

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK NR33 0HT
2012 RESEARCH VESSEL REPORT**

REPORT: RV CEFAS ENDEAVOUR: SURVEY 19 (CEND19/12)

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Duration: 12-15th November 2012

LOCATION: North Sea: i) Souter Point, ii) North Tyne and iii) Tees disposal sites (see Annex I for a summary of positions).

Primary aims:

1. To conduct a vibrocoring survey for assessing deep layer of Contaminated dredged material (CDM) and sediment characteristics at Souter Point disposal site, in order to obtain information on:
 - a) Sediment (Particle Size analysis-PSA, organic carbon and nitrogen)
 - b) Contaminants (TBT, PAHs, trace metals)
2. To undertake a Sediment Profile Imagery (SPI) survey to characterise sediments and faunal presence at the Souter Point disposal site and adjacent areas.
3. To sample North Tyne dredged material disposal site to characterise sediments (PSA, organic carbon and nitrogen) and contaminants(TBT, PAHs, organohalogen, trace metals)
4. To undertake survey to sample at the Inner Tees dredged material disposal site for characterising sediments (e.g. PSA, organic carbon and nitrogen) and contaminants(TBT, PAHs, organohalogen, trace metals)

Narrative

RV Cefas Endeavour sailed from Lowestoft at 07:00h on Monday 12th November. Onboard there will be 10 Cefas staff and 3 Gardline Geophysical consultants. A 'shakedown' vibrocoring was carried out at Smith Knowles (lat: 53° 32.2'N; long 002 ° 28.8' E) approximately at 14.00 to test the deployment of the instrument on the 12th November at ~14.00. This activity enabled Cefas scientists and Gardline personnel to check the equipment was working correctly. The deployment and successful collection of a mixed (sandy gravelly mud) sediment sample allowed scientists, Gardline personnel and crew to

familiarise themselves with the work (i.e. slicing corers, sub-sampling of sediment layers and logging the samples). All vibrocoreing was carried out using a 3-metre vibrocorer. The Vibrocoreing was performed using a standard 101-mm OD core barrel with an 85-mm ID plastic inner liner. At each location, once the vessel was on station and suitably stable, the vibrocorer was lowered to the seabed using the 'A' frame or ship's crane. Once on the seabed the position and water depth was recorded by Cefas's responsible staff. Provided the position was acceptable, the vibrocorer was activated and penetration of the barrel into the seabed started commence. On completion of vibration the unit was recovered to the vessel where the core liner was extracted from the core barrel using a core pull device designed to minimise sample disturbance. Penetration depth was recorded using a sprung steel ring on the outside of the core barrel.

On day 1, the vessel travelled to the sites (~ 20 hours). We arrived at Tees Disposal site at ~3.15 a.m. and the first task undertaken was a multibeam survey. A total of 7 lines were collected at the Outer Tees disposal site box, which was at the deeper area of the disposal site (~40m depth). At ~ 07.00 Cefas Endeavour moved to Souter Point disposal site (Figure 1). A CTD cast was conducted at Souter Point disposal site prior to undertaken the multibeam survey (2 lines across the centre of the disposal site) at the centre of the capped area. The vibrocoreing at Souter Point started at ~ 9.00 a.m. and ended at 20.00 p.m. and collected a total of 12 vibrocorers. During the night shift, a Sediment Profile Imagery (SPI) survey was conducted at Souter Point, the survey aimed to: i) characterised in situ the intact sediment layers, ii) provide indication of faunal presence in these areas and iii) provide long-term consistency of the status of these stations. A total of 36 images were obtained (covering 12 stations), as well as video stills (collected with the plan view camera) of the seabed surface. After the SPI survey, RV Endeavour travelled to the North Tyne disposal site (Figure 2), where a shipek grab survey to collect sediment samples mainly for contaminants and metals was undertaken. A total of 31 shipek grabs were collected at the site (surveying 13 stations).

On Day 2, vibrocoreing at Souter Point Capping continued a total of 17 stations were sampled ~ until 20.00. All of the vibrocorers samples were divided into 2 samples (one sample was processed and one was frozen and stored). The corer labelled, photographed, sliced and samples were kept in rinsed hexane jars. The different layers were then frozen until further transport to the laboratory. During the night shift a NIOZ corer survey was also undertaken at 2 stations (namely SPI8 and Cap5) at Souter Point. The corers were sub-sampled and oxygen profiles, rapid fines assessment analysis were undertaken. The aim of this work will help to complement SPI observations and training of oxygen sensors. The vessel travelled to the Tees site (Figure 3) and conducted a shipek and day grab survey at Inner Tees disposal site. A total of 17 grabs were collected to characterise the nature of the sediments in the area.

