

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

2007 RESEARCH VESSEL PROGRAMME

PROGRAMME: RV Endeavour: SURVEY 17/07

STAFF:

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DURATION: Thursday 13th September – Friday 21st September

Approx Sailing Time 10:30 BST

Approx Docking Time 18:00 BST

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

Background: This is the 4th 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 2 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 re-deploy landers at the three sites and additionally the SmartBuoy at the north dogger site.
2. Perform scanfish tows to give the water column context.
3. Sampling at frequent intervals (approx hourly) using CTD rosette at the 3 sites with LISST 100.
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 and towed multinet.
7. Deployment of SPI camera.
8. Deploy the SPI cameras and leave in-situ for 24 hours.
9. Undertake assessment of benthic flora/fauna assemblage using Jennings 2m beam trawls and hyperbenthic sledge.
10. Collect samples for isotope analysis of fish, fauna and flora using 2m beam
11. Collect sediment profiles, of nutrients, oxygen, chl-a. (NIOZ corer).
12. Undertake experiments on productivity and grazing at the three sites.

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

Weather permitting Endeavour will sail at approximately 10:30 (BST) on 13th September and collect a CTD cast and water samples off Lowestoft. We then head for the West Gabbard site. Work will commence here, with a CTD and water sampling. Surface samples for isotope analysis will be collected in transit to the Sean Gas field site

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, benthic sledge and beam trawls will be performed as well as recovery (by trawling or grapnels) and deployment of a lander. Studies will take approximately 36 hrs, with beam trawling occurring in daylight hours.

Then transit to Dutch coast when a scanfish section will be undertaken from the south of the area north, to the Oyster Grounds site (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, benthic sledge 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 towards the North Dogger site a scanfish section will be undertaken from the south of the area through the North Dogger site (8 hours). On return to the site a full complement of water column and benthic measurements will be collected. The SmartBuoy and lander will be serviced. 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 afternoon tide (approx 18:00 BST) on the 21st.

Dave Sivyer  
(Scientist-in-Charge)  
31 July 2007