

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

2005 RESEARCH VESSEL PROGRAMME /REPORT

REPORT: RV CEFAS ENDEAVOUR: SURVEY 10B/06

STAFF: Michaela Schratzberger (SIC)
 Tracy Maxwell (2IC)
 Cheryl Burt
 Jim Ellis
 Nigel Lyman
 Steve Milligan
 Richard Mitchell
 Karema Warr

DURATION: 26 April – 5 May 2006

LOCALITY: North Sea (ICES IVb)

AIMS:

This was the last of seven related cruises that have been scheduled to describe the effects of fishing and environment on production and food web structure during a seasonal production cycle in. 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 study focused on the Silver Pit region of the central North Sea and the specific aims of the study were to:

- (1) analyse 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) investigate 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) study the relationships between body size and production for zooplankton, benthic invertebrate and fish communities
- (4) collect solenette to estimate density and trophic level in the southern North Sea.

NARRATIVE (all times are GMT):

After the change-over of one crew member and four scientific staff by searider, CEFAS ENDEAVOUR sailed from Lowestoft at 19.00h on Tuesday 25 April 2006. She steamed approximately 110 miles where an adrift wave rider was recovered at 53°55.73N, 02°48.32E at 06.15 on Wednesday 26 April. CEFAS ENDEAVOUR proceeded to the Silver Pit region of the central North Sea the same morning and work at the first three of five 'benthic ecology' station commenced at 08.19h. 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 17.15h. Work at the first three of eight TTN zooplankton stations commenced at 18.50h. Samples were size fractionated at sea and sample collection and processing was completed at 24.00h.

On Thursday 27 April from 05.41h to 11.13h, 2-m beam trawling and NIOZ coring at the remaining two 'benthic ecology' stations was completed successfully. Work at the five remaining TTN zooplankton stations commenced at 11.51h and the final sample was collected at 18.41h. CEFAS ENDEAVOUR then steamed 56 miles to re-deploy the wave rider off Dowsing at 53°32'08N, 01°03'07E at 22.58.

On Friday 29 April, from 05.42h to 13.54h, 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. CEFAS ENDEAVOUR left the Silver Pit at 16.00h and steamed SE to a trawl line in the Indefatigable area (53°50.05N, 02°10.00E to 53°47.53N, 02°15.06E) where, as part of an ongoing study in this area, two 4-m beam trawl tows were collected commencing at 05.42h. Fish and bivalves from both tows were processed for stable isotope analysis. Subsequently, two 2-m beam trawl tows were conducted to collect samples of scaldfish, solenette and bivalves to complement 4-m beam trawl samples. As in previous cruises, bivalve catches were low and therefore a further five 2-m beam trawl samples were collected after fitting short lengths of chain to the shoes of the trawl.

With the planned work for the Indefatigable completed at 12.04h, CEFAS ENDEAVOUR sailed approximately 9 nm NW to commence a 2-m beam trawl survey in the area 52° to 53°N and 2° to 3°E. The sampling grid consisted of 36 stations arranged in six blocks (A to F) of six stations each. From Saturday 29 April 13.28h to Monday 1 May 07.46h, two replicate 2-m beam trawl tows were conducted at 13 stations to estimate density and trophic level of solenette, scaldfish and dab in the southern North Sea. A 30-minute camera tow was carried out over slack water in block A, B and C to provide integrated information on the sedimentary habitat. Due to strong winds with gusts of up to 40 knots, further work was suspended until 14.30h when 2-m beam trawling and camera tows resumed at the remaining stations.

With the sampling grid completed on Thursday 4 May at 10.26h, CEFAS ENDEAVOUR steamed to the Wound off Happisburgh (52°49.06N, 01°38.12E to 52°47.62N, 01°40.23E) for a Multibeam survey to complement survey 10A/06. CEFAS ENDEAVOUR then proceeded to Lowestoft where she docked on Friday 5 May at 04.30h.

I would like to thank all scientists, officers and crew for their efforts that contributed significantly to the achievements of this cruise. Their positive approach to work, professionalism and expert knowledge is greatly appreciated.