On Day 3-4, Cefas Endeavour continued to work at the Tees disposal site, a CTD cast was deployed and then the multibeam survey was conducted to collect a total of 20 lines of the Inner Tees disposal site. Cefas RV Endeavour docked at Hartlepool on the 15th November (Day 4) at 14.18. Gardline staff demobilised their equipment back to their offices. Cefas staff stayed on board the vessel and travel back to Cefas Lowestoft Laboratory on the Friday 16th November with the sediment samples. A total of 4 Cefas staff stayed on board for the CEND19x/12 cruise.

Summarised survey plans:

	Monday	Tuesday	Wednesday	Thursday
Shifts	Day 1-(12th Nov)	Day2 (13th Nov)	Day3 (14th Nov)	Day4 (15th Nov)
08:00-20:00	(7.00)Travelling to NE sites	CTD cast	Vibrocoreing at Souter Point	Multibeam survey (20 lines)
	Shake down test (vibrocorer)	(08.00-09.00)multibeam at Souter Point	Slicing sediment samples	Dock at Hartepool ('14.18)
		Vibrocoreing at Souter Point		
		Slicing sediment samples		
20:00-08:00	CTD cast	SPI Survey at Souter Point (20.00-2.00)		
	TEES multibeam (3.15-6.00 a.m.)	North Tyne grabs (3.00-6.00)	NIOZ cores(2 stations) Tees grab survey /	

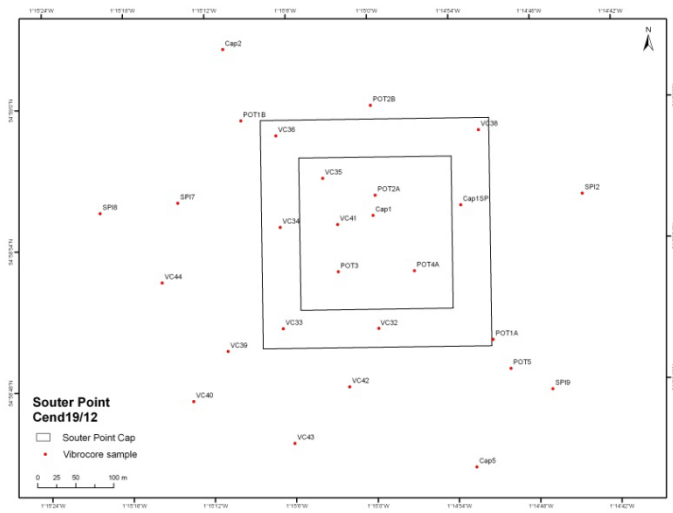


Figure 1. Vibrocore survey conducted at Souter Point disposal site.

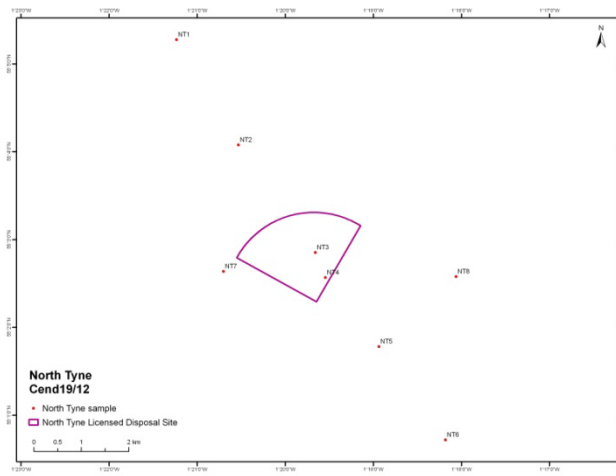


Figure 2. Shipek grab survey conducted at North Tyne disposal site.



Figure 3. Shipek and day grab survey conducted at Inner Tees disposal site.

