

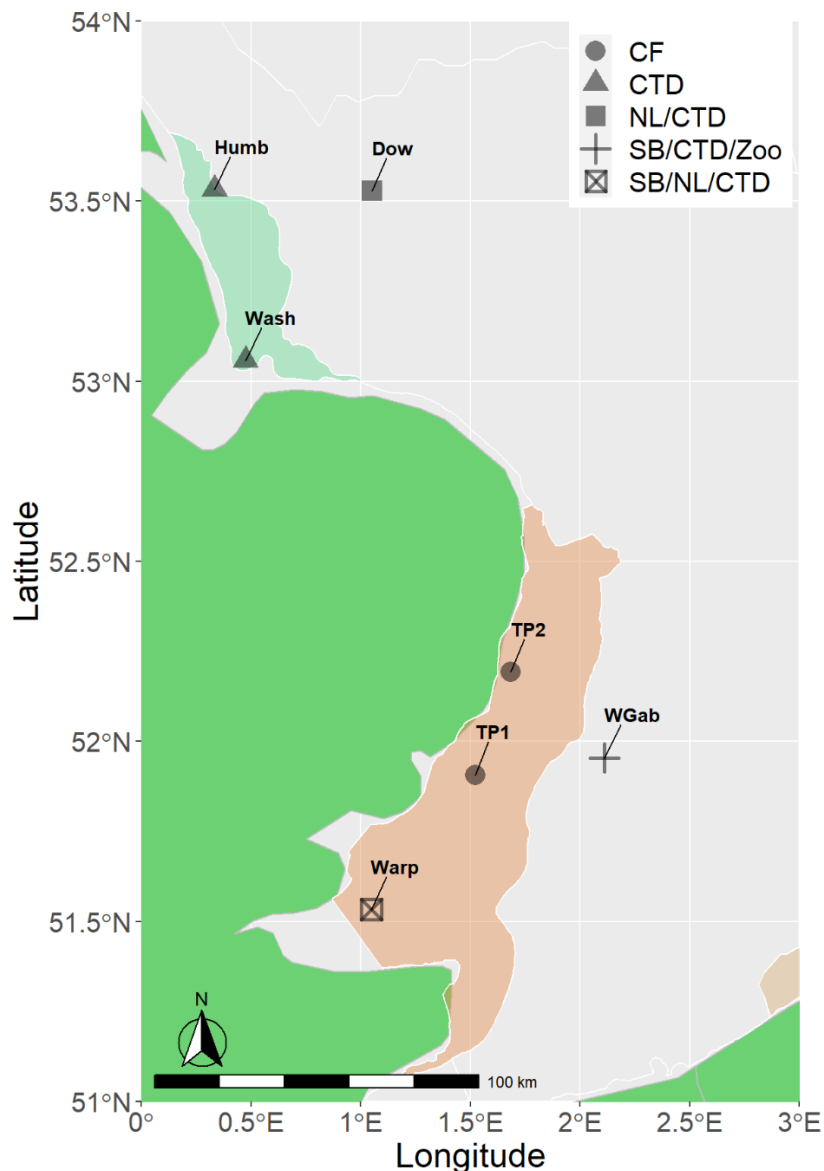
## RESEARCH VESSEL SURVEY REPORT

**RV CEFAS ENDEAVOUR**  
**Survey: C END 07 - 2021**

**DURATION:** 7<sup>th</sup> May to 8<sup>th</sup> May (2 days)

### **AIMS:**

1. Service Noise Landers at Dowsing and Warp (GIA06H).
2. Service SmartBuoys at West Gabbard and Warp (GIA03D).
3. Continuous flow and CTD Rosette water sampling as required on various transects.
4. Collection of zooplankton sample at West Gabbard.
5. Collection of water samples 24-hours prior return to port for University of East Anglia.



All times are BST

Cefas staff boarded the RV Cefas Endeavour on Tuesday 4<sup>th</sup> May between 8:30-10:00. All staff self-administered COVID PCR tests and proceed to self-isolating in their cabins.

By 8:00 of 5<sup>th</sup> May, all staff members (and crew) had received a negative COVID test, and it was possible to proceed with gear mobilization operations. These included: building of the two SmartBuoys on the quay side; assemblage of the Rosette sampler and setting up of equipment for water sampling in the garage; further testing of the new ESMX CTD loggers were also completed. All Cefas team received a safety induction at 13:00.

All mobilization operations and SmartBuoy building were completed on the 6<sup>th</sup> May. Further tests were carried out on the new ESMX data logger system of the SmartBuoy, to determine whether the system was working reliably. A brief with Cefas team, crew, officers, and master was carried out at 16:00 to discuss the survey plan. The RV departed from Lowestoft at 18:00 heading northwards towards the first sampling station off the Wash, and the planned shift schedule started.

Due to a narrow weather window with suitable conditions for servicing SmartBuoys (SB) and Noise Landers (NL) it was decided to drop the 2 CTD sampling stations (Humb1 and Wash1). Instead, a CTD profile was carried out offshore the Wash (but within the green zone in the Figure), after a toolbox talk on the bridge between crew, scientists, and officers involved in the deployment. Underway water sampling from the FerryBox flow-through was carried out every 2 hours from departure to Lowestoft to the Dowsing site.

Operations started at Dowsing at 05:00 on the 7<sup>th</sup> May with a CTD profile, followed by a toolbox talk prior recovery of the NL. Weather conditions were moderately good with < 1 m swell and 14 knots wind. Both clump and lander were recovered by 06:00 am. After swapping over the lander 'feet' the serviced lander was deployed with all operation completed at 07:06 am. Dowsing NL new coordinates (from Tower) are as follow:

*Dowsing noise lander: 53° 31.749 N, 001° 3.226E*

*Dowsing noise lander clump: 53° 31.742 N, 001° 3.357E*

The RV proceeded towards the West Gabbard 2 site, resuming two-hourly underway sampling on the transit. During the transit, the two 'new' SmartBuoys for Warp and West Gabbard2 were stripped down and taken apart, as the multiple tests carried out in the previous days showed that the new ESMX loggers were not functioning reliably. An abandon ship drill was carried out at 11:00.

At arrival at West Gabbard2 a CTD profile was carried out (16:30), while the SmartBuoy was recovered at 17:21. Servicing of the buoy proceeded in a different way compared to previous surveys as result of the ESMX logger not working properly: the recovered buoy was washed down to remove biofouling and cleaning the sensors; batteries, water sampler and sediment trap were replaced as well as the cable/chain/clump. The serviced buoy was then deployed at

18:43. Weather and sea conditions were good throughout the operations with slight wind and 0.5 m sea height.

*WestGabbard2 SmartBuoy: 51° 57.244 N, 002° 6.66E*

During the cleaning operation of the SmartBuoy a zooplankton sample was collected, while two CTD profiles were carried out once the serviced buoy was deployed: one post deployment for buoy sensors validation and one for collecting surface water samples for the University of East Anglia (10x20L carboys) from the Rosette Niskin bottles. The RV headed towards the Warp SmartBuoy/lander, and underway sampling was resumed.

A CTD profile pre-recovery was carried out at Warp at 03:30 on the 8<sup>th</sup> of May; after a toolbox talk, the SB was recovered (05:14), followed by the recovery of the NL (05:50). The serviced lander was deployed at 06:32 while the serviced SB at 08:41, as, like for the West Gabbard2 SB, the servicing procedure was different (requiring cleaning of the buoy, and replacement of batteries, sampler, sediment traps, cables, chain, and clump on deck, before redeployment). Weather conditions were not as good as the previous day (rainy and with 18-20 knots of wind) although sea state was good (slight swell and 0.5 m sea height). Operations at the site were completed with a CTD profiles and water sampling, after which the RV steamed towards Lowestoft, resuming underway water sampling (through Waypoints TP1 and TP2 in the Figure). New positions for Warp SmartBuoy and noise lander are given below.

*Warp noise lander: 51° 31.938 N, 001° 2.793E*

*Warp noise lander clump: 51° 32.017 N, 001° 2.782E*

*Warp SmartBuoy: 51° 31.994 N, 001° 2.876E*

Packing of gear and cleaning operations were completed during the transit from Warp to Lowestoft, as well as a debrief with master, officers, and crew at 11:00. The RV docked at 18:36.

Scientist in Charge: Elisa Capuzzo  
Second in Charge: Eleanor Haigh

Date: 8<sup>th</sup> May 2021

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