LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 OHT

2016 RESEARCH VESSEL PROGRAMME

REPORT: RV CEFAS ENDEAVOUR: SURVEY 9/16

STAFF:

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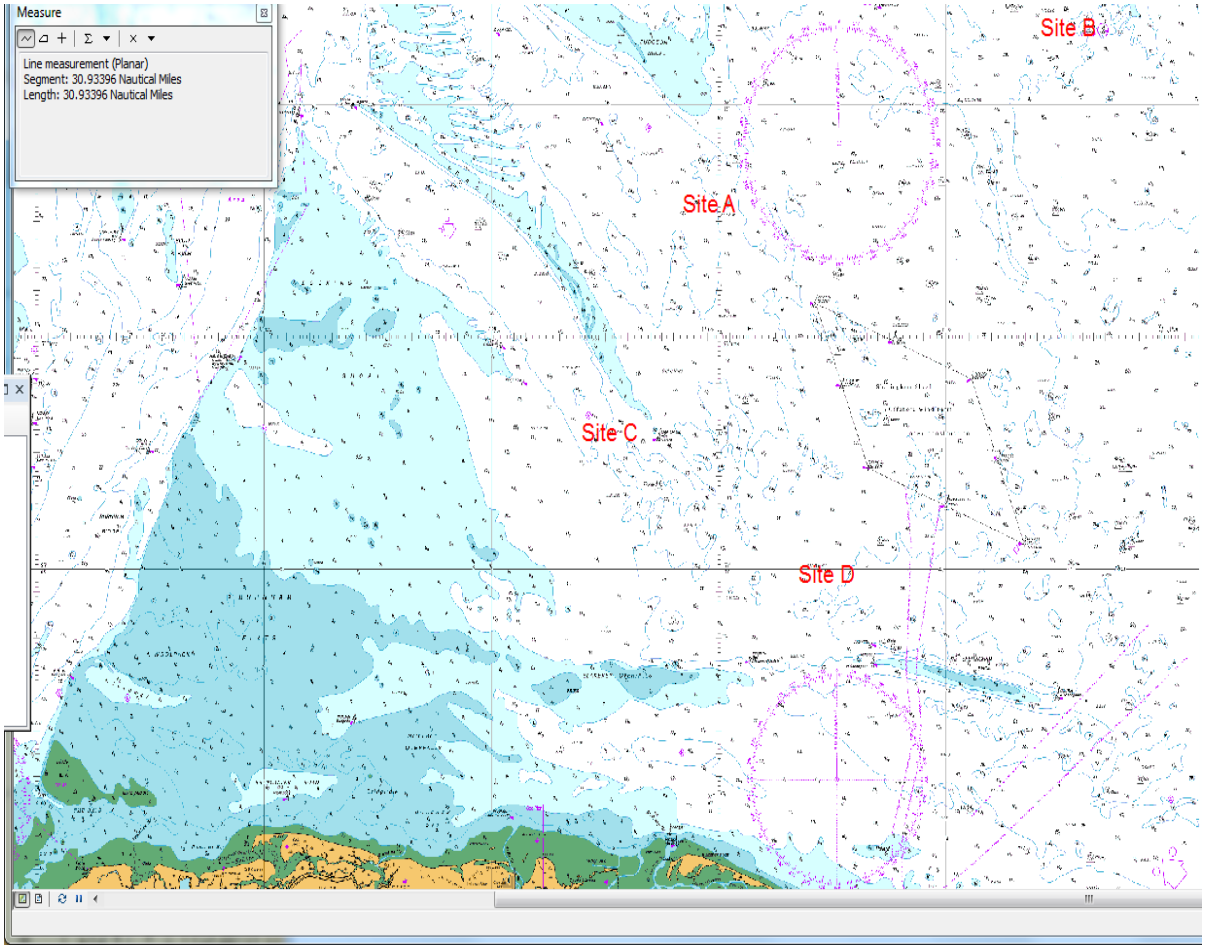
DURATION: 12– 16 May 2016

LOCATION: Southern North Sea (Race Bank), (ICES area IVb)

POTENTIAL STATIONS: **Site A** 53 12.7; N 0 59.2 E; **Site B** 53 16.6 N; 1 15.5 E

Site C 53 7.8 N; 0 55.65 E; **Site D** 53 4.9; N 1 4.6 E



SURVEY AIM:

To assess the impact of beam trawling on macro-crustacea.

SURVEY GEAR:

- 2 x 4m survey beam trawl, 75mm mesh cod-end
- Drop frame (sea spider)
- Drop frame
- Camera sledge
- Release cages

NARRATIVE: (All times GMT)

Vessel safety inductions were held for staff at 1200hrs on 12 May, followed by full survey tool-box talk with all ship's staff to discuss and assess best practice for planned survey operations. This allowed for survey operations to begin immediately upon arrival at the first sampling location.

