Centre for Environment Fisheries & Aquaculture Science

Cefas

RESEARCH VESSEL PROGRAMME

RV CEFAS ENDEAVOUR
Survey: C END 10 - 2019.

STAFF:

Name	Role	Cabin	Shift
Manuel Nicolaus	**SIC**	SIC cabin	**Day**
Alex Callaway	**2IC**	Upper (B) Sci 1	**Night**
John Bignell	**Deck master; FD**	Upper (B) Sci 2	**Day**
Caroline Daumich	**Deck master; FD**	Lower (D) Sci 3	**Night**
Paul Nelson	**fish data**	Main (C) Sci 2	**Day**
Freya Goodsir	**fish data**	Main (C) Sci 3	**Night**
P&O additional	**Additional Officer**	Main (C) Sci 4	**Day**
Oliver Twigge	**Water, otoliths**	Lower (D) Sci 6	**Night**
Paula Milliken	**Biological effects**	Main (C) Sci 6	**Day**
Marta Vannoni	**Biological effects, litter**	Main (C) Sci 7	**Night**
Briony Silburn	**Sediment with data; otoliths; litter**	Main (C) Sci 5	**Day**
Sara Losada	**Sediment with data; otoliths; litter**	Lower (D) Sci 2	**Night**
Richard Hazelgrove	**FD**	Main (C) Sci 1	**Day**
Stuart Ross	**FD**	Lower (D) Sci 4	**Night**
P&O additional	**P&O additional AB**	Lower (D) Sci 5	**Night**
Nick Goldsmith	**Marine Mammal Observer**	Main (C) Sci 8	**Day**

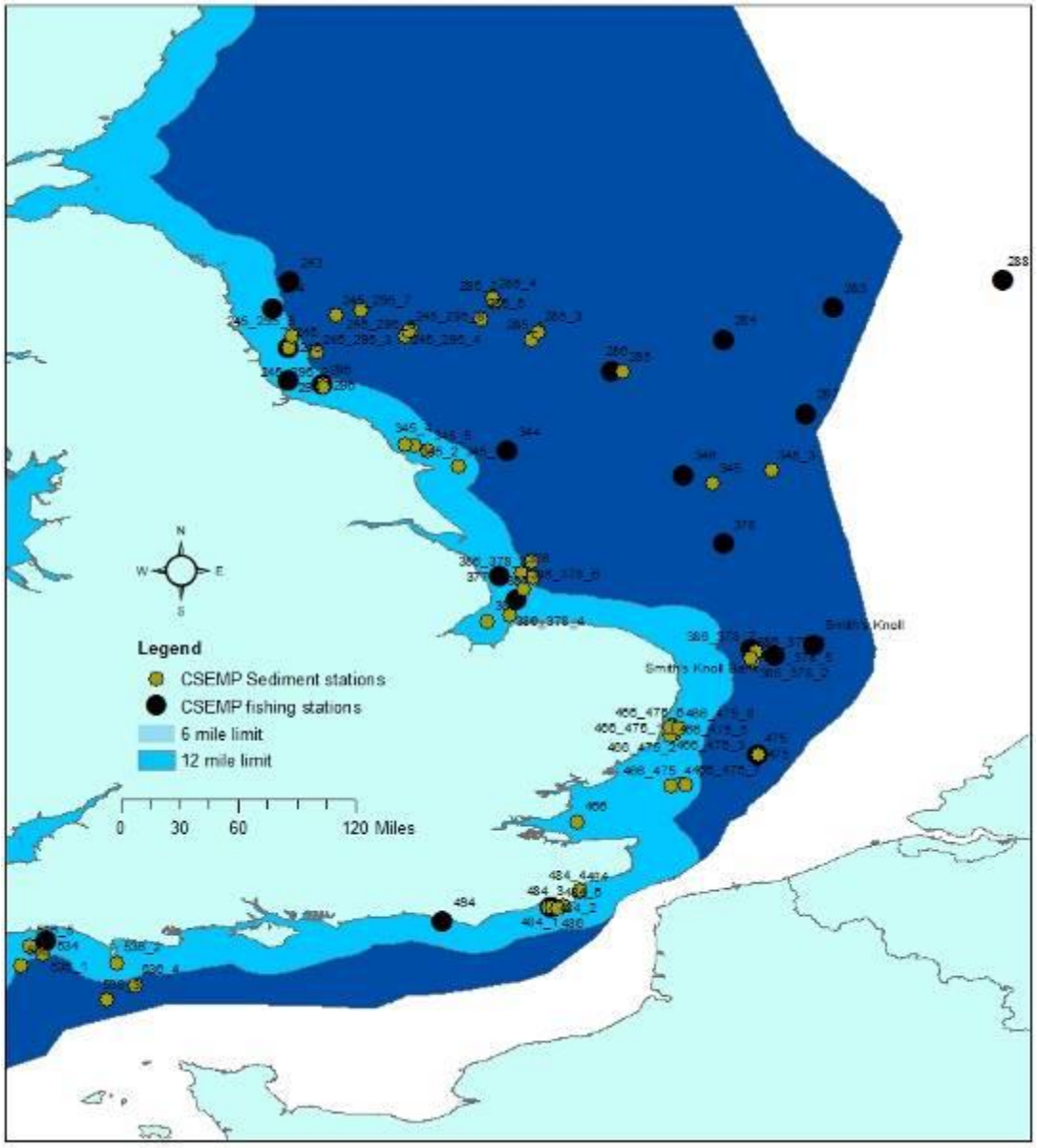
DURATION: **Sail**: 6th July 2018 at ~00:01 from Lowestoft

