

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE  
LOWESTOFT LABORATORY, SUFFOLK, NR33 0HT**

**2015/16 RESEARCH VESSEL PROGRAMME**

**REPORT: Endeavour, Survey CEND 14\_15.**

**STAFF:**

<b>Name</b>	<b>Berth</b>	<b>Name</b>	<b>Berth</b>
Brett Lyons	SIC cabin	Jon Barber	Main Sci. 6
John Bignell	Upper Sci.1	Paul Nelson	Main Sci. 7
Suzanne Ware	Upper Sci. 2	Adam Porter (Exeter Uni.)	Main Sci. 8
Stuart Ross	Main Sci. 1	Sean Mimms MMOB.)	Lower Sci. 2
Matt Green	Main Sci. 2	Fiona McNie (MMOB.)	Lower Sci. 3
Andy Smith	Main Sci. 3	Free	Lower Sci. 4
Marta Vannoni	Main Sci. 4		
Michelle Pond	Main Sci. 5		

\*MMOB: Marine mammal observer

**DURATION: 5<sup>th</sup> – 16<sup>th</sup> July**

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

**AIMS:**

The data generated during this cruise will be used to meet obligations for reporting of contaminant data to MERMAN and the ICES database and for subsequent assessments for OSPAR and Good Environmental Status (GES descriptors 8, 9 & 10) under the Marine Strategy Framework Directive (MSFD). In addition, the cruise will complete dredge disposal site sampling off the North east coast (Blyth), undertake nutrient, O<sub>2</sub> and pCO<sub>2</sub> sampling as part of a major NERC-Defra Shelf Sea Biogeochemistry and MSFD GES 5 programmes.

1. To collect samples of demersal fish and sediment samples from the North Sea and Eastern English Channel in support of the Clean Seas Environmental Monitoring Programme (CSEMP) (MSFD Descriptor 8 & 9).
2. To conduct marine benthic litter surveys (MSFD Descriptor 10).
3. For the NERC-Defra Shelf Sea Biogeochemistry programme: To collect daily surface discrete samples for total alkalinity, dissolved inorganic carbon, inorganic nutrients and dissolved organic matter. Additionally to run the underway surface pCO<sub>2</sub> system throughout the cruise.

4. Sample zooplankton as part of R&D programme into uptake of micro-plastics into the food web (Cefas-Exeter University PhD programme).
5. To conduct surveys of marine animals (birds and cetaceans) and part of Marine Life UK programme.
6. Undertake sampling SLAB5 dredge disposal site of Blyth (North Tyne area) sites.

## **NARRATIVE:**

### **05/07/15 Sunday**

- Ships safety induction 09:00hrs, through Lowestoft bridge and out into open water at 12:00hrs. Ships drill (Engine fire) at 13:00hrs.
- Steamed to CSEMP 385 to have a shake down stn (fishing).

### **06/07/15 Monday**

- 08:00hrs fishing Inner Wash CSEMP 387. Restricted sampling to crustaceans (disease assessment) and dab for chemistry (out of size range).
- Profiler (O2 and temp.) taken at end of fishing tow.
- Moved off fishing stn to undertake spatial and temporal sediment stns (CSEMP 386).
- Deployed bongo nets for microplastic/zooplankton sampling at @14:20hrs
- Moved onto final CSEMP 386 sediment stn before steaming to CSEMP 377 Outer Humber fishing stn. Fishing generally poor so sampled dab for contaminants and flounder for biomarkers and histopathology.

### **07/07/15 Tuesday**

- 08:00hrs fished CSEMP 344 Off Flamborough and collected 2x dab chemistry sample + an additional bag for dioxins analysis.
- Undertook full assessment of disease and biomarker samples, before moving off stn.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Under took sediment sampling at spatial and temporal sites.

### **08/07/15 Wednesday**

- 07:00hrs fishing at CSEMP 294 Tees Bay. Undertook 3 tows in total collecting full histology, biomarker and biota chemistry sampling (including 1 bag of plaice).
- Profiler (O2 and temp.) taken at end of fishing tow.
- Moved off at @ 11:00hrs to start sampling CSEMP spatial and temporal sites.
- After tea (17:30 hrs) started work on Blyth dredge disposal site monitoring.
- Finished work at @ 22:00hrs.

### **09/07/15 Thursday**

- Started sampling both Blyth dredge disposal site and CSEMP sediment stns.
- Conducted microplastic/zooplankton tow at @ 14:00hrs.

- Moved back onto Blyth dredge disposal site and worked through until 17:00hrs.
- Arrived at CSEMP 244 Amble fishing stn at @18:00hrs and conducted 3 tows, sampling 80 fish for biomarkers and histopathology and collect 3x dab chemistry samples.
- Profiler (O2 and temp.) taken at end of fishing tow
- Finished work at 22:00hrs.

#### **10/07/15 Friday**

- Started sampling both Blyth dredge disposal site and CSEMP sediment stns
- Conducted microplastic/zooplankton tow at @ 14:00hrs.
- Moved back onto Blyth dredge disposal site and worked through until 18:00hrs
- Arrived at CSEMP 243 Farne fishing stn at @18:00hrs and conducted 2 tows, sampling fish for biomarkers and histopathology and collect 2x dab chemistry samples (only 35 fish in total) and 1x additional undersized sample for dioxins analysis.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Finished work at 22:00hrs.

