

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE**  
**LOWETSOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT**  
**2017 RESEARCH VESSEL PROGRAMME**

**DRAFT PROGRAMME: RV CEFAS ENDEAVOUR: 19 / 2017**

**STAFF:**

<b>Part 1 (29<sup>th</sup> Sep -16<sup>th</sup> Oct)</b>	<b>Part 2 (16– 25<sup>th</sup> October)</b>	<b>Part 3 (25<sup>th</sup> Oct -4<sup>th</sup> Nov)</b>
1. Jeroen van der Kooij (SIC)	Jeroen van der Kooij (SIC)	Jeroen van der Kooij (SIC)
2. Elisa Capuzzo (2IC)	Elisa Capuzzo (2IC)	Elisa Capuzzo (2IC)
3. Joana Silva (2IC)	Joana Silva (2IC)	Joana Silva (2IC)
4. Marc Whybrow	Marc Whybrow	Marc Whybrow
5. Richard Humphreys	Richard Humphreys	Richard Humphreys
6. Matt Eade	Piera Carpi	Piera Carpi
7. Louise Cox	Wendy Dawson	Ben Hatton
8. Sam Barnett	Luke Aislabie	Ian Holmes
9. James Pettigrew	Sam Barnett	Sam Barnett
10. Sílvia Rodríguez Climent	Clare Marshall	Clare Marshall
11. Andrew Bodle	Hayden Close	Pete Howlett (ML)
12. Hayden Close	Andrew Bodle	Charlotte Atlas (ML)
13. Julian Tilbury	Stuart Thomas (ESAS)	
14. Stuart Thomas (ESAS)	Sean Minns (ESAS)	
15. Phil Espin (ESAS)	Pete Howlett (ML)	
16. Pete Howlett (ML)		

**DURATION:** 29<sup>th</sup> September–4<sup>th</sup> November 2017

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

**AIMS:**

1. To carry out the sixth of 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 water column. Water column profile and water samples will provide information on 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. Seabirds and Marine Mammals. Locations, species, numbers and activities observed will be recorded continuously during daylight hours by a Marinelife observers from bridge.
5. Additional high resolution ESAS observations will be conducted on critically endangered Balearic shearwaters and other seabirds by 2 ESAS trained observers during parts 1 and 2.
6. Ferrybox Continuous CTD/Thermo-salinograph. Continuously collect oceanographic data at 4 m depth during steaming, including chlorophyll concentration (from calibrated fluorescence).
7. 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.
8. To trial 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) as part of the UK monitoring network for zooplankton.
10. To collect and freeze small pelagic fish specimens for genetic study into stock structure of sardine, sprat and anchovy.
11. To collect and freeze up to 100 horse mackerel specimens at three different locations: eastern English Channel, Western English Channel and Bristol Channel

#### **PLAN:**

Provisionally all staff will join RV CEFAS Endeavour at 14:00 the afternoon of the 28<sup>th</sup> of September in Swansea. Following an induction for staff new to the RV (15:00 BST), she will sail at high tide around midnight. She will steam in darkness to commence the north-western part of the grid and to conduct shake-down tows with the 20x40 herring mid-water trawl, the Rosette/CTD and zooplankton nets. On the afternoon of the 1<sup>st</sup> of October, staff-member Marc Whybrow will be collected from Swansea via small boat transfer. The vessel will steam in darkness to arrive at first light and continue completing the remaining transects in the eastern part of the Bristol Channel.

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 tows. 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, on the evening of the 15<sup>th</sup> of October, the RV will go into Falmouth, for a mid-survey break and for a crew and staff change. New staff will join by 14:00 on the 16<sup>th</sup> of October, followed by an induction at 15:00 for those who require it after which the RV will sail on the evening of the 16<sup>th</sup> to continue the survey which will include transects around the Isles of Scilly and in French waters, according to the same protocol as described above.

Provisionally around the morning of the 24<sup>th</sup> of October, the RV will sail to London to dock alongside the HMS Belfast around 4:00 AM on the 25<sup>th</sup> of October to partake in Cefas' 20<sup>th</sup> anniversary event. On the evening of the 25<sup>th</sup> at approximately 18:00-19:00, the RV will sail back to resume the final transects in the western Channel, making its way east to finally dock in Lowestoft on the evening tide of the 4<sup>th</sup> of November.



*Figure 1: Survey design (acoustic transects in purple). Strata (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**

**13/09/2017**

**DISTRIBUTION:**

- Basic list+
- Jeroen van der Kooij
- David Righton
- Elisa Capuzzo
- Joana Silva
- Marc Whybrow
- James Pettigrew
- Brian Salter (P&O)
- Barrie Horton (P&O)
- Rachel Davies (rachel.davies@marine-life.org.uk)
- Ciaran O'Donnell (Ciaran.O'Donnell@Marine.ie)
- IFCA's in SW
- MMO
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- BODC