CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE

LOWETSOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT

2018 RESEARCH VESSEL PROGRAMME

DRAFT PROGRAMME: **RV CEFAS ENDEAVOUR: 17 / 2018**

STAFF:

Part 1 (6th- 23rd Oct)	**Part 2 (23th Oct-9th November)**
1. Jeroen van der Kooij (SIC)	Elisa Capuzzo (SIC)
2. Elisa Capuzzo (2IC)	Jeroen van der Kooij (2IC)
3. Joana Silva (2IC)	Joana Silva (2IC)
4. Richard Humphreys	Richard Humphreys
5. Marc Whybrow	Marc Whybrow
6. Matt Eade	Louise Cox
7. Piera Carpi	Allen Searle
8. Fabio Campanella	Sílvia Rodríguez Climent
9. Sam Barnett	Catarina Maia
10. James Pettigrew	Sam Barnett
11. Hayden Close	Nevena Almeida
12. Chris Brodie (PhD, Univ Salford)	Axayacatl Molina-Ramirez
13. Marine Cusa (PhD, Univ Salford)	Chris Brodie (PhD, Univ of Salford)
14. Julian Tilbury (Plankton Analytics Ltd.)	Jahcub Trew (PhD, Univ of Exeter)
15. Pete Howlett (ML)	Pete Howlett (ML)
16. Fiona McNie (ML)	Sara Bisset (ML)

DURATION: 6th October–10th November 2018

LOCATION: Western Channel and Celtic Sea (ICES areas VII d, e, f, g)

AIMS:

1. To carry out the annual multidisciplinary pelagic survey of the Western Channel and Celtic Sea waters to estimate the biomass of-, and gain insight into the population of the small pelagic fish community (sprat, sardine, mackerel, anchovy, horse mackerel).
    a. To carry out a fisheries acoustic survey during daylight only using four operating frequencies (38, 120, 200 and 333 kHz) to map and quantify the small pelagic species community.
    b. To trawl for small pelagic species using a 20x40m herring (mid-water) trawl in order to obtain information on:
        - Species- and size composition of acoustic marks
        - Age-composition and distribution, from all small pelagic species
        - Length weight and maturity information on pelagic species
        - Stomach contents
2. To collect plankton samples using 2 different mesh ringnets (80 μm, and 270 μm mesh) at fixed stations at night by vertical haul. Samples will be processed onboard:
    a. Ichthyoplankton (eggs and larvae, 270 μm) of pelagic species will be identified, counted and (in case of clupeids) staged and measured onboard to identify spawning areas.
    b. Zooplankton (80 μm) will be stored for further analysis back in the lab.
3. Water column sampling. At fixed stations along the acoustic transect, a CTD (either an ESM2 profiler or a Seabird mounted on a Rosette sampler) will be deployed to obtain a vertical profile of the physical properties of the water column, including chlorophyll, oxygen, salinity, temperature, turbidity, and dissolved inorganic nutrients as well as the relevant QAQC samples for calibration of the equipment. Water samples will be collected and fixed on board for analysis post-hoc.

4. Apex predator observations. Locations, species, numbers and activities of mammals, birds and other large predators including bluefin tuna will be recorded continuously during daylight hours by two Marinelife observers from bridge.
5. Ferrybox Continuous CTD/Thermo-salinograph. Continuously collect environmental data at 4 m depth during survey transects, including chlorophyll concentration (from calibrated fluorescence).
6. To carry out hourly measurements of the phytoplankton functional groups using an online flow-cytometer, connected to the Ferrybox; in collaboration with project JERICHO NEXT.
7. To collect water samples from the Rosette (at oceanographic stations) and the Ferrybox flow-through (during trawling), and process to extract environmental DNA (eDNA) for detection of small pelagic fish as part of a PhD study (Chris Brody, University of Salford) on the use of eDNA in marine environment to validate acoustic data and as a monitoring tool for rare organisms.
8. To continue development of the continuous Plankton Image Analyser (PIA)
9. To collect a zooplankton sample using the 200 µm mesh ringnet at the West Gabbard SmartBuoy, for the Lifeform project (Defra, PI Sophie Pitois) as part of the UK monitoring network for zooplankton.
10. The water sampler on the Ferrybox will be used to automatically collect daily samples for phytoplankton or nutrients analysis for the ASMIAE project (PI Sophie Pitois). Samples will be analysed for phytoplankton species composition and abundance using microscopy or inorganic nutrient concentrations.
11. To collect zooplankton samples at 10 preselected coastal and estuarine stations (10, 13, 15, 17, 20, 21, 23, 50, 79 and 82), to investigate the presence of lineages of microscoporidia on copepods (Jahcub Trew, Univ of Exeter).
12. To collect and freeze small pelagic fish specimens for genetic study into stock structure of sardine, sprat and anchovy.
13. To collect and freeze up to 30 herring specimens, where possible at different locations, for a genetic study into stock structure for D. Clarke at Swansea University.
14. To collect stomachs from dominant small pelagic fish species
15. To tag and release elasmobranchs species caught in the trawl with conventional -(Petersen discs) and/or electronic (DSTs) tags (Defra/MMO project(s), PI Jim Ellis/Sophy Phillips).