#### **11/07/15 Saturday**

- Conducted two fishing tows at West Dogger CSEMP 286 and collected 3x dab chemistry samples and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Moved off @11:00hrs to sample temporal CSEMP sediment stn and then steamed NW to collect 1x spatial sediment stn.
- Conducted microplastic/zooplankton tow at @ 14:00hrs.
- At 15:00hrs set course to steam to NE Dogger CSEMP 284 fishing stn starting work just after 19:00hrs. Collected 2x dab chemistry sample and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Finished work at 23:00hrs.

#### **12/07/15 Sunday**

- Started work at the Central Dogger CSEMP 287 fishing stn at 8:00hrs, collected 3x dab chemistry samples and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Steamed to Outer Humber CSEMP 346 fishing stn, conducting microplastic/zooplankton tow at @ 13:00hrs.
- Conducted 3 fishing tows at CSEMP 346 2x dab chemistry samples and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow
- MOB drill conducted at 16:00hrs).
- Work initiated following MOB drill and completed by @22:30hrs.

### **13/07/15 Monday**

- Started work at the Indefatigable CSEMP 378 fishing stn at 8:00hrs, collected 3x dab chemistry samples and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Steamed to Smith Knoll Trend stn, conducting microplastic/zooplankton tow at @ 13:00hrs
- Conducted 3 tows across Smith Knoll and Smith Knoll alternative stns and sampled place (Groups 3,4,& 5) and dab (Groups 1, 2, 3, 4 & 5) for contaminant analysis.

### **14/07/15 Tuesday**

- Sampled Outer Gabbard temporal sediment stn at 8am before dropping off onto the CSEMP 475 fishing stn at @09:40. Collected 3x dab chemistry samples and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow
- Conducting microplastic/zooplankton tow at @13:00hrs.
- Moved off to complete 4x spatial sediment stns. Completed work at @18:30hrs.

### **15/07/15 Wednesday**

- Started sampling CSEMP 486 spatial sediment stns at 06:00hrs, collecting sediment from 2x sites before moving off to CSEMP fishing stn (outer Rye Bay). Collected 3x dab chemistry samples and 80 fish sampled for biomarkers and histopathology.
- Profiler (O2 and temp.) taken at end of fishing tow.
- Finished sediment sampling at 2x spatial stns.
- Conducting microplastic/zooplankton tow at @14:00hrs.
- Moved onto CSEMP fishing stn 493 New Haven.
- Finished sampling at 20:00hrs and started clean down. Finished work at 23:00hrs.

### **16/07/15 Thursday**

- Alongside in Portland at @ 07:30am.
- Scientists de-mobbed by 14:00hrs.

## **RESULTS:**

The majority of results from this survey require laboratory analysis. However, the cruise include Marine Mammal Observers and a brief outline of the findings from their survey is included below.

Marine Observers report:

Observation of birds and marine mammals were recorded through the standard marine life survey method. In addition, photos of white beaked dolphins (WBD) were taken to add to WBD photo id catalogues and have been sent for identification; and, observations were collated on birds specifically attracted to and feeding on the CEFAS trawls. At least 2000 birds were counted within the first five days, and a similar number throughout the following days. The majority of birds seen were in the gull family with frequent sightings of with Kittiwake, Black headed, and Black Backed Gulls with healthy portions of immature birds. Sightings of Gannets and Guillemots were also frequent, with a healthy proportion of chicks/immatures, and less frequent sightings of razorbills and puffins, some with chicks too. A highlight was the high numbers of puffins and terns (Arctic, Sandwich and Roseate) particular around Coquette island where there are known breeding colonies. There were rarer sightings of Mediterranean and Little Gull; and Great, Arctic and Pomerine skuas. Although unsuccessful, there was hope of spotting the vagrant Black browed Albatross confirmed on an RSPB reserve on the East coast of England on the 12<sup>th</sup> of July.

Marine Mammal were observed where expected to some degree, with large numbers of both Harbour and Grey seals on sandbanks in the Wash, and 2 sightings of White beaked dolphin in a known hotspot. Survey conditions in the offshore (sea state 5 – 6) may have prevented some sightings, but condition improved considerably in the southern North Sea in time to see a surprising number of whales, however many were spotted “off effort” but recorded as incidental sightings. Minke whales were seen and also larger whales far away – one was clearly seen and by process of elimination, was identified as a Humpback Whale, clearly characterised by their arched dive, and medium/tall bushy blow. Although an exciting find, it is not a first as a Humpbacks has been documented on the Dogger Bank in recent years. The area of considerable activity was adjacent to a slope areas between Skate Hole and shallower areas of the southern Dogger Bank. Harbour porpoise were seen in this area, and also an area further south.

Brett Lyons  
Scientist In Charge  
16<sup>th</sup> July 2015

SEEN IN DRAFT

Master:  
Senior Fishing Mate:

INITIALLED:

DISTRIBUTION: