

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE
LOWESTOFT LABORATORY, SUFFOLK, NR33 0HT**

2015 RESEARCH VESSEL PROGRAMME

PROGRAMME: Cefas Endeavour: **Survey CEND.0715**

STAFF: Cabin list attached

DURATION: 16th April to 1st May 2015

LOCATION: Fladen Grounds, Northern North Sea (Figure 1). Co-ordinates for the area of interest of shown in Table 1.

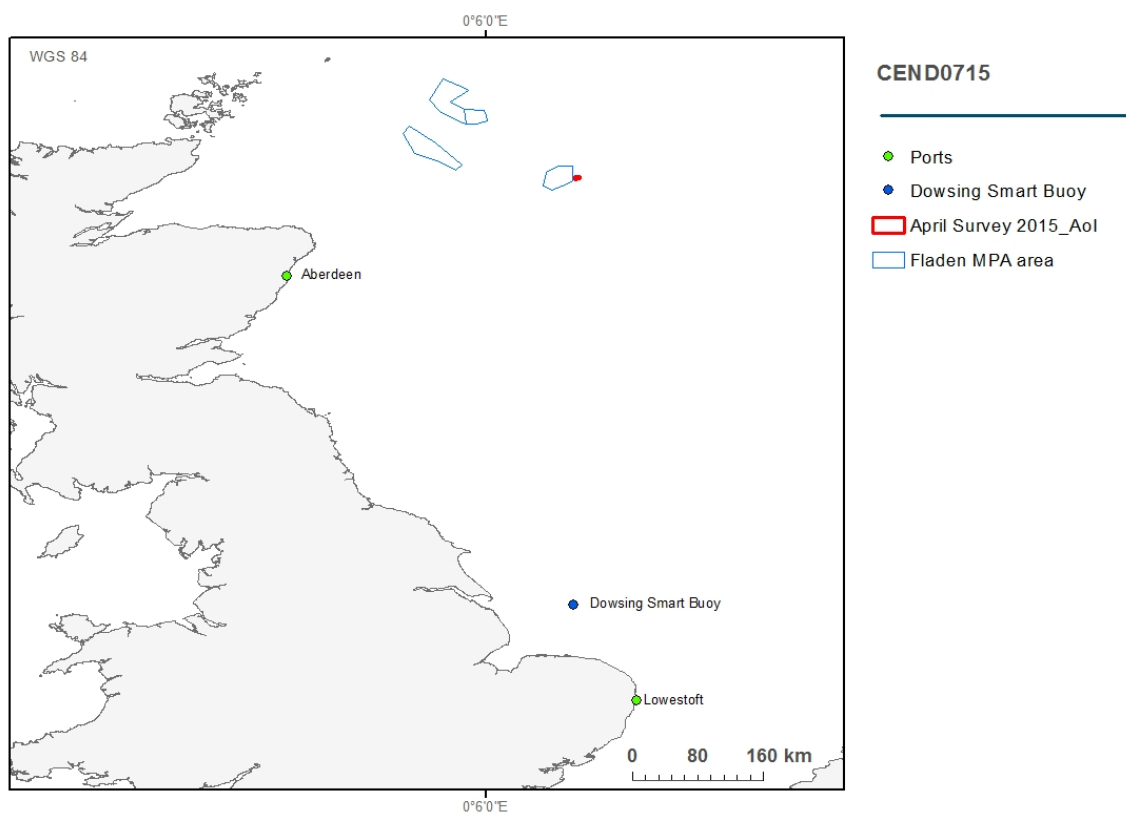


Figure 1. Location of Dowsing Smart Buoy and area of interest at the Fladen Grounds.

Table 1. Bounding co-ordinates for area of interest at the Fladen Grounds.

Long	Lat
1.0753	58.2495
1.1304	58.2497
1.13056	58.2179
1.07535	58.2178
1.0753	58.2495

AIMS:

To assess a number of biodiversity indicators for detecting a change in benthic biological communities from fishing impacts in offshore muddy sediments to detect the effects of fishing impacts on benthic infaunal communities.

This study complements a previous study (same design) carried out in coarse-mixed sediments West of Lundy. The study will consist of three sampling periods but only T0 and T1 will be carried out on this survey (CEND0715):

T0 = Before Impact (Baseline)

T1 = 1 day after impact (Immediate effects of trawling)

T2 = 8 weeks later (Recovery) to be agreed, will not be carried out during this cruise

To further develop operational Indicators for Seafloor Integrity.

SPI derived aRPD, organic carbon content, PSA and faunal data are all metrics under investigation in the development of suitable combined fauna/BGC indicators. The location of the proposed study site will enhance the geographical coverage of the currently available data sets. In addition observations at Fladen will potentially provide a suitable comparison site to work done in the context of the Defra/NERC Shelf Sea Biogeochemistry programme, where the focus is on sites in the Celtic Sea. The work carried out on this survey will provide data relevant to the Defra project C6264/ME5316.

