Centre for Environment Fisheries & Aquaculture Science

Cefas

RESEARCH VESSEL PROGRAMME

RV CEFAS ENDEAVOUR
Survey: C END 06 - 2021

STAFF:

Name	Role	Cabin	Shift
Freya Goodsir	SIC	Upper (B) Sci 1	7am-7pm
Richard Humphreys	2SIC	Upper (B) Sci 2	7pm-7am
John Bignell	Deck master; FD	Main (C) Sci 1	Days
Caroline Daumich	Deck master; FD	Lower (D) Sci 3	Nights
Paul Nelson	Water, fish data	Main (C) Sci 2	Days
Briony Silburn	Data manager, sediment & litter	Main (C) Sci 5	Nights
Joanna Uzyczak	sediment & litter	Main C Sci 4	Days
Isobel Lake	Water, fish data	Main (C) Sci 6	Nights
Andy Smith	FD	Main (C) Sci 3	Days
Marta Assuncao	Ecotox	Main (C) Sci 8	Days
Chris Martin	Ecotox	Lower (D) sci 2	Nights
Charlotte Reeve	Stomach, Otolith	Main (C) Sci 7	Days
Peter Randall	Stomach, Otolith	SIC cabin	Nights
Richard Hazelgrove	FD	Lower (D) Sci 4	Nights
AWSM	Additional AB	Lower (D) Sci 5	

DURATION:

