

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

2005 RESEARCH VESSEL PROGRAMME

REPORT: RV ENDEAVOUR: CRUISE 18/05

STAFF: Michaela Schratzberger (SIC)
 Karema Warr (2IC)
 Chris Firmin
 Jennie Keable
 Emma Lane
 Nigel Lyman
 David Pearce
 Mike Shaw

DURATION: 5 November – 10 November 2005

LOCALITY: North Sea (ICES IVb)

AIMS:

This was the fifth 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 22.45h on Saturday 5 November 2005. She arrived in the Silver Pit region of the central North Sea the following morning and work at the first of five 'benthic ecology' station commenced at 09:00h. 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 and this work was completed at 12.00h. Due to increasing SW winds, further work had to be suspended until the evening.

Overnight from 19.00h Sunday 6 November to 00.30h Monday 7 November, TTN zooplankton samples were collected at four of eight TTN stations and size fractionated at sea. From 06.50h to 20:00h, NIOZ coring and 2-m beam trawling (during day light hours) at the remaining four 'benthic ecology' stations was completed successfully. Work at the remaining TTN zooplankton stations commenced at 17.50h. On arrival at the fourth plankton station at 23.00h, the weather conditions had worsened considerably, thereby precluding the safe collection of the remaining sample.

Gale-force winds on Tuesday 8 November prevented any work on deck. Therefore, the remaining plankton sample was collected and processed the following morning, commencing at 06:00h, when weather conditions had improved sufficiently. From first day light (07.00h) to 14.00h, 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. Two 4-m beam trawl samples were collected successfully but insufficient day light prevented the completion of two 2-m beam trawl tows. Fish from the 4-m beam trawls was processed for stable isotope analysis and this was completed at 19.30h.

The wind had freshened over night and between 06:00h and day break on Thursday 10 November, the weather conditions deteriorated rapidly. Gale-force winds with gusts of up to 50 knots prevented the collection of the remaining 2-m beam trawls. Endeavour left the Silver Pit area of the North Sea at 07.30h and docked at Lowestoft at 18.00h.

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 (Silver Pit)/part (Indefatigable).
- 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 (Silver Pit)/part (Indefatigable).
- To collect samples to allow analysis of relationships between body size and production for zooplankton, benthic invertebrate and fish communities: Met in full (Silver Pit)/part (Indefatigable).

Michaela Schratzberger
Scientist in Charge
10 November 2005

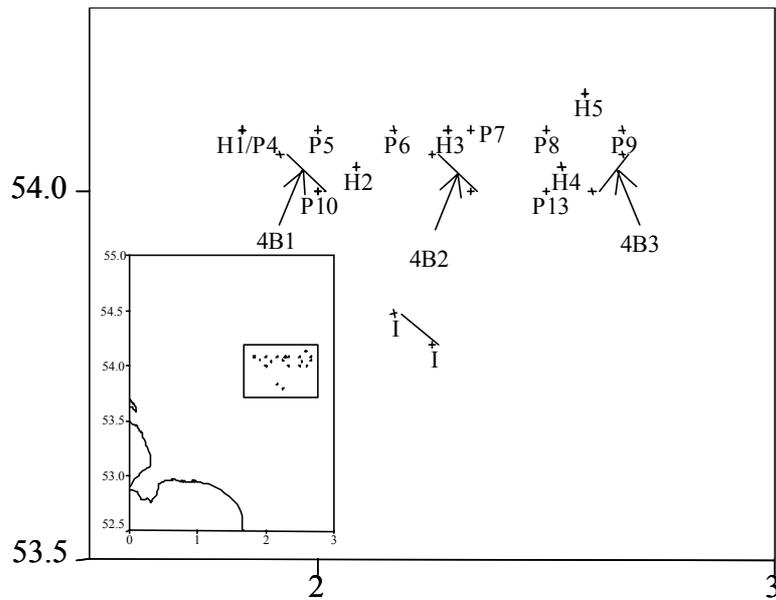


Figure 1: Map of study area showing sites in the Silver Pit sampled for plankton (P4-P10, P13), benthos (H1-H5) and demersal fish (4B1-3), plus additional sampling undertaken at the Indefatigable for demersal fish (I).

SEEN IN DRAFT:

B. McCurry (Master)

B. Salter (FM)

INITIALLED:

B. Camplin (EI SAH)

DISTRIBUTION:

Basic List +

Michaela Schratzberger

Karema Warr

Chris Firmin

Jennie Keable

Emma Lane

Nigel Lyman

David Pearce

Mike Shaw

SIGS

Master: Endeavour

Fishing skipper: Endeavour

Eastern SFC

North Eastern SFC