Live brown crab (*Cancer pagurus*) arrived at the vessel around 1400hrs and were loaded onto the vessel. These were retained out of water until a supply of non-estuarine water could be supplied upon sailing. The remainder of the day was spent preparing equipment and painting the first day's brown crab specimen with specially tested fluorescent paints. All staff were aboard for sailing before 2300hrs that day. Sailing took place from Lowestoft at 0030hrs 13 May and once at sea, the brown crab were loaded into large deck tanks and the sea-water supply turned on.

Figure 1: Brown crab painted ready for deployment

On 13 May, operations began at site D at 0911hrs with an STR SeaSpyder drop camera test dip to check the visibility on the sea-bed and this was found to be very good. Whilst waiting for slack water, potential beam trawl towing locations free from static gear were located at site D. Several test crab release operations using different methods were carried out with varying degrees of success due to the release cage being unused for >20 years and several fixes and modifications to the cage were necessary. Ultimately, it was found the best method of crab deployment was to fix the cage to the base of the drop camera frame and deploy off the starboard gantry, with the crab being manually released using ropes and catches. At this time, Cefas scientists split into two watches working 12 hours each allowing survey operations to continue around the clock.

The first live operation consisted of a release of 80 crab followed by an STR drop camera search following an expanding square search for these crab. Few observations were made with those seen being located within 20m of the drop location in the direction of the tide. Subsequent operations took place at carefully chosen locations and consisted of brown crab being released via manual release cage, two 4m beam trawls towed through this release location for approximately 500m followed by using the STR drop camera to view the towed area.

The first of these operations began at 0346hrs 14 May and took place in site D. A total of 160 crab were released and then the location was towed through for a distance of approximately 500m. This tow yielded just one of the released crab and one other non-survey crab. The beam trawl track was then followed with the camera initially using a ‘zig-zag’ pattern followed by following the actual tow track. The entire camera operation took around 2 hours to complete, ending the work at 0635hrs. Just one potential sightings of a deployed crab were made along with 5 other crabs.

Figure 2 Brown crab in cage ready for deployment and the STR SeaSpyder drop camera being deployed.

The second full station was carried out at site C and began at 0924hrs 14 May and began with the release of a further 160 live crab. This position was towed over with the beam trawls in two directions yielding a total of 35 brown crab in total, of which just three were re-captures. Both beam trawl tracks were covered by STR drop camera deployments with just three crab sightings made – none of which had been deployed. A second full operation at site C began at 1520hrs with a deployment of 160 live crab. This was towed over with the beam trawls on a single tow of ~500m length yielding a total of 25 crab but with zero recaptures on this occasion. The camera operation

followed with beam trawl tracks and located just 9 crab of which just 2 were painted and deployed.

At 2138hrs, operations began at the first position at site A. A total of 240 live brown crab were released onto the seabed in two cage drops. The following beam trawl deployment cover a total of 880m and yielded a total of 154 brown crab including 16 re-captures. The STR drop camera operations observed 41 sightings of brown crab but none of which were released by Cefas. This full operation was completed at 0054hrs 15 May. A second full operation at site A began at 0435hrs with a total of 240 crab being released. The beam trawls for 542m and were towed through this release position. A total of 18 brown crab were caught including 4 re-captures. The STR drop camera deployment yielded just one potential sighting of crab.

Figure 3: Fluorescent painted crab located on the sea-bed.

The final survey operation took place in site B and followed the same pattern as before with all 252 remaining crab deployed. The beam trawls were towed through this position and yielded a total of 22 crab of which 10 were painted crab. The STR drop camera deployment lasted for 2 hours and 18 minutes during which time 9 crab were observed, with three being deployed crab. Hauling this gear at 1313hrs marked the completion of all survey operations.

All survey equipment was cleaned, dismantled and packed away in readiness for unloading the following morning. Cefas Endeavour began the journey back to Lowestoft with docking took place at 0648hrs 16 May.

RESULTS

A total of 8 full survey operation took place that consisted of the following activities: Crab deployment, beam trawling; STR drop camera deployment. In addition, there were several other trial operations to test the deployment equipment and the camera visibility. Table 1 shows the number of operations by type and validity.

Table 1 – Details of survey operations.

Operation type	Valid/successful	Invalid/unsuccessful
Crab Deployment	9	2
Beam Trawling	6	0
STR drop camera	9	0
Drop camera/crab deployment	0	2

In total, six full operations consisting consisted of crab deployment, beaming trawling and camera operations were completed with two at both sites A and C, and just one at sites D and B. A total of 1472 painted were safely deployed to the seabed and 34 were recovered in the beam trawl operations. Additionally, there were 6 confirmed sightings of deployed crab remaining on the seabed.

OTHER WORK

A selection of benthic creatures taken from the beam trawl operation were kept for use in a Cefas outreach programme with local schools. (J Smith – Cefas, Lowestoft).

Our thanks go to the officers and crew of RV Cefas Endeavour for their help, support and advice given during this previously untried R&D survey. Their skill and co-operation in achieving the survey aim was greatly appreciated.

Ian Holmes
15 May 2016

INITIALLED: E Bell
SEEN IN DRAFT: Vessel Master (Paul Kersey)

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