GEAR Employed

- Vibrocoring (provided by Gardline) but cranes and lifting equipment needs to be checked for deployment and operation on board of RV Cefas Endeavour.
- Sediment Profile Camera (SPI) + plan view video camera
- Shipek and Day grab
- NIOZ Corer (6 cylinders)
- Plotter/GIS Paper

Silvana Birchenough

16.11.12

Annex 1 Positions sampled at Souter Point during CEND19/12 survey

Station	STATION	FIX	TIME	Lat	Long
Cap1	6	3	101103	54.98205	1.25001
					-
POT2A	7	4	110848	54.98223	1.24994
POT3	8	5	115714	54.98132	-1.2508
					-
POT4A	9	6	131300	54.98138	1.24931
					-
Cap1S	10	7	134650	54.98217	1.24814
					-
POT2B	11	8	143518	54.98333	1.24999
					-
POT1B	12	9	151140	54.98316	1.25265
					-
SPI8	14	10	161619	54.98219	1.25565
					-
POT1A	15	11	174151	54.98051	1.24766
					-
POT5	16	12	181142	54.98019	1.24737
					-
SPI9	17	13	184340	54.97982	1.24634
					-
Cap5	18	14	201142	54.97875	1.24834
					-
Cap5	18	15	201628	54.97883	1.24829
					-
Cap5	18	16	202004	54.97891	1.24825
					-
Cap5	19	17	210645	54.97887	1.24817
					-
Cap5	19	18	211029	54.97896	1.24811
					-
Cap5	19	19	211418	54.97903	1.24804
					-
Cap1	20	20	213143	54.98174	1.25019
					-
Cap1	20	21	213513	54.98183	1.25019
					-
Cap1	20	22	213817	54.98191	1.25021
					-
Cap1S	21	23	215225	54.98183	1.24833
					-
Cap1S	21	24	215505	54.98192	1.24839
					-
Cap1S	21	25	215749	54.982	1.24834
					-
POT3	22	26	221352	54.98133	1.25085
POT3	22	27	222330	54.98142	-

						1.25087
POT3	22	28	222559	54.9815	-1.2509	-
POT4A	23	29	224151	54.98112	1.24941	-
POT4A	23	30	224405	54.98121	1.24941	-
POT4A	23	31	224624	54.98129	1.24943	-
SPI7	24	32	231112	54.98187	1.25424	-
SPI7	24	33	231415	54.98195	-1.2542	-
SPI7	24	34	231628	54.98205	1.25417	-
SPI8	25	35	232846	54.982	1.25594	-
SPI8	25	36	233113	54.98207	1.25585	-
SPI8	25	37	233354	54.98216	1.25577	-
SPI2	26	38	240	54.98179	1.24554	-
SPI2	26	39	1043	54.98187	1.24545	-
SPI2	26	40	1319	54.98195	1.24538	-
SPI3	27	41	2111	54.98221	1.24516	-
SPI3	27	42	2345	54.98228	1.24509	-
SPI3	27	43	2556	54.98237	1.24502	-
SPI5	28	44	3945	54.98487	1.24995	-
SPI5	28	45	4212	54.98478	1.24998	-
SPI5	28	46	4414	54.98469	1.24994	-
SPI6	29	47	5456	54.98595	1.25045	-
SPI6	29	48	5659	54.98603	1.25043	-
SPI6	29	49	5939	54.98612	1.25045	-
Cap2	44	82	85431	54.98399	1.25302	-
VC36	45	83	92329	54.98299	1.25194	-
VC34	46	84	100217	54.9819	1.25185	-
VC33	47	85	102659	54.98069	-1.2519	-
VC39	48	86	112031	54.98044	-	-

					1.25303
					-
VC40	49	87	114633	54.97989	1.25375
					-
Cap5	50	88	124821	54.979	1.24799
					-
Cap5	50	89	134553	54.97898	1.24796
					-
VC32	51	90	141436	54.98067	1.24993
					-
VC38	52	91	144543	54.98298	1.24777
VC35	53	92	151546	54.9823	-1.251
VC41	54	93	154159	54.98187	-1.2507
					-
SPI2	55	94	161443	54.98218	1.24572
					-
VC42	56	95	182940	54.98	1.25057
					-
VC42	56	96	185834	54.98	1.25056
					-
VC43	57	97	193331	54.97936	1.25167
					-
VC44	57	98	200841	54.98126	1.25437
					-
SPI8	57	99	212455	54.98217	1.25566
					-
SPI8	59	100	213747	54.98218	1.25566
					-
SPI8	59	101	214903	54.98209	1.25565
					-
Cap5	60	102	222833	54.97901	1.24801
					-
TC4	61	103	234939	54.90501	1.19202
					-
TC4	61	104	235915	54.90502	1.19202
					-
TC4	61	105	923	54.90493	1.19202