

CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE,
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 OHT, UK

2006 RESEARCH VESSEL PROGRAMME

REPORT: RV ENDEAVOUR: CRUISE 4/06

STAFF: Tracy Maxwell (SIC)
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DURATION: 13 February – 17 February 2006

LOCALITY: North Sea (ICES IVb)

AIMS:

This was the sixth cruise of a series of seven related cruises to the Silver Pit, central North Sea in 2005/06 to describe the effects of fishing and the environment on production and food web structure during a seasonal production cycle (Figure 1). The data collected will be used to parameterise size-based food web models and to describe how seasonal patterns of energy flow affect indicators of fisheries impacts on trophic structure, biomass and production. The specific objectives of the cruise were:

- (1) To collect samples to allow analysis of spatial and temporal variation in carbon and nitrogen stable isotope ratios close to the base of marine food chains (filter feeding infauna and zooplankton).
- (2) To collect samples to allow analysis of relationships between body size, energy content and trophic level (from nitrogen stable isotope analysis) in space and time for zooplankton, benthic invertebrate and fish communities.
- (3) To collect samples to allow analysis of relationships between body size and production for zooplankton, benthic invertebrate and fish communities.

NARRATIVE (all times are GMT):

Endeavour sailed from Lowestoft at 21.00h on Monday 13 February 2006. She arrived in the Silver Pit region of the central North Sea the following morning and work began at the first (H1) 'benthic ecology' station at 06:10h. Seven replicate NIOZ cores were collected and sub-sampled for the analysis of sediment granulometry and stable isotopes, meiofauna, chlorophyll a and porosity. The remaining cores were then sieved to obtain benthic infauna for stable isotope and energetic analysis. Subsequently, two 2-m beam trawl collections were carried out at the same station. Catches of invertebrate epifauna were size fractionated for the analysis of spatial and temporal variation in carbon and nitrogen stable isotope ratios. Work at this station was completed at 07.20h. A further 3 benthic ecology stations (H2, H3 and H4)

and six 2m beam trawl (stations 2B2, 2B3 and 2B4) were also sampled and successfully completed by 18.50h

Overnight from 19.20h Tuesday 14 February to 01.45h Wednesday 15 February, TTN zooplankton samples were collected at six (P5, P6, P7, P8, P9 and P13) of eight TTN stations and size fractionated at sea. Endeavour then proceeded to the final benthic ecology station (H5). However, on arrival at the station at 05.09h, the weather conditions had worsened considerably, gusting force 9 to 10, thereby precluding the safe collection of the remaining samples. By 11.23h, the weather had improved considerably, and the work at the station commenced. 2-m beam trawling and NIOZ coring was successfully completed by 13.40h. Endeavour then steamed to the first of three 4-m beam trawl lines, arriving on station (4B3) at 14.44h. However, whilst trying to deploy the 4-m beam, problems were encountered with the 'A' frame Gilson winch which temporarily prevented any further work. The first 4-m beam was finally shot away at 16.19h, but on recovery was deemed invalid. With daylight fading further 4-m beam trawling was abandoned for the day, and Endeavour steamed to plankton station P4. Work at the final two TTN zooplankton stations commenced at 20:08h, with all work successfully completed by 21:49h. From first day light (07.06h) on Thursday 16 to 15:35h, two 4-m beam trawl tows were completed at each of the three Silver Pit 4-m beam stations. The fish caught on these tows were processed for stable isotope and energetic analysis.

Endeavour then steamed to a trawl line in the Indefatigable area (53°50.05' N, 02°10.00'E to 53°47.53'N, 02°15.06'E) where, as part of an ongoing study in this area, 2- and 4-m beam trawl samples have been collected in previous years. However, lack of daylight prevented work on arrival. Two 4-m beam trawl samples and eight 2-m beam trawl tows were collected on the morning and early afternoon of Friday 17 (07:51h to 13:27h). Fish from the 4-m beam trawls and bivalves from the 2-m tows were processed for stable isotope analysis. Solenettes and scaldfish were also picked out from the 2-m tows and frozen for later analysis.

With all work successfully completed, Endeavour left the Indefatigable area of the North Sea early afternoon on Friday 17 and docked at Lowestoft at 23:25h Friday 17 February.

The following progress was made in relation to the primary objectives:

- To collect samples to allow analysis of spatial and temporal variation in carbon and nitrogen stable isotope ratios close to the base of marine food chains (filter feeding infauna and zooplankton): Met in full.
- To collect samples to allow analysis of relationships between body size, energy content and trophic level (from nitrogen stable isotope analysis) in space and time for zooplankton, benthic invertebrate and fish communities: Met in full.
- To collect samples to allow analysis of relationships between body size and production for zooplankton, benthic invertebrate and fish communities: Met in full.

Tracy Maxwell
Scientist in Charge
17 February 2006

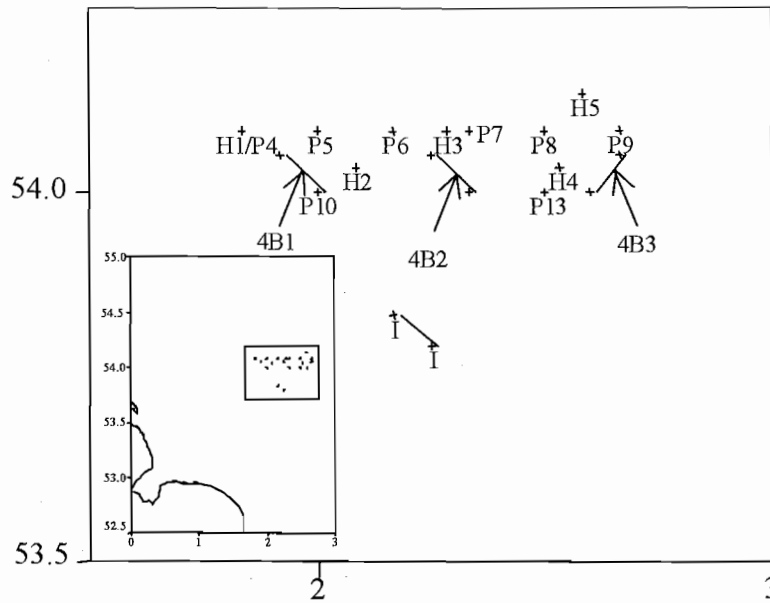


Figure 1: Map of study area showing sites in the Silver Pit sampled for plankton (P4-P10, P13), benthos (H1-H5) and demersal fish (4B1-3), plus additional sampling undertaken at the Indefatigable for demersal fish (I).

SEEN IN DRAFT:

T. Reading (Master)

B. Salter (FM)

INITIALLED:

B. Camplin (EI SAH)

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