Sail: **23rd April 2021 at 07:00 from Lowestoft**

Dock: **2nd May in Lowestoft (TBC)**

LOCATION: **North Sea and Eastern English Channel**

CSEMP fishing and, temporal/spatial sediment stations

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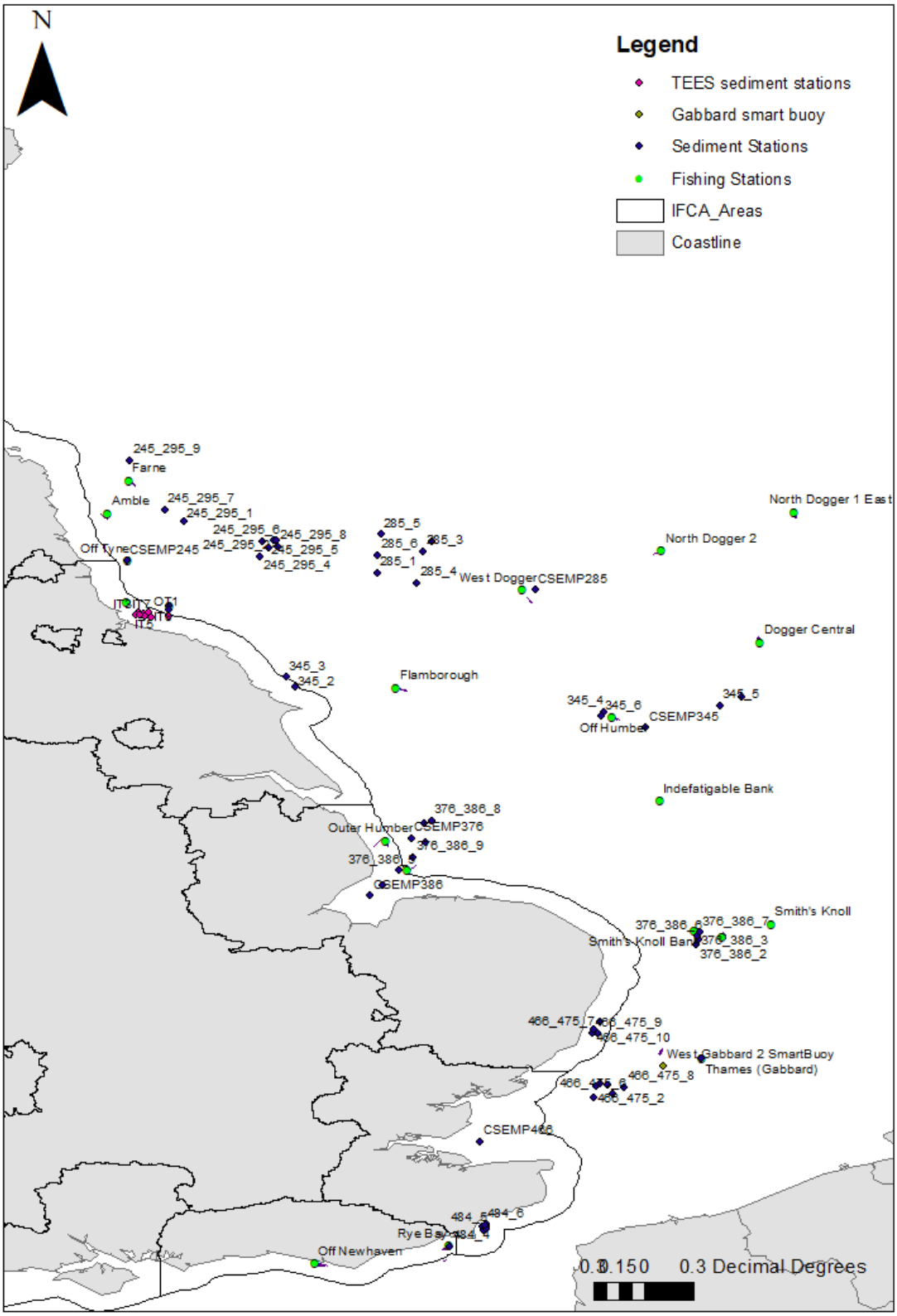
N
Legend
TEES sediment stations
Gabbard smart buoy
Sediment Stations
Fishing Stations
IFCA_Areas
Coastline
245_295_9
Farne
Amble
245_295_7
245_295_1
245_295_6
245_295_8
245_295_5
245_295_4
Off Tyne
CSEMP245
285_5
285_6
285_3
285_1
285_4
West Dogger
CSEMP285
North Dogger 1 East
North Dogger 2
Dogger Central
345_3
345_2
Flamborough
345_4
345_6
345_5
CSEMP345
Off Humber
Indefatigable Bank
376_386_8
Outer Humber
CSEMP376
376_386_9
376_386_1
CSEMP386
Smith's Knoll
376_386_7
376_386_6
Smith's Knoll Ban
376_386_3
376_386_2
466_475_7
466_475_9
466_475_10
West Gabbard 2 SmartBuoy
Thames (Gabbard)
466_475_8
466_475_6
466_475_2
CSEMP466
484_5
484_6
Rye Bay
484_4
Off Newhaven
0.3 Decimal Degrees

A: CSEMP fishing station positions

Old Station Code	New Station Code	New Station Name	Latitude	Longitude
243fi	TyneTees_TTOpenSeaS_fi02	Farne	55.4952	-1.1263
244fi	TyneTees_TTInter_fi01	Amble	55.2967	-1.255
245fi	TyneTees_TTInter_fi02	Off Tyne	55.0083	-1.1333
283fi	HumWash_HWOpenSeaNE_fi01	North Dogger 1 (East)	55.3023	2.8972
284fi	HumWash_HWOpenSeaNE_fi02	North Dogger 2	55.068	2.09
286fi	HumWash_HWOpenSeaNE_fi03	West Dogger	54.8333	1.255
287fi	HumWash_HWOpenSeaNE_fi04	Dogger Central	54.5152	2.6905
288fi	ENorthSea_ENSOpenSea_fi01	North East Dogger (add)	55.504	4.1525
294fi	TyneTees_TTInter_fi03	Tees Bay	54.7597	-1.1397
295fi	TyneTees_TTInter_fi04	Off Tees (add)	54.7333	-0.8833
344fi	TyneTees_TTOpenSeaS_fi01	Flamborough	54.2417	0.4883
346fi	HumWash_HWOpenSeaS_fi01	Off Humber	54.0633	1.79
377fi	HumWash_HWInter_fi01	Outer Humber	53.3167	0.4283
378fi	HumWash_HWOpenSeaS_fi02	Indefatigable Bank	53.5567	2.082
387fi	HumWash_HWInter_fi02	Inner Wash	53.1417	0.555
475fi	Anglia_AnOpenSea_fi01	Thames (Gabbard)	52	2.3333
486fi	EastChan_ECInterE_fi01	Rye Bay	50.8667	0.8083
494fi	EastChan_ECInterE_fi02	Off Newhaven	50.7598	0
Smith's Knoll	ENorthSea_ENSOpenSea_fi02	Smith's Knoll	52.8111	2.7555
Altern. Smith's Knoll	Anglia_AnOpenSea_fi03	Altern. Smith's Knoll	52.7318	2.4585
Smith's Knoll Bank	Anglia_AnOpenSea_fi04	Smith's Knoll Bank	52.7746	2.2875

