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

2010 RESEARCH VESSEL PROGRAMME

REPORT: RV CEFAS ENDEAVOUR: SURVEY 9/10

STAFF:

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DURATION: 12 April 2010 - 22 April 2010

LOCATION: Western English Channel and Celtic Sea

AIMS:

The objectives of the cruise are (1) to describe the size and species structure of epifaunal communities in the Celtic Sea to provide production and diversity estimates and (2) to sample chlorophyll in the sediments and water column to assess the relationship between surface and sediment chlorophyll concentrations. Both activities will support the validation of models of benthic production and diversity in the Celtic Sea (Defra MF1001).

NARRATIVE:

The scientific staff joined CEFAS ENDEAVOUR at Swansea Docks, early evening (approx. 17:15 BST) on Monday 12 April. CEFAS ENDEAVOUR sailed from Swansea on the morning tide (06:56) of Tuesday 13 April.

Upon sailing, CEFAS ENDEAVOUR steamed south westwards to reach the first grid station, C67. Sampling started at 10:31 working within a 100m bullring which was drawn up around each target sampling station. Two five minute 2 m beam trawl tows were successfully completed at station by 11:04. The catch was combined and the fauna removed from the debris and sediment. Individual animals were weighed into weight classes. Aggregated weights and numbers by species were recorded on paper. The electronic deck master system was also trialled successfully. On completion of the beam trawls, the NIOZ corer was deployed and sub samples of the sediment were collected for chlorophyll ‘a’,

porosity, sediment granulometry and meiofauna. CEFAS ENDEAVOUR then steamed south west to station C58. Two 2m beam trawls and one NIOZ core were obtained before continuing on to a further 3 stations (C59, C69 and C107). At each station both the 2 m beam trawl and NIOZ corer were deployed to collect physical and biological data. At station C69, 5 deployments were made with the NIOZ corer and in addition to taking subsamples from the sediment, all five samples were sieved over a 1 mm sieve and the fauna picked off and preserved in 4% formaldehyde for later identification. CEFAS ENDEAVOUR then steamed south west overnight to station C49, beginning work at 06:33 on Wednesday April 14. During the day 5 stations were visited (C49, C47, N3, C53, C52) and samples collected for faunal and sediment analysis at each. At station N3, 5 NIOZ core samples were taken and sieved to collect infaunal invertebrates. With weather predicted to deteriorate slightly over the next two days, CEFAS ENDEAVOUR then steamed south west overnight to station C45, beginning work at 05.50hrs on Thursday 15 April. All work was completed on station by 07:45 (including 5 NIOZ core deployments). Work continued throughout the day, with a further 3 stations being successfully achieved (C43, C106, C105). At station C105 2 additional deployments were made with the 4 m beam trawl. The catch from each trawl was sorted and fish and invertebrate species present were recorded on the deck master system.

Over the next three days (Friday 16 to Sunday 18 April), a further 14 stations were completed – see fig 1 - with successful deployments of the NIOZ corer and the 2m-beam trawl at each station. At stations C28, C31, C34 and C14, the NIOZ corer was deployed five times and fauna collected from each replicate sample. CEFAS ENDEAVOUR then steamed east overnight to station E3 at the western end of the English Channel, beginning work at 05.06hrs on Monday 19 April. Two 2 m beam trawls were deployed, resulting in relatively large catches (approximately 3 fish baskets of fauna at E3 in contrast to <1 basket at stations in the Celtic and Irish Sea areas), with the Hydroid *Cellaria* sp., and crustaceans (*Macropodia* spp., *Pagurus* spp.) dominating the catch. The NIOZ corer was also successfully deployed before continuing north to the next station (C8). Throughout the remainder of the day 5 additional nearshore stations were surveyed (C8, C7, C6, C5 and C4) with all gear deployments completed by 20:10. At stations C8 and C5 four additional NIOZ cores were taken, whilst at C4, the 4 m beam trawl was deployed (one 30 minute tow). During the final two days of the survey, (Tuesday 20 to Wednesday 21 April), a further 8 stations were completed – see fig 1 - with successful deployments of the NIOZ corer and the 2m-beam trawl at each station. At stations C8, C5, C1 and C9, the NIOZ corer was deployed five times and fauna collected from each replicate sample. On approaching station C100 (at 12:49hrs on 20 April) the target position for surveying was found to be in close proximity to a number of flags indicting static gear. Following discussions with the bridge staff, the survey position was moved 1 nm east to avoid any conflict.

With all of the primary aims of the cruise achieved, CEFAS ENDEAVOUR set sail for Falmouth at 13:55 on Wednesday 21 April, docking at Falmouth at approximately 19:48. Scientific staff remained onboard overnight, travelling back to Lowestoft by car on the morning of Thursday 22 April.

RESULTS:

PRIMARY AIM 1: Description of the size and species structure of epifaunal communities in the Celtic Sea

84 successful 2m-beam trawl deployments were completed during the nine day survey. All fauna from the cruise was sampled (epifauna and fish), and body size and species data was recorded. The information will be used to provide production and diversity estimates for Celtic Sea fauna.

In addition to epifaunal invertebrates recorded from the 2 m beam trawl, 60 NIOZ core deployments were made at 12 stations (5 replicates at each station) to allow for the collection of infaunal invertebrates. Samples were preserved in 4% formaldehyde and will be identified on return to the laboratory.

PRIMARY AIM 2: Assessment of sediment chlorophyll 'a' and sediment-biota coupling

42 NIOZ core samples were collected for analyses of meiofauna (preserved in 4% formaldehyde), sediment particle size and chlorophyll a / porosity (frozen). All samples will be identified on return to the laboratory.

I would like to thank the officers, scientists and crew for their hard work during the course of the survey.

T Maxwell
22 April 2010

SEEN IN DRAFT:

B Salter (Master)

DISTRIBUTION:
Basic list:
Staff on Cruise
Fishing Skipper: Endeavour
Newlyn, SH H (MFA)
Plymouth, SH H (MFA)
MilfordHaven, SH (MFA)
Devon SFC
Cornwall SFC
Isles of Scilly SFC
Republic of Ireland

Figure 1: Figure 1: Survey area indicating study sites successfully sampled; + = standard station (2* 2 m beam trawls and 1* NIOZ core), solid diamonds = replicate NIOZ cores, open triangles = 4 m beam trawl