Dock: 13th July in the evening in Lowestoft at ~19:04

LOCATION: **North Sea**

Pakefield Road, Lowestoft NR33 0HT | www.cefas.co.uk | +44 (0) 1502 562244

CSEMP fishing and, temporal/spatial sediment stations:



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

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)	ARC Name
245	**55.00830**	**-1.13330**	**245**
295	**54.73330**	**-0.88330**	**295**
285	**54.83330**	**1.33330**	**285**
345	**54.00000**	**2.00000**	**345**
376	**53.33330**	**0.58330**	**376**
386	**52.98300**	**0.33470**	**386**
475	**52.00000**	**2.33330**	**475**
466	**51.49670**	**1.00000**	**466**
484	**50.98330**	**1.01670**	**484**
536	**50.43000**	**-3.12170**	**536**
East245_170	**55.1289773**	**-0.230435718**	**245_295_1**
245_295_34	**54.71469161**	**-0.880730986**	**245_295_2**
245_295_43	**54.97250451**	**-0.929696529**	**245_295_3**
East245_178	**55.09036966**	**-0.27960963**	**245_295_4**
245_295_39	**55.08808476**	**-1.119100998**	**245_295_5**
245_295_36	**55.28845053**	**-0.602117562**	**245_295_6**
245_295_44	55.24622474	-0.787873534	245_295_7
East245_177	55.12905641	-0.24673162	245_295_8
NorthWest285_58	**55.06265309**	**0.656281769**	**285_1**
NorthWest285_45	**55.34621642**	**0.391292774**	**285_2**
NorthWest285_47	**55.12503728**	**0.709716228**	**285_3**
NorthWest285_54	55.37056893	0.367641655	285_4
NorthWest285_57	55.22234343	0.2816199	285_5
West345_66	**54.1234254**	**0.11516106**	**345_1**