GREEN Additional 9 Fish need to be collected per site for the EA. Put 3 fish in one bag

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B: CSEMP sediment stations (only bold stations need to be sampled in an ideal scenario)
2 replicas for metals and organics at the 3-numbered stations, and 1 replica for metals and organics at the other stations.

Site name	Lat (DD)	Long (DD)	Priority
CSEMP245	55.00830	-1.13330	245
CSEMP295	54.73330	-0.88330	295
CSEMP285	54.83330	1.33330	285
CSEMP345	54.00000	2.00000	345
CSEMP376	53.33330	0.58330	376
CSEMP386	52.98300	0.33470	386
CSEMP475	52.00000	2.33330	475
CSEMP466	51.49670	1.00000	466
CSEMP484	50.98330	1.01670	484
CSEMP536	50.43000	-3.12170	536
245_295_44	55.2462	-0.787874	1
East245_177	55.1291	-0.246732	2
East245_170	55.129	-0.230436	3
East245_171	55.0356	-0.327743	4
East245_178	55.0904	-0.27961	5
East245_175	55.126	-0.312064	6
NorthWest285_50	54.9354	0.37793	1
NorthWest285_47_2	55.125	0.709716	2
NorthWest285_58_3	55.0627	0.656282	3
NorthWest285_49	54.8743	0.6205	4
NorthWest285_48_5	55.1686	0.401025	5
NorthWest285_46	55.0427	0.381492	6
345_16	54.1823	2.578489	1
West345_63	54.2432	-0.116967	2
West345_72	54.304	-0.169926	3
345_18	54.0957	1.749935	4
345_22	54.1321	2.44809	5
345_17	54.0671	1.733577	6
376_386_78	53.4215	0.661557	1
OffLowestoft_94	52.6843	2.308214	2
OffLowestoft_101	52.7156	2.317874	3
376_386_85	53.3103	0.670742	4
376_386_89	53.1351	0.509363	5
OffLowestoft_100	52.7391	2.314633	6
SouthWest475_111	51.8395	1.772073	1
SouthWest475_107	51.7648	1.68813	2
SouthWest475_117	51.8306	1.702045	3
West475_133	52.224	1.721424	4
SouthWest475_108	51.8443	1.728404	5
SouthWest475_112	51.7829	1.799927	6
484_194	50.9871	1.038996	1

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484_188	50.9609	1.025903	2
484_183	50.9971	1.040335	3
South484_197	50.8648	0.816498	4
484_182	50.9699	1.036962	5
484_184	50.9953	1.029736	6
East536_235	50.5197	-2.191676	1
536_222	50.5812	-3.052021	2
536_223	50.2763	-3.390848	3
East536_238	50.1814	-2.482858	4
East536_239	50.1318	-2.405141	5
East536_233	50.2917	-2.273809	6

TEES sediment grabbing stations

Station code	Longitude (degrees)	Latitude (degrees)	priority
IND2	-1.03483	54.6815	primary
IND5	-1.01383	54.683	primary
IT1	-1.06	54.7	primary
IT3	-1.08	54.68	primary
IT4	-1.05	54.68	primary
IT5	-1.03233	54.68717	primary
IT7	-1.02617	54.6735	primary
IT8	-0.99	54.67	primary
IT10	-0.88167	54.67167	primary
OT1	-0.9985	54.69417	primary
IND1	-1.05783	54.67967	secondary

Water sample at West Gabbard Smart buoy station

Station	y	x
Gabbard SB	51.95458333	2.1096

AIMS:
The information generated during this survey will be used to meet UK's obligations for reporting of contaminant, eutrophication and marine litter data to MERMAN and the ICES database and for subsequent assessments for OSPAR.

