CEND8/12 Cruise Report

RV Cefas Endeavour Cruise 8 2012

Staff

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Duration: 29th April 2012-12th June 2012

Locality: North Sea and Eastern English Channel

Aims

To collect additional data at a number of recommended Marine Conservation Zones (rMCZ) to increase confidence in the evidence for the presence and extent of the Broadscale Habitats (BSH) and Habitat Features of Conservation Importance (FOCI) included in the proposals for designation. This will include the acquisition of multibeam bathymetry and backscatter data, grab sampling for sediment Particle Size Analysis (PSA) and infaunal analysis and video and still imagery techniques.

Additionally, dredge disposal site monitoring, in support of the Food and Environmental Protection Act (FEPA) was carried out at the Souter Point disposal site.

Also, an SAC monitoring survey was carried out, in collaboration with Natural England (NE) at the Berwickshire Coast European Marine Site.

Survey Narrative: Part A (29/04/12-11/05/12)

RV Endeavour mobilised from Lowestoft on the 29th April 2012 to begin survey at the Markham's Triangle rMCZ on 30th April 2012 (00:30). A CTD was deployed to obtain the Sound Velocity Profile (SVP) for calibration of the multibeam. The multibeam survey then commenced, following calibration, at 06:30. Following completion of the first tranche of acoustic survey (08:15, 01/05/12) the area was groundtruthed using a combination of HamCam sampling and video and still imagery. During the first tranche of groundtruthing a total of 17 Hamon grab samples were obtained along with video and still images from 9 camera stations.

The second tranche of the acoustic survey commenced at 02:40 (02/05/12) and continued until 02:00 (03/05/12). A portion of the tranche 2 survey area was not surveyed during this time due to the presence of the Chiswick Field Well which restricted safe access to the area (particularly during hours of darkness). Therefore, acoustic survey of this remaining area of tranche 2 was reassigned to the hours of daylight. The tranche 2 survey area was then groundtruthed during which time a total of 18 Hamon grab samples were collected and 9 camera stations were completed. Acoustic survey then recommenced across tranche 3 (17:30, 03/05/12). On completion of the first portion of tranche 3 acoustic survey the area was groundtruthed during which time a total of 13 Hamon grab samples were obtained and 4 camera stations were completed. The remaining acoustic surveys in tranche 2 and tranche 3 were then completed (15:30, 05/05/12) after which the vessel began transit to the next rMCZ survey area.

Survey began at the Fulmar rMCZ at 04:42, 06/05/12. The Conductivity Temperature Depth (CTD) micrologger was deployed prior to survey commencing to obtain the Sound Velocity Profile (SVP) for the multibeam survey. Multibeam bathymetry and backscatter data were acquired for the full length of the site (diagonally from SW-NE corner) during transit to the first groundtruthing station. The groundtruthing survey then commenced using a combination of Hamon grabs and video and still imagery. Multibeam bathymetry and backscatter data were acquired during transits between groundtruthing stations to give a broadscale description of the seafloor characteristics across the

survey area. The survey continued until 03:10, 10/05/12, during which time at total of 65 Hamon grab samples were obtained and 25 video stations were completed.

The vessel then transited south-west to the Barmades Bank where 5 video stations were surveyed before continuing on to the Souter Point disposal site where multibeam bathymetry and sidescan sonar data were acquired across the site to inform a subsequent groundtruth sampling campaign scheduled for later in the year. The vessel then transited to Middlesbrough for a scientific staff and crew changeover.

Survey Narrative: Part B (13/05/12-26/05/12)

Survey began at the Berwickshire Coast Special Area of Conservation (BCSAC) at 15:00 on 13/05/2012. A CTD micrologger was deployed to acquire a sound velocity profile (SVP) prior to beginning MBES survey at the Holy Island transect. MBES data acquisition continued at this transect until full data coverage had been achieved (02:30, 14/05/2012). The vessel then transited to the Farne Islands transect where MBES survey commenced at 04:00 on 14/05/2012. MBES survey at the Farne Islands transect was completed at 19:30, 14/05/2012, after which, the vessel transited back to the Holy Island transect to begin the ground-truthing survey using drop down video and still imagery techniques. The ground-truthing survey (10 x camera transects) was completed (02:24, 15/05/2012) and the vessel transited back to the Farne Islands transect to begin camera survey (04:55, 15/05/2012). On the ground-truthing survey at the Farne Islands transect was completed, the vessel transited to the southerly survey transect at Dunstanburgh, where MBES survey began at 12:00 on 15/05/2012. During the course of the MBES survey at the Dunstanburgh transect, a number of strings of static fishing gear were identified within the survey area. Therefore, a sub-set of the camera stations, positioned using the MBES data already acquired, were selected for survey during the hours of darkness in areas identified as being clear of static fishing gear. This minimised the risk of the vessel coming into contact with ropes securing static gear. MBES survey recommenced within the Dunstanburgh transect once daylight returned (04:00, 16/05/2012) and was completed at 10:00 on the same day. The remaining camera transects were carried out within the Dunstanburgh transect bringing the full survey to completion at 13:00 on 16/05/2012. The vessel then transited to the Swallow Sand rMCZ.