Michaela Schratzberger
Scientist in Charge
5 May 2006

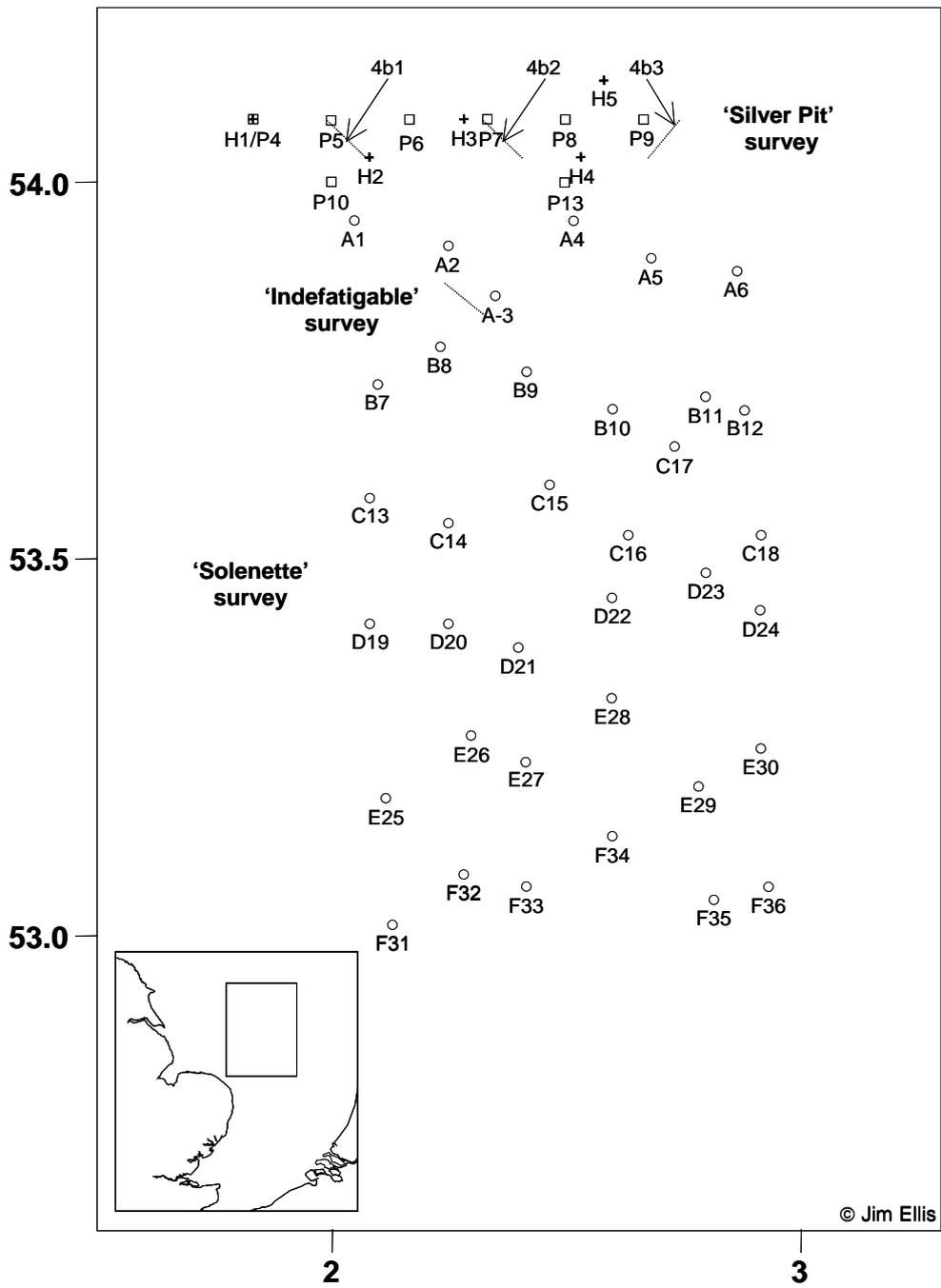


Figure 1. Map of study area showing sites in the Silver Pit sampled for plankton (P4 – P10, P13), benthos (H1 – H5) and demersal fish (4b1 – 4b3), plus additional sampling undertaken for demersal fish and bivalves at the Indefatigable and solenette, scaldfish and dab (A1 – F36).

SEEN IN DRAFT:

B. McCurry (Master)

B. Salter (FM)

INITIALLED:

B. Camplin (EI SAH)

DISTRIBUTION:

Basic List +

Michaela Schratzberger

Tracy Maxwell

Cheryl Burt

Jim Ellis

Nigel Lyman

Steve Milligan

Richard Mitchell

Karema Warr

SIGS

Master: CEFAS ENDEAVOUR

Fishing skipper: CEFAS ENDEAVOUR

Eastern SFC

North Eastern SFC