



RESEARCH VESSEL PROGRAMME

RV CEFAS ENDEAVOUR Survey: C END 16 - 2020

STAFF:			
Name	Role	Cabin	Shift
Jeroen van der Kooij	SIC/Acoustic	SIC	7:00-19:00
Joana Silva	2IC/Fish/Ocea	С3	12:00-0:00
Fabio Campanella	2IC/Acoustic	B1	7:00-19:00
Eleanor Haigh	Oceanography	D4	0:00-12:00
Richard Humphreys	Lead Fishroom	C2	8:00-20:00
Louise Cox	Fish	B2	8:00-20:00
Samantha Barnett	Fish	C1	8:00-20:00
Allen (Spike) Searle	Fish	C5	8:00-20:00
Hayden Close	Zooplankton	D3	0:00-12:00
Nevena Almeida	Zooplankton	D5	12:00-0:00
James Scott	PhD (PI)	D6	7:00-19:00
Peter Howlett	ML Observer	C6	7:00-19:00
Morgan Schofield	ML Observer	C7	7:00-19:00

DURATION: 3rd October – 7th November (35 days)

LOCATION: Western English Channel, Celtic Sea, Cardigan Bay (ICES Divisions 7.e-f and parts of 7.a,g)

AIMS:

- 1. To carry out the tenth PELTIC survey: pelagic ecosystem survey of the western English Channel, Celtic Sea, including (for the first time) Cardigan Bay (for Welsh Government), to estimate the biomass of-, and gain insight into the populations of the small pelagic fish community including sprat (*Sprattus sprattus*), sardine (*Sardina pilchardus*), mackerel (*Scomber scombrus*), anchovy (*Engraulis encrasicolus*), horse mackerel (*Trachurus trachurus*). The PELTIC timeseries on sardine in area 7 will be assessed at an ICES benchmark meeting in February 2021 (WKWEST); sprat biomass data from the western English Channel will feed into the stock assessment of sprat in area 7de (HAWG).
 - a. To carry out a fisheries acoustic survey during daylight hours 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, for small pelagic species
 - Length weight and maturity information of pelagic species





- Stomach contents of selected species
- 2. To collect biological data (size, weight, age and maturity) on range of data-limited fish species, including European seabass (*Dicentrarchus labrax*), black seabream (*Spondyliosoma cantharus*), striped red mullet (*Mullus surmuletus*), garfish (*Belone belone*), saury pike (*Scomberesox saurus*).
- 3. To collect plankton samples using two ring-nets with 80 μ m, and 270 μ m mesh sizes at fixed stations (red squares on map below). Carried out at night by vertical haul and 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 μ m) will be stored for zooscan analysis back in the lab.
- 4. Water column sampling (yellow stations on map below). 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 measurements of environmental properties within the water column. Water column profile and water samples will provide information on chlorophyll concentration, dissolved oxygen, salinity, temperature, turbidity, and dissolved inorganic nutrients concentration as well as the relevant QA/QC samples for calibration of the equipment. Water samples will be collected and fixed on board for analysis post-survey. Samples for analysis of the phytoplankton and microzooplankton communities will also be collected at the subsurface at fixed sampling stations.
- 5. Seabirds and Marine Mammals. Locations, species, numbers and activities observed will be recorded continuously during daylight hours by two Marinelife observers located on the bridge.
- 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 flowcytometer, connected to the Ferrybox; (V. Creach).
- 8. To further trial the continuous Plankton Imager (PI, James Scott, PhD).
- 9. To collect between 25-50 specimens per species (anchovy, boarfish, herring, horse mackerel, mackerel, sardine) and freeze for further analysis in the lab supporting a study on microplastics in fish stomachs (A. Bakir).
- 10. To collect 20 whole sardine specimens at two locations in the western English Channel for a genetic study (J van der Kooij)
- 11. To collect 10 specimens per species (small sprat, herring, sardines, pearlsides and anchovy) for species ID training in Weymouth lab (S Davis).
- 12. To collect a zooplankton sample using the 200 μm mesh ring-net at the West Gabbard2 SmartBuoy, for the Lifeform project (Defra) as part of the UK monitoring network of zooplankton.
- 13. Record macro-litter observations in the trawl (B. Silburn)







PLAN:

All staff will join RV Cefas Endeavour on the morning of 1st of October in Lowestoft. COVID-19 swaps will be taken from all scientists and crew after which staff will self-isolate in their cabins until test-results are returned. The RV will sail most likely on the 3rd of October at the evening tide and make its way to Portland Bill, where fisheries acoustic equipment will be calibrated and other gears will also be tested. Following that, the Endeavour will start running the first acoustic transect, at some point conducting a shake-down tow with the 20x40 m herring mid-water trawl.

The survey 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 and validate acoustic marks and to obtain biological information of the fish community. At night, plankton and oceanographic data will be collected using frame-mounted ring-nets and a Rosette sampler/ESM2 profiler 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 ichthyoplankton samples collected on board; fish otoliths will be read onboard to determine the age of small pelagic species.

The vessel will continue in a westerly direction, working on both sides of the English Channel. Before first light on the 19th of October, the RV will dock to take Jo Silva ashore in Falmouth, after which the RV will resume surveying the remaining transects and continue making its way around the Isles of Scilly





into the Bristol Channel. For the first time, the survey is extended northwards to map and quantify the small pelagic fish community and collect ecosystem data in Cardigan Bay for the Welsh Government.

After completion of the survey, the RV will sail back Lowestoft where she will dock on the morning tide of the 7th November.

PLAN:

GEAR:

Jeroen van der Kooij Scientist in Charge 29/09/2020

DISTRIBUTION:

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