Survey at the Swallow Sand rMCZ began at 21:15 on 16/05/12. Survey commenced with a combination of Hamon grabbing and video and still imagery techniques across the predetermined triangular lattice sampling grid (9km spacing for predicted sand habitats and 3km spacing for predicted coarse habitats). During the course of the survey a total of 102 Hamon grab samples were collected (for PSA and infaunal analysis) along with the completion of 37 camera stations (to inform BSH assessment and epifaunal analysis). On completion of the sampling grid additional multibeam data were collected in the western region of the rMCZ to target areas of coarse sediments identified to be present by the ground truthing survey and the opportunistic multibeam data collected on transit between the stations.

The vessel then transited south-west to the Barmades Bank where the remaining video stations were surveyed before continuing on to the Holderness Offshore rMCZ. Survey at Holderness Offshore rMCZ began at 07:30 on 23/05/12. Hamon grab samples (for PSA and infaunal analysis) were collected at all planned stations and video and still images were collected at approximately every third station. Multibeam bathymetry and backscatter data were acquired opportunistically on

transit between stations. Over the course of the survey 44 grab samples were collected and 26 video stations were carried out before completion of the survey at 01:00 on 25/05/12.

The vessel then transited back to Lowestoft for a changeover of scientific staff and crew.

Survey Narrative: Part C

RV Cefas Endeavour departed from Lowestoft on the 31st May to begin survey work at the Folkestone Pomerania rMCZ on 01/06/12 at 13:50 with a drop camera deployment over the predicted rock broad scale habitat in the south east corner of the site which was followed by a further 9 drop camera deployments within the predicted rock habitat (19:20, 01/06/12). On completion of the drop camera survey over the predicted rock habitat, sampling commenced within the predicted coarse and sandy broad scale habitats identified within the site. In total 28 grab samples for Particle Size Analysis (PSA) and infaunal analysis were collected from predicted coarse broad scale habitats and 17 grab samples for PSA and infaunal analysis from sandy broad scale habitats. Images of the seabed observed during the deployment of the HamCam guided the positioning of subsequent camera sledge deployments. If the area was homogenous then camera deployments were carried out every third station to ensure an adequate density and spatial coverage of video footage (and still images) across the rMCZ was achieved. If the sea bed was of a heterogeneous nature or different to the predicted habitat type, additional camera sledge deployments were carried out. The survey of Offshore Brighton rMCZ was completed 04:00, 03/06/12 after which the vessel transited to the Offshore Overfalls rMCZ.

Survey work commenced at the Offshore Overfalls rMCZ on 03/06/12 at 13:10 with the 2 prospecting geophysical survey lines. On completion, the grab and camera sledge survey started on 03/06/12 at 22:22 over the predicted mixed broad scale habitat in the south east corner of the site. The survey continued by sampling sandy habitats (04/06/12) followed by coarse habitats (05/06/12). In total 22 grab samples for Particle Size Analysis (PSA) and infaunal analysis were collected from predicted mixed broad scale habitats, 19 grab samples for PSA and infaunal analysis from sandy broad scale habitats and 10 grab samples for PSA and infaunal analysis from coarse broad scale habitats. Images of the seabed observed during the deployment of the HamCam guided the positioning of subsequent camera sledge deployments. If the area was homogenous then camera deployments were carried out every third station to ensure an adequate density and spatial coverage of video footage (and still images) across the rMCZ was achieved. If the sea bed was of a heterogeneous nature, different to the predicted habitat type or not possible to obtain a grab sample, additional camera sledge deployments were carried out. In total video data was collected at 19 locations, of which 11 within predicted mixed habitats, 6 within predicted sandy habitats and 2 within predicted coarse habitats. Visibility over sandy substrates or shallow survey stations was often poor. The survey of Offshore Overfalls rMCZ was completed 03:15, 06/06/12 after which the vessel transited to the offshore Brighton rMCZ.

Survey work commenced at the Offshore Brighton rMCZ on 06/06/12 at 13:50 with two sidescan sonar lines run through the length of the site over the predicted rock habitats. Following the completion of the two sidescan survey lines work commenced on the ground-truthing survey at station OB_MX_28 in the north east corner of the site. Work continued with grab and camera deployments at the planned sample points. Worked ceased due to bad weather (23:00, 07/06/12) and did not resume until 08:00, 09/06/12. The survey resumed with a drop camera deployment at

station OB_R_18 within the moderate energy circalittoral broadscale habitat. The ground-truthing survey was completed 13:00, 10/06/12. In total 28 grab samples for Particle Size Analysis (PSA) and biological community analysis were collected from predicted coarse broad scale habitats and 17 grab samples for PSA and biological community analysis from sandy broad scale habitats.