West345_70	**54.28202832**	**-0.213494499**	**345_2**
345_19	**54.09805402**	**2.43086462**	**345_3**
West345_61	54.29644786	-0.279170032	345_4
West345_63	54.24321942	-0.116967464	345_5
376_386_78	**53.42151603**	**0.661556647**	**386_378_1**
OffLowestoft_96	**52.69487831**	**2.30267343**	**386_378_2**
376_386_85	**53.31027451**	**0.670741923**	**386_378_3**
376_386_86	**53.02451081**	**0.492234434**	**386_378_4**
OffLowestoft_98	**52.76236867**	**2.324006726**	**386_378_5**
376_386_80	**53.21660603**	**0.597390399**	**386_378_6**
OffLowestoft_93	52.75977234	2.31392359	386_378_7
OffLowestoft_99	52.71285263	2.274746063	386_378_8
West475_124	**52.19738164**	**1.689405973**	**466_475_1**
West475_120	**52.15262694**	**1.706260268**	**466_475_2**
West475_127	**52.14492332**	**1.685672364**	**466_475_3**
SouthWest475_107	**51.76483981**	**1.688129876**	**466_475_4**
West475_128	**52.20642004**	**1.705220423**	**466_475_5**
West475_130	**52.19944608**	**1.679155035**	**466_475_6**
SouthWest475_109	51.77485263	1.79722518	466_475_7
West475_121	52.18523922	1.747168118	466_475_8
South484_196	**50.86386801**	**0.781015324**	**484_1**
South484_197	**50.86478473**	**0.816498232**	**484_2**
South484_198	**50.87831769**	**0.886750198**	**484_3**
484_186	50.99310162	1.020416257	484_4
South484_204	50.86218615	0.85341938	484_5

C: Plankton sample at West Gabbard Smart buoy 2 station:

Station	y	x
Gabbard SB 2	51.95642	2.10703

Objectives and 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 and UK indicator assessments (GES descriptors 1, 4, 5, 8, 9 & 10) under the UK Marine Strategy.

Specific aims:

1. To collect samples of demersal fish (dab plaice and whiting) for chemical analysis from the North Sea in support of the Clean Seas Environmental Monitoring Programme (CSEMP)

2. To collect dab samples at CSEMP sites for fish disease and biochemical markers (e.g. EROD, AChE and bile metabolites analysis)

3. To sample representative CSEMP stations 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.

4. To conduct marine litter surveys by collecting benthic litter information from the trawls and collecting sediment samples for litter analysis.

5. To conduct marine mammal and bird observations.

6. To collect a Plankton sample at Gabbard SB2.

PLAN:

5th July

Scientific staff board ship
Inductions at ~15:30 for all scientific staff

6th July

Leaving Lowestoft with the morning tide around 00:01. Sailing to sediment stations 466_475_5; 466_475_6, 466_475_1; 466_475_3 and 466_475_2 (02:30 and 04:00). Then sailing to the Outer Gabbard (CSEMP 475) fishing station. Fishing there between 07:00 and 11:00. Grabbing CSEMP 475 in between tows. Collecting Plankton sample. Then sailing 41nm north to sediment stations 386_378_2 and 386_378_5) on transit to Alternative Smith's Knoll (15:30-17:00). Fishing Alternative Smith's Knoll at 19:00 (1-2 tows). Then fishing Smiths Knoll trend sites for another 2 tows starting around 22:30 (Annex 2). Then moving on North-East.

7th July

Finishing fishing at Smith's Knoll around 01:00). Then steaming the 84nm (7.5hours) to the Inner Wash. Collecting sediment stations 386, 386_378_4 (08:30 and 09:30). Then fishing the Inner Wash (CSEMP 387) from 10:30 until 14:00. Then collecting sediment station 386_378_6 (15:00). Then steaming to Outer Humber (CSEMP 377). Fishing Outer Humber (CSEMP 377) between 16:00 and 20:00. Then either collecting sediment station 376 in between tows or afterwards. Then collecting sediment stations 386_378_3 and 386_378_1 (21:00-22:00).

Then depending on weather, either following
Plan A: moving NE to Indefatigable Bank (CSEMP 378).
Plan B: North to Flamborough (CSEMP 344).

8th July

Plan A: Sailing NE to Indefatigable Bank (CSEMP 378) for ~5 hrs reaching the station at 03:00. Fishing between 03:30 and 07:30. Then Sailing North to the sediment station 345 sampling at 10:30, followed by 345_3 at 12:30. Then off to Dogger Central (CSEMP 287). Fishing between 15:30 and 19:00. Then off to North (East) Dogger 1 (CSEMP 283; 50nm away). Starting fishing at 23:30.

Plan B: Fishing Flamborough (CSEMP 344) between 03:30 and 07:30. Then collecting the sediment samples 345_1 and 345_2 between 09:00 and 11:30. Then sailing to Off Tees (CSEMP 295). Fishing

here between 17:30 and 22:00. Collecting sediment samples between tows (CSEMP 295 and 245_296_2). Then sailing to Tees Bay (CSEMP 294; arrival at 23:00) and starting fishing.