To undertake camera trials of the Sub C 1 Cam Alpha + camera system.

Test the camera under various conditions / habitat's. The testing is to show whether the camera is suitable for Cefas needs in the long term and for JNCC (Cend 9/15) in the short term. This will include checking the ability to take stills on demand whilst the recording HD video, the effectiveness of the strobe at freezing the image for still photographs, and general use of the camera and settings. The video and stills to be inspected for their visual representation of the seabed habitat.

PLAN:

Seven personnel require inductions, these have been scheduled for 15:00 on the 15th April 2015 prior to sailing.

Equipment mobbing and sampling demonstrations for chlorophyll and nutrient sampling will be completed on the 15th April and all personnel will be on board for 11pm on the evening of the 15th. Depart from Lowestoft on the morning tide of the 16th April 2015 (07:30) and transit north past the Dowsing SmartBuoy (53.53 N 1.06 E) where a chlorophyll sample will be collected on route.

A 24 hour period on route to the Fladen Grounds will be allocated to the trialling of a new camera system by the MIST team. The new camera system will be tested under various conditions / habitats. This 24 hour period will be run by a member of the MIST team with input from JM and PW.

A multibeam (MBES) calibration site will be located near the Fladen Grounds and multiple calibration lines will be acquired (approx. 2-3 hours) before arriving at the Fladen Grounds survey site.

MBES of the 6 survey boxes (3 treatment and 3 control) (Figure 2) each 250m² in size will commence prior to trawling to confirm that the selected sites are suitable for trawling. Following the collection of acoustic data, twenty Day grabs (10 for infaunal analysis and 10 for sediment analysis), three 2m beam trawl deployments (approx 5 minutes in length) and three underwater camera deployments will be carried out in each survey box. In addition, the SPI camera will be deployed during this study at both control and impact sites.

On completion of T0 sampling, trawling impact will be carried out using paired 4m beam trawls on the three treatment boxes. To ensure that each of the three treatment boxes are sufficiently impacted (~100% coverage of each of the survey boxes) they will each be trawled twice (Figure 3).

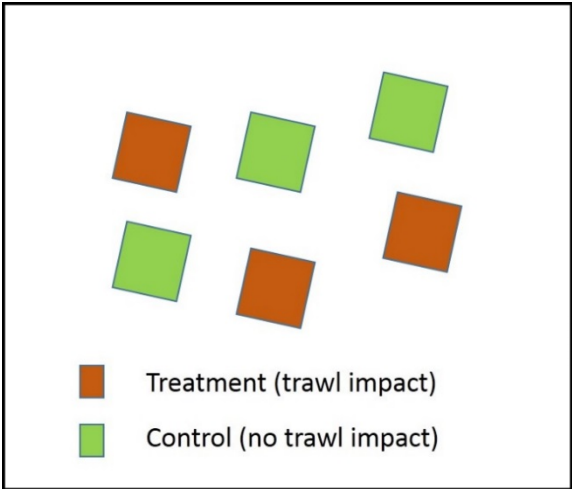


Figure 2. Survey box design which will be located within the area of interest outlined in Figure 1.

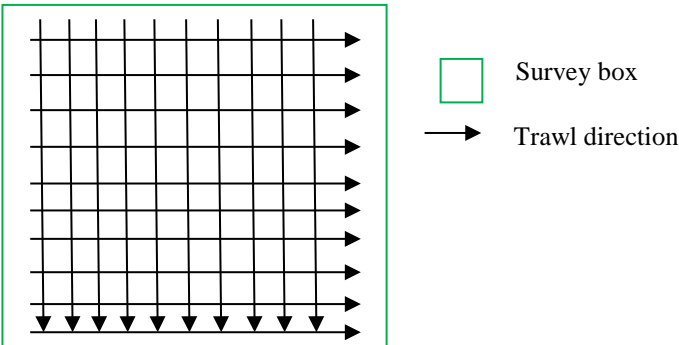


Figure 3. Trawling impact approach

On completion of the trawling impact, T1 sampling will commence as described above for T0 including MBES, grab sampling, video and 2m beam trawls.

Contingency are options are currently being sort from Marine Scotland, JNCC and NE.

Leave the Fladen Grounds and arrive into Lowestoft on 1st May 2015, on the evening tide (TBC).

GEAR: MBES, camera sledge, drop camera, mini Hamon grab, Day grab, 2m beam trawl, 4m beam trawl, SPI camera system

Joanna Murray
Scientist In Charge
09/04/2015

INITIALLED:

DISTRIBUTION: P& O, MIST, SIC, shift leads