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

2005 RESEARCH VESSEL PROGRAMME

REPORT: RV ENDEAVOUR: CRUISE 14/05

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DURATION: 29 September – 04 October 2005

LOCALITY: North Sea (ICES IVb)

AIMS:

This was the fourth of five related cruises to the Silver Pit, central North Sea in 2005 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 05.30h on Thursday 29 September 2005. She arrived in the Silver Pit region of the central North Sea the same afternoon and work at the first four of eight TTN zooplankton stations commenced at 16.55h. Samples were size fractionated at sea. Work was completed successfully at 23.00h.
On Friday 30 September, from 06.05h to 14.53h, two 4-m beam trawl tows were completed at each of the three 4-m beam stations. The fish caught on these tows were processed for stable isotope and energetic analysis (juvenile cod were recorded regularly in these samples). In addition, the epibenthic invertebrates were quantified for future reference. Commencing at 16.49h, work at the remaining four zooplankton stations was completed at 23.00h the same day.

Endeavour then steamed to Bridlington where M Schratzberger was picked up by the searider on Saturday 1 October 2005 at 12.30h. Endeavour returned to the Silver Pit region the same day and proceeded to the first of five 'benthic ecology' stations. NIOZ coring started at 18.55h with the collection of seven replicate cores at the first of five stations. Cores were sieved to obtain benthic infauna for stable isotope and energetic analysis and this was completed by 21.00h. Two 2-m beam trawl collections were carried out at the same station at day break the next morning, commencing at 05.57h. Catches of invertebrate epifauna were size fractionated for the analysis of spatial and temporal variation in carbon and nitrogen stable isotope ratios.
From 08.01h on Sunday 2 October 2005 to 08.55h Monday 3 October 2005, NIOZ coring and 2-m beam trawling (during day light hours) at a further four 'benthic ecology' stations were completed successfully. Endeavour then steamed SE 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, two 4-m beam trawl samples were collected and fish and bivalves processed for stable isotope analysis, with work completed by 16.00h. As with the 4-m beam trawl samples collected in the Silver Pit area, epibenthic invertebrate fauna was quantified for future reference.
Commencing at 05.57h on Tuesday 4 October 2005, two 2-m beam trawl tows were conducted in the Indefatigable area to collect samples of scaldfish, solenette and bivalves to complement 4-m beam trawl samples collected at the same site the previous day. Bivalve catches were low and therefore a further seven 2-m beam trawl samples were collected. For the last three hauls, short lengths of chain were fitted to the shoes of the trawl, and this notably increased the bivalve catch rate. With the planned work for the cruise completed at 10.13h, Endeavour sailed to Lowestoft where she docked at 22.00h.

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.

The positive outcome of this cruise is a result of the enthusiasm and hard work of all those involved. Officers, crew and scientists worked well as a team and this significantly contributed to the successful completion of all cruise aims. The atmosphere on board was excellent.

Michaela Schratzberger
Scientist in Charge
4 October 2005

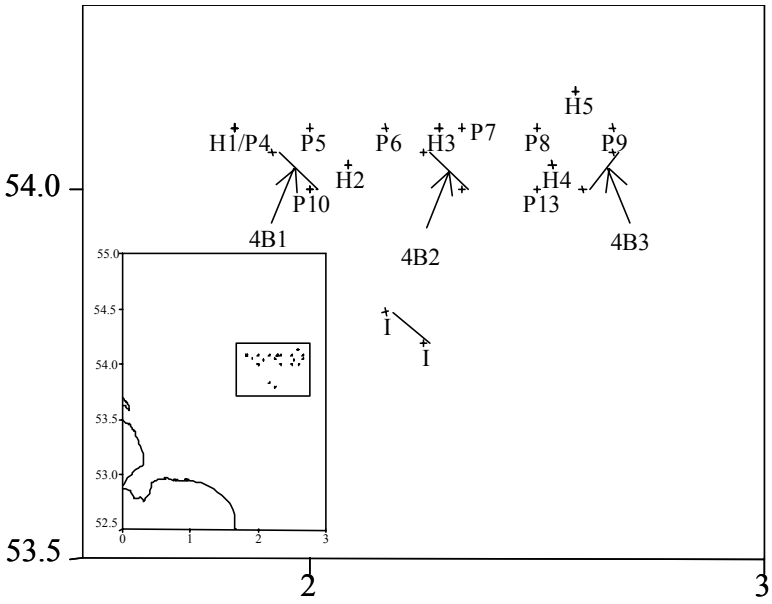

Figure 1: Map of study area showing sites in the Silver Pit sampled for plankton (P4-P10, P13), benthos (H1-H5) and demersal fish (4B1-3), plus additional sampling undertaken at the Indefatigable for demersal fish and bivalves (I).

SEEN IN DRAFT: A. Reading (Master)

A. Simpson (FM)

INITIALLED: B. Camplin (EI SAH)

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