9th July

Plan A: Finishing fishing North (East) Dogger 1 (CSEMP 283) at 03:30. Then sailing 30 nm SE to North Dogger 2 (CSEMP 284). Starting fishing there at 06:30 until 10:00. Then sailing to West Dogger (CSEMP 286), arriving 13:00). Fishing here until 17:00. Grabbing 285 sediment station in between tows when the CTD will be collected. Then sailing to sediment station 285_1 (20:00), followed by 285_3 (21:00) and 285_2 (23:00). Then sailing towards 245_295_1 (25nm away).

Plan B: Finishing fishing Tees Bay (CSEMP 294) at 03:30. Then grabbing 245_295_3 at 05:00. Then fishing Off Tyne (CSEMP 245) at 06:00 until 10:00. Collecting sediment samples in between tows at CSEMP 245. Then collecting sediment samples at 245_295_5 at 11:00. Then sailing to Amble (CSEMP 244) to fish between 12:30 and 16:30. Then fishing Farne (CSEMP 243) between 18:00 and 22:00. Then sailing to sediment station 245_295_6.

10th July

Plan A: Sampling sediment station 245_295_1 at 01:30, followed by 245_295_4 at 02:30 and 245_295_6 at 04:00. Steaming to Farne (CSEMP 243). Fishing Farne between 06:30 and 10:30. Fishing Amble (CSEMP 244) between 12:00 and 16:00. Then sampling sediment station 245_295_5 at 17:30. Then fishing Off Tyne (CSEMP 245) between 18:30 and 22:30. Grabbing CSEMP 245 and 245_295_2 in between tows. Then grabbing 245_295_3 at 23:30. Then sailing to Tees Bay (CSEMP 294).

Plan B: Grabbing sediment station 245_295_6 at 00:30 followed by 245_295_4 at 02:00, 245_295_1 at 02:30, 285_2 at 05:00, 285_1 at 07:00 and 285_3 at 08:00. Then steaming to West Dogger (CSEMP 286) to fish between 11:00 and 15:00. Collecting the sediment station CSEMP 285 in between tows. Fishing North Dogger 2 (CSEMP 284) between 18:00 and 22:00. Then steaming to North (EAST) Dogger 1 (CSEMP 283).

11th July

Plan A: Fishing Tees Bay (CSEMP 294) between 02:00 and 06:00. Then fishing Off Tees (CSEMP 295) between 08:00 and 12:00. Then grabbing sediment station CSEMP 295 (12:30) and 245_295_2 at 13:00. Then grabbing 345_2 at 17:30 and 345_1 at 19:30. Then fishing Flamborough (CSEMP 344) between 21:00 and 23:59.

Plan B: Fishing North (EAST) Dogger 1 (CSEMP 283) between 01:00 and 05:00. Then fishing Central Dogger (CSEMP 287) between 10:00 and 14:00. Then collecting samples at sediment station 345_3 at 17:30 and at CSEMP 345 at 19:30. Then fishing Off Humber (CSEMP 346) between 20:30 and midnight.

12th July

Plan A: Continue fishing at Flamborough (CSEMP 344) until 01:00. Then steaming to Off Humber (CSEMP 346). Starting fishing Off Humber at 06:00 until 10:00. Then steaming back to Lowestoft (100nm).

Plan B: Finishing fishing Off Humber (CSEMP 346) at 01:00 with a CTD. Then steaming to Indefatigable Bank (CSEMP 378). Fishing Indefatigable Bank (CSEMP 378) between 05:00 and 09:00. Steaming back to Lowestoft.

13th July

Plan A: Arrival at Lowestoft (having 24hours contingency in case of downtime). Docking in Lowestoft around 19:00.

Plan B: Arrival at Lowestoft (having 24hours contingency in case of downtime). Docking in Lowestoft around 19:00.

14th July

Disembark. Weymouth staff for CSEMP2 can hopefully stay on the vessel.

E. E. Manuel Nicolaus
Scientist in Charge
10/06/2019

DISTRIBUTION:

P&O
BODC

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