

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

2020 RESEARCH VESSEL PROGRAMME

PROGRAMME: RV CEFAS ENDEAVOUR: C END 3 - 2020

STAFF:

Part 1 (15 February – 29 February)	Part 2 (1 March – 15 March)
Louise Straker Cox (SIC)	Louise Straker Cox (SIC)
Ben Hatton (2IC)	Ben Hatton (2IC)
Mary Brown (Deckmaster)	Charlotte Jennings (Deckmaster)
Steve Shaw (Deckmaster)	Matt Eade (Deckmaster)
Nicola Hampton	Nicola Hampton
Sam Roslyn	Sam Roslyn
Tom Woods	Tom Woods
Dan Clarke	Dan Clarke
Zachary Radford	Zachary Radford
Kirsty Bradley	Nevena Almeida
Ruth Hicks	Lisève Fierens
Hannah Lloyd Hartley	Lois Elvin
Eleanor MacLeod	Hannah Wolstenholme
TBC	Cian Derbyshire (Observer from Ireland)

DURATION: 15 February – 15 March 2020 (30 days).

LOCATION: Celtic Seas/western English Channel (ICES areas 7e, 7f, 7g, 7h, 7j)

AIMS:

1. To carry out an otter trawl survey of the demersal fisheries resources in the Celtic Sea and western English Channel using a Jackson 19 otter trawl in order to collect appropriate data to inform assessments of the fish stocks and fish assemblages in the area. The main aims are to collect relevant data on the:
 - a) Distribution, size composition and abundance of all fish and shellfish species caught;
 - b) Age–length distribution of commercially important fish species;
 - c) Individual length, weight, sex and maturity information for commercial fish species (in support of the EU Data Collection Regulation);
 - d) Distribution of macrobenthos, gelatinous zooplankton and anthropogenic debris;
 - e) Surface and bottom temperature and salinity data using CTD.

2. To collect multibeam data and fisheries acoustic data at three operating frequencies (38, 120 & 200 kHz) continuously throughout the survey. These data will be used to determine the spatial scale of various habitats and to aid the subsequent beam trawl survey fishing the same stations on the following survey (CEND 4/20).

SECONDARY AIMS:

3. To tag-and-release and collect dead specimens of various shark, skate and ray elasmobranch species including (a) deploying electronic and Peterson disc tags on starry smooth-hound *Mustelus asterias*, and where time allows, collecting vitality, reflex and injury data, augmenting data collected under EMFF project ENG1395), (b) deploying electronic and Petersen disc tags on tope *Galeorhinus galeus*, common (blue) skate *Dipturus batis*, undulate ray (*Raja undulata* and blonde ray *Raja brachyura* where catches are sufficient to help inform on habitat use, nursery areas and migration patterns in support of Defra funded projects, (c) conventionally tag specimens of cuckoo ray (*Leucoraja naevus*), shagreen ray (*Leucoraja fullonica*), greater-spotted dogfish *Scyliorhinus stellaris* and spurdog *Squalus acanthias* to help inform on stock structure and (d) retain any dead specimens of tope, common skate, shagreen and blonde ray for biological studies.
4. To collect additional biological information on the trawl catch in support of biological programmes, including (a) retention of any rare and unusual species, (b) length-weight data for unusual fish species and extreme sizes, (c) biological information from four-bearded rockling *Enchelyopus cimbrius* and wrasse (Labridae) (d) otoliths from uncommon species and extremes of length range as part of an on-going otolith reference collection, and (e) maturity stage photographs and to review maturity stage descriptions for John dory *Zeus faber*, black seabream *Spondylisoma cantharus*, anglerfish *Lophius piscatorius* and *L. budegassa*, striped red mullet *Mullus surmuletus* and European seabass *Dicentrarchus labrax*, to further improve Cefas maturity keys.
5. All diadromous species (including allis shad *alosa*, twaite shad *alosa fallax* and lampreys (Petromyzontidae)) found dead on capture are to be frozen and returned to the lab for analyses, marking samples with the survey, station and date to support DiadES project.
6. To collect data on the feeding habits of selected fish species (including John dory *Z. faber*, anglerfish *Lophius piscatorius* and *L. budegassa*) by sampling stomachs and identifying associated prey species (data provided to DAPSTOM database).
7. To collect and freeze muscle (and liver) samples from selected longer-lived and higher trophic level fish species for subsequent contaminant analyses (ling *Molva molva*, spurdog *S. acanthias*, anglerfish *Lophius piscatorius* and *L. budegassa*, John dory *Z. faber*, skates, whiting *Merlangius merlangus* and European hake *Merluccius merluccius*).
8. Collect a vertical ring net sample at the west Gabbard smartbuoy, contributing to the Lifeform project (Defra) as part of the UK monitoring network for zooplankton.

9. TBC To analyse any stomach samples for the presence of microplastics in order to examine pathways of microplastic uptake at different trophic levels (BAU monitoring programme).
10. Collect, retain and filter surface water samples from Ferrybox underway water supply every 12 hours (or once a day) for subsequent nutrients (February) and chlorophyll (March) sampling in support of SLA25.

OPPORTUNISTIC AIMS:

11. To collect genetic samples from *Lophius piscatorius* and *L. budegassa*, and European hake *M. Merluccius*) in support of the GECKA project.

PLAN:

Provisionally, RV Cefas Endeavour will sail from Lowestoft early on the 15 February and sail around to the Celtic Sea stratum, working western Channel locations en-route. The survey will be equipped with a Jackson 19 trawl and Morgere doors in a standard survey setup including net geometric sensors and a trawl eye sensor for recording net opening dimensions, bottom contact and catches. The survey will operate continuously and aim to sample 100 (minimum 86) stratified selected stations, whilst collecting acoustic data on route (see aim 2). A mid-survey break and staff changeover will take place on day 15 of the survey (location likely to be Falmouth). The survey will end on 15 March with the location likely to be Falmouth.

GEAR:

List to be distributed separately and marked to relevant individuals for action.

Louise Straker Cox
08/01/2020

DISTRIBUTION:

All Cefas staff on survey plus:

Sally Songer (Principle Investigator [PI])
Lois Elvin (Project Manager [PM])
Ian Holmes (Fisheries Surveys Manager)
Clare Leech (Portfolio lead)
James Maitland (P&O)
Brian Salter (P&O)
Cefas Endeavour Master (P&O)