PLAN:

Provisionally all staff will join RV CEFAS Endeavour at 14:30 on the 5th of October in Swansea. Following an induction for staff new to the RV (15:30 BST), and a toolbox talk with staff, crew and officers (at 18:00 BST), she will sail at high tide around 01:00 on Saturday morning. She will steam to a suitable location and conduct the calibration of the echosounders. Upon completion, the first oceanographic and plankton stations will be sampled at night. Provisionally, on the morning of the 7th of October, the first acoustic transect will be run, during which, at some point, a shake-down tow will be conducted with the 20x40 herring mid-water trawl.

The fieldwork will involve steaming along transects (map below) continuously collecting fisheries acoustic data, surface oceanographic data and marine mammal and bird observations during daylight. Ad hoc pelagic trawl operations will be conducted during the day to identify acoustic marks and obtain biological information of fish community. Biological samples will be processed between trawls. At night, plankton and oceanographic data will be collected using frame-mounted ringnets and Rosette or ESM2 respectively at fixed primary stations. Depending on time and conditions, pelagic fish eggs and larvae will be identified, staged (eggs), measured (larvae) and quantified from the ichthyo-plankton samples on board; fish otoliths will be read onboard to determine age of small pelagic species.

Provisionally, at approximately 18:00 on the 22nd of October, the RV will go into Falmouth or Fowey, for a mid-survey break and for a crew and staff change. New staff will join the RV on the morning of the 23rd of October, followed by an induction at 15:00 for those who require it, after which the RV will sail on the afternoon of the 23rd to continue the survey. She will resume to complete the final transects in the western Channel, making its way east to finally dock in Lowestoft on the evening tide of the 10th of November.

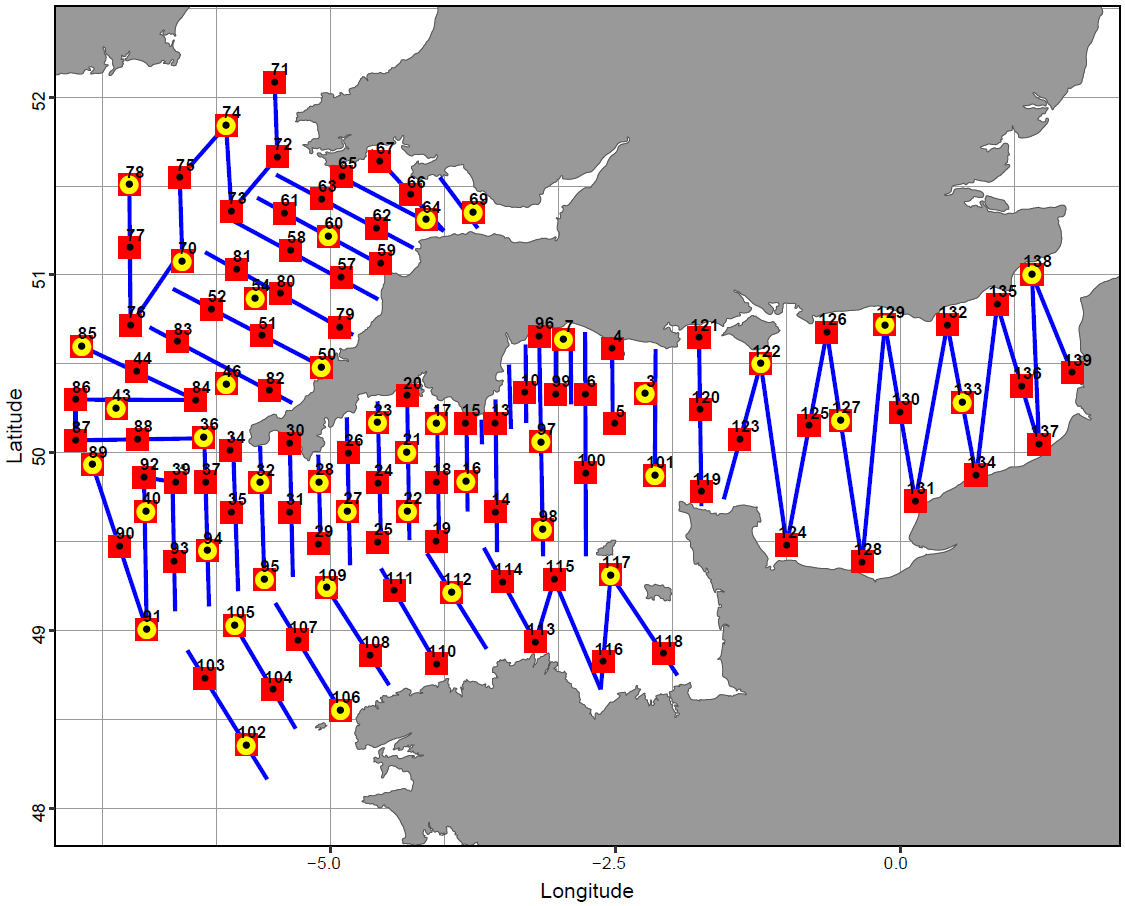

Figure 1: Survey design (acoustic transects in blue). Red and yellow marks represent plankton and CTD stations respectively. (Please note that trawl positions are not known as yet)

GEAR:

List distributed separately and marked to relevant individuals for action.

Jeroen van der Kooij
SIC
10/09/2018

DISTRIBUTION:

Basic list+
Jeroen van der Kooij
Elisa Capuzzo
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Marc Whybrow
James Pettigrew
Plankton lab
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