Specific aims:

1. To collect samples of demersal fish for chemical analysis from the North Sea, and English Channel (Table 1; Figure 1) in support of the Clean Seas Environmental Monitoring Programme (CSEMP) (OSPAR Common indicator and UK specific Indicator.
assessments).

2. To collect fish samples at CSEMP sites for fish disease biochemical markers (e.g. EROD and bile metabolites analysis and AChE) (UK specific Indicator Assessments).

3. To sample representative CSEMP stations (Table 1; Figure 1) using day grab, for polycyclic aromatic hydrocarbons (PAHs), trace metal contaminants, organic contaminants (PCBs, PBDEs and HBCD), sediment particle size analysis (PSA) and marine litter (OSPAR Common indicator and UK specific Indicator assessments).

4. To conduct marine litter surveys (OSPAR Common indicator and UK specific Indicator assessments) by collecting benthic litter information from the trawls and collecting sediment samples for litter analysis.

5. To conduct surveys of marine animals (birds and cetaceans) and as part of the Sea Watch programme.

6. To sample representative stations using a Shipek or a Day grab from 11 stations within and around the Inner Tees dredged material disposal site. Samples will be assessed for sediment contaminants concentrations (organohalgens) and carbon. This is funded by the MMO and the results will be reported in a report which is publicly available on the Defra.gov.uk site and via the MMO. The results are used by the MMO to aid decisions regarding dredged material disposal applications and the suitability of the screening process for contaminants concentrations.

Secondary Aims

7. To collect water conductivity, temperature, nutrient, and depth information, and Plankton community information to provide additional knowledge on Eutrophication levels (OSPAR Common indicator and UK specific Indicator assessments). Calibration exercise at West Gabbard (51.95458333, 2.1096) smart Buoy location, using CTD Rosette. Daily chlorophyll sample (night time hours of dark for SLA25).

8. To collect additional fish for the EA for a comparison study of whole fish, and fish muscle and liver in the quantity of contaminants). EA require 9 fish from stations 244, 345,294,377,387,486, and 494.

SURVEY PLAN:

19th April
Weymouth scientific staff board ship for testing and then isolation in cabins to await test results (TBC at presurvey meeting).

20st April
Scientific staff board ship for testing and then isolation in cabins to await test results (Staggered joining times (TBC at presurvey meeting).

21st April
Pending results/retesting allow 96 hours. Mobilisation and set up. Induction, tool box/safety talk.

22nd April
Pending results/retesting allow 96 hours. Mobilisation and set up. Induction, tool box/safety talk. If all test results back leave on the earliest high tide.

23rd April
Leaving Lowestoft with the morning tide around 07:00 heading south east to Thames Gabbard 475. Arrive at Thames gabbard at approx. 10:30. then CTD deployment followed by fishing between 10:30 and 15:30. Carry out water sampling at West Gabbard smart buoy and plankton samples using ring net. Sailing to temporal sediment station CSEMP 475 to carryout 3 deployments (2x organics; 2x metals, 1x litter). Transit approximately 5 hrs to Alternative smiths knoll.

24th April
CTD deployment followed by fishing Alternative smiths know between 00:00 and 05:00. Transit to spatial sediment stations 376_386_2, 376_386_3, 376_386_7 to collect sediment samples (1 organics 1 metals). Transit approximately 5 hrs to Indefatigable bank. CTD deployment followed by fishing between 12:20 and 17:20. Transit to temporal sediment station CSEMP345 to carry out 3 deployments (2x organics; 2x metals, 1x litter). Transit approximately 1 hr to Off Humber, CTD deployment followed by fishing.

25th April
Fishing Off Humber between early morning Transit approximately 3hrs to spatial station 345_1 to collect 1 organics 1 metals. Transit 3 hrs to Central Dogger, CTD deployment followed by fishing between 09:15 and 14:15. Transit approximately 5 hrs to North Dogger East, CTD deployment followed by fishing between 15:00 and 19:00. Transit approximately 3hrs to North Dogger CTD deployment followed by fishing between19:15 and 00:15.

26th April
Continue fishing North Dogger, Transit approximately 3 hrs to West Dogger, CTD deployment followed by fishing between 11:10 and 16:10. Transit to CSEMP 285 to carry out 3 deployments (2x organics; 2x metals, 1x litter). Transit approximately 3 hrs to spatial sediment stations 285_2, 285_3 and 285_1 to collect 1 organics 1 metals.

27th April
Moving onto spatial stations 245-295_4, 245_295_5, 245_295_3, 245_295_2, 245_295_6 and 245_295_1.
Transit to Farne. CTD deployment followed by fishing between 09:00 and 14:00. Transit approximately 1 hr to Amble. CTD deployment followed by fishing between 15:00 to 20:00. Transit 2hrs to temporal sediment station CSEMP 245 carry out 3 deployments (2x organics; 2x metals, 1x litter). Transit to Off Tyne CTD deployment followed by fishing between 23:00 and 04:00.

28th April
Finish fishing approximately 04:00 and transit 1.5 hrs to Tees Bay CTD deployment followed by fishing between 05:30 and 10:30. Transit to the Tees sediment stations for collection of sediment for contaminants sampling to 11 stations in the following order: IT3, IT1,1D1, IT4, IND2, IT5, IT7, IND5, OT1, IT8, and IT10. Transit to temporal sediment station 295 carry out 3 deployments (2x organics; 2x metals, 1x litter). Transit 3.5 hrs south to spatial sediment stations 345_3, 345_2 collection 1 organics and 1 metals. Transit approximately 2hrs to Flamborough.

29th April
CTD deployment followed by fishing between 01:00 and 06:00. Transit 5 hrs south to Outer Humber. CTD deployment followed by fishing between 11:45 and 16:45. Transit to temporal sediment station CSEMP 376 to carryout 3 deployments (2x organics; 2x metals, 1x litter). Transit to spatial sediment

stations 376_386_1, 376_386_4. and 376_386_5, one deployment collect 1 organics and 1 metals. Transit to Inner wash, CTD deployment followed by fishing between 22:00 and 03:00.

30th April

Finish fishing inner wash, transit approximately 1 hr to pick up temporal station CSEMP 386 carry out 3 deployments (2x organics; 2x metals, 1x litter). Followed by a transit of approximately 11 hrs South to spatial sediment stations 466_475_3, 466_475_5, 466_475_1, 466_475_8, 466_475_6 and 466_475_2. Transit to CSEMP 466 carry out 3 deployments (2x organics; 2x metals, 1x litter). Followed by a transit to spatial stations 484_3 and 484_1.

1st May

Collect spatial stations 484_3 and 484_1. Transit to CSEMP 484 carry out 3 deployments (2x organics; 2x metals, 1x litter, then onto the last spatial station 484_2. Continue on to Rye Bay for CTD deployment followed by fishing between 05:25 and 10:25. NIGHT SHIFT TO STOP OPERATIONS AND START TRANSITION TO DAYS. Transit to Off Newhaven for the last fishing station of the survey. Carry out CTD deployment followed by fishing between 13:45 and 18:45. Finish all fishing operations and transit back to Lowestoft approximately 14hrs.

2nd May

Clean down, data checking, report writing. Dock at either 14:00hrs on 2nd or 03:00hrs on the 3rd of May (TBC at pre-survey meeting).

3rd May

Debrief, demob scientific equipment, Weymouth staff to leave morning to travel home(TBC at pre-survey meeting).

EQUIPMENT:

See gear List

Freya Goodsir
Scientist in Charge
25/03/2021

DISTRIBUTION:

BODC
Marine Operation
AWSM
Survey Team