CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE

LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK NR33 0HT

2017 RESEARCH VESSEL PROGRAMME

PROGRAMME: RV CEFAS ENDEAVOUR: SURVEY 17

STAFF:

Part A	**Part B**
B Hatton (SIC)	B Hatton (SIC)
L Cox (2IC)	L Cox (2IC)
J Ellis	I Holmes
R Humphreys	R Humphreys
M Eade	M Eade
E Capuzzo	P White
N Hampton	C Marshall
C Bird	L Aislabie

Plus:

R Wright (University of East Anglia)	G Hunt (Newcastle University)
	J Van Der Kooij (19-20 August)
	M Whybrow (19-20 August)
	D Burggraaf (Cefas 19-20 August)
	O Beijert (19-20 August)

DURATION: 4 August – 3 September

LOCATION: North Sea

PRIMARY AIMS:

1. To carry out a groundfish survey of the North Sea (Figure 1) as part of the ICES coordinated IBTS, using a hybrid GOV trawl in order to obtain information on:
   a) Distribution, size composition and abundance of all fish species caught.
   b) Age – length distribution of selected species.
   c) Distribution of fish in relation to their environment.
   d) Distribution of macrobenthos and anthropogenic debris.
   e) Surface and bottom temperature and salinity data using ESM2 profiler/mini-CTD logger and Niskin Bottle.
   f) Length weight & maturity information using individual fish measurements, in support of the EU Data Regulation.

2. To carry out additional 'zero-minute' tows to investigate the potential catch during deployment and retrieval of hauls that may fall outside tow duration.

3. To install and test a new calibration rig, which is designed to provide a robust, semi-automated calibration of the four drop-keel mounted split-beam transducers aboard

the RV Cefas Endeavour. At a suitable location in a fjord outside Bergen, Norway, the equipment will be set up, tested and utilized to perform a calibration.

SECONDARY AIMS:

4. Tag and release specimens of starry smooth-hound *Mustelus asterias*, greater-spotted dogfish *Scyliorhinus stellaris*, spurdog *Squalus acanthias*, tope *Galeorhinus galeus*, common skate *Dipturus batis* species-complex, and blonde ray *Raja brachyura*, in support of the ICES Working Group for Elasmobranch Fishes work to inform on stock units for demersal elasmobranchs.

5. To freeze any unusual fish species for subsequent identification / verification in the laboratory, including specimens of eelpout (*Zoarces, Lycodes* and *Lycenchelys*), sea scorpions (Cottidae, sub-area IVa only), and any unusual fish species, which may also be used in otolith research.

6. To collect dead specimens of smooth-hound (*Mustelus* spp.), if over 60cm, and tope (*Galeorhinus galeus*) for biological studies.

7. Collect dead specimens of shad and lamprey for biological studies.

8. Collect fisheries acoustic continuously data at four operating frequencies (38 kHz, 120 kHz, 200 kHz and 333kHz), using the Simrad EK60 split beam sounder. The data will contribute to the existing 15 year time series of acoustic data in the North Sea and will be used as part of the Defra funded project Poseidon (MF1112) to monitor changes in mackerel distribution and abundance.

9. To retain empty skate and ray egg cases with corresponding positional information for subsequent identification by the Shark Trust.

10. Cetacean observations will be recorded where possible and sent to the Sea Watch Foundation.

11. Identification, count, measure and weight all jellyfish caught in GOV trawl will allow the continuation of the North Sea August Jellyfish dataset started in 2012; As the dataset grows from year to year, this should allow the evaluation of changes in jellyfish community and biomass with time.

12. To collect maturity and life history information for lesser-spotted dogfish *Scyliorhinus canicula* from the southern and northern North Sea.

13. To collect and filter on board water samples for determination of chlorophyll and suspended particulate materials; data collected will be used for validation of Ferrybox and ocean colour space-born data (SLA25)

14. Collect squid egg samples to map spawning grounds. This could be highly relevant in studying squid stock's structure.

15. Collection of samples to measure carbon dioxide, methane and nitrous oxide in surface waters across the North Sea, with a view to developing and refining these techniques for future use.

16. To collect biological information from four-bearded rockling *Enchelyopus cimbrius*. Including length, weight & maturity information.

17. Collection of stomach samples and dorsal muscle tissues of various finfish for stable isotope analysis to analyse long-term changes in abundance and shifts in diet composition in the English north-east and Dogger Bank regions of the North Sea.

18. Recording evidence of *Ichthyophonous* infestation on herring.

19. Collection of a selection of different species (whole fish) to be used in a species identification display during CEnd 19/17.

20. Collection of finfish for otolith extraction training of new fisheries stock monitoring staff

21. Near bed water samples will be collected using a niskin at seasonally stratified sites. These data will be used in the assessment of eutrophication under MSFD and OSPAR for which near bed oxygen concentrations are an indicator.

PLAN:
RV Cefas Endeavour will sail from Lowestoft at approximately 08:00 on 4 August and fish the stations detailed in Figure 1. Cefas Endeavour will proceed to stations in the southernmost North Sea and start the IBTS survey. The survey will then continue northwards until docking in Bergen, Norway, in the evening of 17 August for a mid-survey staff change-over. The second half of the survey will sail from Bergen on the early morning of 19 August and the survey will continue and dock in Lowestoft on 3 September.

GEAR:
List distributed separately and marked to relevant individuals for action. Thomas Maes for aim 1d, Jim Ellis for aims 4, 6, 9 & 12, Andy Moore for aim 7, Jeroen Van Der Kooij for aims 3 & 8, Rebecca Wright for aim 11, Elisa Capuzzo for aim 13 & 21, Vlad Laptikhovsky for aim 14, Oliver Lambert for aim 15, Louise Cox for aim 16, Georgina Hunt for aim 17, and Tom Woods for aim 20.

B Hatton
Scientist in Charge
14 June 2017

DISTRIBUTION:
Survey participants +

T Maes	O Lambert
A Moore	V Laptikhovsky
S Pitois	G Burt
G Engelhard	S McCully
T Woods	

Cefas MIST services

Figure 1: Fishing station of IBTS North Sea Groundfish Survey