

**RESEARCH VESSEL SURVEY REPORT**

**RV CEFAS ENDEAVOUR**

**Survey: C END 6 - 2018**

**STAFF:**

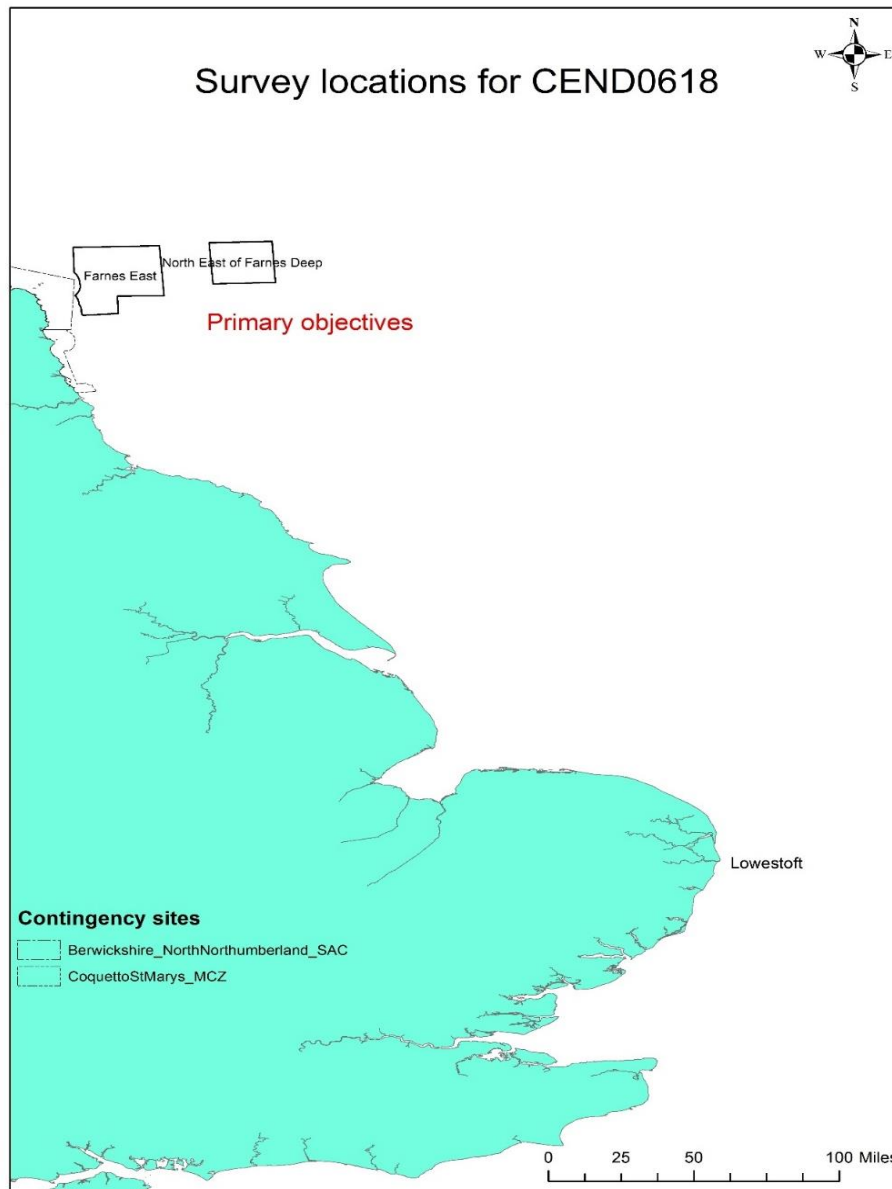
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Dave Clare	Survey scientist
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Charlotte Reeve	Survey scientist
Georgia Robson	Survey scientist

**DURATION:** 23<sup>rd</sup> April 2018 – 4<sup>th</sup> May 2018

**LOCATION:**

Two areas of interest were visited during expedition CEND0618; Farnes East Marine Conservation Zone (MCZ) and North East of Farnes Deep MCZ ( Figure 1). The first gear deployment was in North East of Farnes Deep MCZ (55.704N 0.595W).



**Figure 1** Showing the location of the two primary survey sites; Farnes East and North East of Farnes Deep MCZs (labelled and solid line). Contingency sites (broken lines) were included in the permissions and objectives for the survey but were not surveyed.

**AIMS:** The aim of this expedition was to acquire information to contribute to the development of monitoring time-series for the Farnes East and North East Farnes Deep MCZs. The operations were conducted, and the resulting data will be processed, to gather evidence on the structure, function and condition of each sites protected features. Seabed imagery and sediment samples were collected to acquire quantitative and semi-quantitative infaunal and epifaunal community data to enable sentinel ('Type 1') monitoring of the subtidal sediment features, the FOCl and SOCl features (Sea-pen and burrowing megafauna communities and Ocean Quahog), and circalittoral rock features present and designated in each site.

Seabed imagery was acquired from the sediment features using the camera sledge fitted with a video camera and a separate still images camera. Additional parameters were recorded using a data logger in conjunction with the camera system to further our understanding of the environmental conditions associated with each feature surveyed. Sediment samples for particle size analysis (PSA) and macrofauna were collected using a mini-Hamon grab. The entire Farnes East MCZ was surveyed while the area of interest in the North East Farnes Deep MCZ was in the south-eastern corner of the site and immediately outside the site boundary.

#### **NARRATIVE:**

All times are GMT

### **North East of Farnes Deep (NEFD)**

The survey equipment and consumables were mobilised in advance of sailing. A vessel induction and familiarisation talk was given at 11:00 for staff who had not received one in the last six months. The vessel left Lowestoft at 15:00 on the 23 April 2018 and transited to North East of Farnes Deep MCZ. The vessel arrived at the first station of NEFD at 09:00 24 April 2018 at which point Hamon grab toolboxes were held with all staff.

Hamon grab sediment sampling was carried out for at 60 station over four days. Sampling at two of these stations was unsuccessful so two additional stations were added. At the first unsuccessful station the sediment was too coarse and only yielded two samples. Samples taken at the second unsuccessful station were too small to be valid. A successful “wet test” deployment of the camera sledge system was carried out on 25 April 2018 at 15:00 in preparation for the FRNE site. Once all the sediment sampling was complete at NEFD the vessel transited to FRNE. The vessel left NEFD at 06:00 and arrived at FRNE at 08:00 on 28 April 2018.

### **Farnes East (FRNE)**

Hamon grab sampling began immediately at 08:00 before the camera sledge system was deployed at 12:00 28 April 2018. Simultaneous camera and grab sampling then took place for 35 hours. Camera sledge operations were stopped at 23:30 on 29 April 2018, after a notable kink and damage appeared in the fibre optic cable. At the same time there were two occasions of the camera sledge lights and lasers unexpectedly turning on. It was suspected that the damage to the cable had caused the camera system to restart leading to the lights and lasers being turned on as part of the start-up routine. By this point 26 video samples had been successfully collected however, very high levels of phytodetritus in the water column meant that visibility was often poor. It was decided to focus on taking sediment samples at the Objective 2 sites (Type 1 Monitoring of all sedimentary BSH) while the camera issues were investigated and resolved.

Hamon grabbing operations continued for the next 24 hours with 68 further grab samples taken. The high intensity of operations took its toll on the Hamon grab which had to be replaced after the welds on the grab arm pivot were ripped apart. This resulted in 30 minutes of downtime while the grab was swapped for a replacement Hamon grab.

On 1 May 2018 the damaged fibre optic cable was replaced with a coaxial cable. This did mean a decrease in image quality from full HD to 720P however, image quality was still good. To avoid a repeat of the lights and lasers incident, changes were made to the software settings. At the same time a revised risk assessment and standard operating procedure were developed. Camera sledge operations recommenced at 15:00 once after staff carried out a toolbox talk to understand the changes and new procedures. Again, visibility of the camera sampling was hindered by poor visibility due to high levels of phytodetritus in the water column. Simultaneous camera and grab sampling went on until 03:30 on 2 May 2018. At this point the weather increased and it was no longer possible to sample using the camera sledge.

The seabed currents reduced visibility to the point that images were not valid. Grab sampling continued until 06:00 when the weather deteriorated further. All sampling was paused until conditions improved at 08:00 when sampling restarted and continued until 17:30, 2 May 2018. At this point the bow thruster of the vessel developed an oil leak while, simultaneously, condensation appeared on the inside of the camera housing. The camera was swapped for a replacement while at the same time the crew carried out preventative maintenance on the bow thruster. Simultaneous grab and video sampling resumed at 22:00 and continued until the last sample was collected at 13:52 on 3 May 2018. In total 53 camera tows were carried out and 208 grab samples were collected from 64 stations across the site

The vessel left FRNE at 14:00 and transited to Lowestoft Port. The RV Cefas Endeavour docked at 12:00 4 May 2018. Sampling gear was demobilised, and samples transferred to storage in readiness for processing.

**RESULTS:**

The number of samples taken at each site is given below. The PSA, macrofauna, video and still photographs will be sent processing. The results of the studies will be published by Cefas/JNCC in due course.

Site	Stations	Grab Samples	Camera Tows
North East of Farnes Deep	62	307	N/A
Farnes East	64	208	53

Daniel Wood  
2<sup>nd</sup> Scientist in Charge  
8<sup>th</sup> May 2018

SEEN IN DRAFT

Master: Noel Fagan  
Senior Fishing Mate: N/A

INITIALLED:

DISTRIBUTION: