls, benthic and sledge, 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, if weather permits a SPI camera will be deployed as a mooring for 36hours.

After transit to the Oyster grounds a scunfish 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 36 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 afternoon tide on the 2<sup>nd</sup>.

Liam Fernand  
(Scientist-in-Charge)  
2 October 2007

### DISTRIBUTION:

BASIC LIST+ all those on cruise.