Images of the seabed observed during the deployment of the HamCam guided the positioning of subsequent camera sledge/drop camera deployments. If the area was homogenous then camera deployments were carried out every third station to ensure an adequate density and spatial coverage of video footage (and still images) across the rMCZ was achieved. If the sea bed was of a heterogeneous nature or different to the predicted habitat type, additional camera sledge deployments were carried out. Following completion of the survey the vessel transited to Portland for demobilisation on the 12th June 2012.

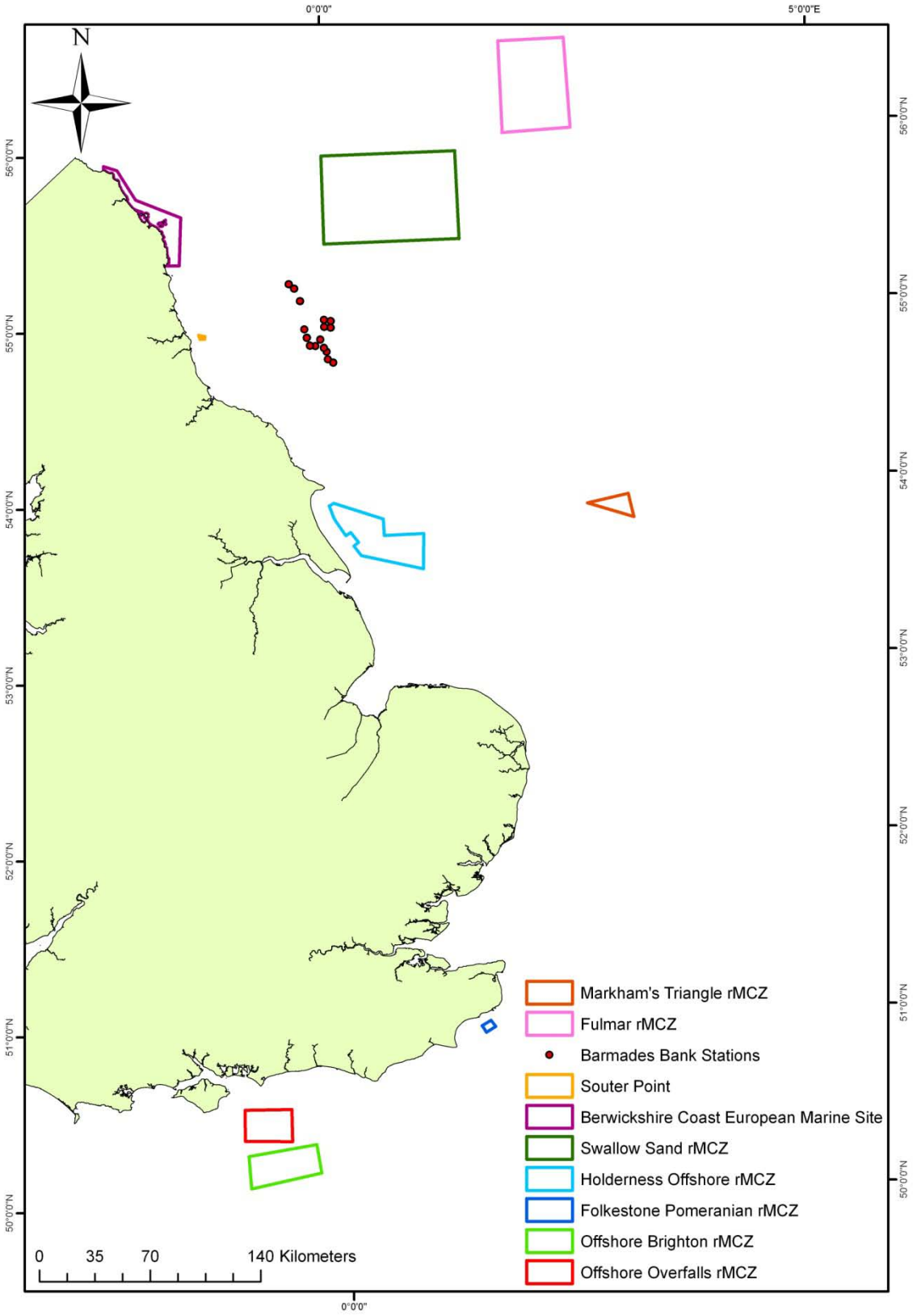

Figure 1. Areas surveyed during RV Cefas Endeavour cruise CEND 08/12.