LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 OHT

2017 RESEARCH VESSEL PROGRAMME

REPORT: RV CEFAS ENDEAVOUR: SURVEY 4/17

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DURATION: 7 March – 5 April 2017

LOCATION: Western English Channel/Celtic Sea (ICES areas VIIe, VIIf, VIIg, VIIh, VIIj)

PRIMARY SURVEY AIMS:

Aim 1) To carry out an integrated monitoring survey of the Celtic Sea, south-western approaches and the western Channel using a random stratified survey design for the purposes of providing fish stock assessment data and the collection of associated ecosystem information.

A) Deployment of two standardised 4m beam trawls. Both beam trawls with 75mm cod-end – one with a 40mm blinder fitted; one without. Catches from the trawls will be processed to obtain information on:

- Distribution, size composition and relative abundance of fish, shellfish, cephalopods, and benthic invertebrates.
- Age-length distribution of selected fish species.

- Biological parameters of selected species.
- Distribution of fish in relation to their environment.
- Distribution of macro-benthos and anthropogenic debris.
- Length, weight and maturity information in support of the EU Data Regulation.

The data obtained from processing the trawl catches are collected in support of the EU Data Collection Framework (DCF), and will be submitted to ICES Expert Groups and will also support other Cefas projects.

B) Water column sampling. Water column profile and water samples using a Niskin with ESM2 logger will be collected at each trawl station, providing profile information for chlorophyll, oxygen, salinity temperature, nutrient samples and the relevant QAQC samples for calibration of the equipment. Water samples will be collected and fixed on board for analysis post-hoc. Vertical plankton nets/ring nets will also be deployed.

C) Sediment and benthos at a station. Sediment sample(s) will be collected at one end of the tows along the trawl transect using a mini-Mini-Hamon grab or NIOZ corer. These samples will be used for collecting the following data:

- The benthic macro infauna (5 mm sieve)
- Benthic infauna (1 mm sieve)
- Sediment particle size analysis
- Bulk chlorophyll
- Bulk nutrients
- Meiofaunal sample /core

D) Sediment redox. SPI camera dips (with up to 5 replicates at each location) will be collected at one end of the tow where sediments were appropriate for the deployment of this gear type. These data will be linked to the sediment and benthic samples so should occur at an equivalent site to those samples.

E) 2m beam trawl deployments. Where SPI camera deployment is not possible, a 2m beam trawl may be deployed to supplement and provide contrast to the fish/benthic catches observed in the 4m beams.

Aim 2) To continuously log sub-surface (3m) salinity, temperature, fluorometry and other environmental data using the ‘Ferrybox’. Additionally, a Flow-cytometer (phytoplankton) and Plankton Image Analyser (PIA) (zooplankton) may be run in conjunction with the Ferrybox.

Aim 3) To record details of surface sightings of any marine mammals, sea turtles and large pelagic fish, and record observations on jellyfish aggregations.

SECONDARY SURVEY AIMS:

Aim 4) Collect water samples for caesium and tritium analysis under SLA22 (T Bailey – Cefas Lowestoft).

Aim 5) To tag/release specimens of various commercially exploited skates (Rajidae) and other selected elasmobranchs.

Aim 6) Collect specimens of selected species for ID purposes as well as length-weight measurements where still required.

Aim 7) To collect length and weight measurements of jellyfish caught.

Aim 8) To collect specimens of cuttlefish to aid identification and for Cefas on-going projects.

Aim 9) To collect other samples in support of active Cefas projects.

NARRATIVE: (All times GMT)

Part 1.

An advance party of scientific staff joined the RV Cefas Endeavour in Swansea at 1600hrs on 5 March to set up labs and equipment, with the remainder of the scientific arriving the following day. Vessel safety inductions were held for all staff requiring them on the evening of 6 March.

RV Cefas Endeavour sailed at 0004hrs, 7 March and headed directly to the first sampling location in stratum C; station 5. Survey activities began with an ESM2 deployment (0832hrs) followed by deployment of the two 4m beam trawls (0902hrs). Scientific toolbox safety talks preceded sorting and sampling of these catches. This was followed by full ship's complement operational toolbox talks at 1100hrs and emergency drill and muster prior to deployment of the Mini-Hamon grab, 2m beam trawl and plankton nets (no SPI camera deployment was possible at this first location). Scientific staff then moved onto their 2-watch system operating from midnight-mid-day and mid-day to midnight. The remaining four stations in stratum C were completed over the following 24hrs with the final 2m beam trawl being deployed at 1628hrs on 8 March. The main species caught in this stratum were dab (*Limanda limanda*), whiting (*Merlangius merlangus)* and plaice (*Pleuronectus platessa)* with the largest individual station-catch of dab being observed in this stratum. A long steam around Land's End followed, in order for survey operations in

the western Channel to commence in stratum 2 (Mounts Bay). The western Channel part of the survey commenced at 2219hrs on 8 March at a location in stratum 2, north-east of Wolf Rock. Upon completion of this station, work continued offshore until daylight to avoid fishing in known static gear areas in darkness – a work pattern that continued throughout the survey. This would mean that at these inshore sampling locations, the fishing would take place in daylight and the location would be re-visited in darkness to complete the associated environmental data collections.

On 9 March, the remaining four sampling locations in stratum 2 were completed. En-route to stratum 2 station 4, FV *Three J's* contacted RV Cefas Endeavour to provide details of their static gear locations. This prompted abandonment of that station and meant that station 6 in this stratum was sampled instead. This stratum yielded the largest catch of dover sole (*Solea solea*) in the survey. Once the five stations in this stratum were completed, RV Cefas Endeavour headed east to stratum 3 (Falmouth Bay west), picking up two stations in stratum 13 (Lizard Point, offshore) en-route. A total of seven sampling locations were fully sampled on 10 March including four locations in stratum 3 (Falmouth Bay west) without incident. Catches of Dover sole and plaice were light in this stratum, with catches dominated by lesser-spotted dogfish (*Scyliorhinus canicula*), poor cod (*Trisopterus minutus)* and scallop *(Pecten maximus).*

The following day saw the successful completion of seven sampling locations, mostly within stratum 4 but also including the last sampling location in stratum 3. On this day, the decision was taken to only collect environmental samples from five locations within those strata where the target (for fishing hauls) was more than five. This decision was made to give the best possible chance of completing the entire survey area in the remaining time. The locations chosen for environmental sampling within a stratum were selected to provide good spatial coverage. The survey operations undertaken at those locations of non-environmental sampling consisted only of a CTD profile, plankton sampling and the 4m beam trawl operations. On 12 March, a total of seven sampling locations were completed, including the remaining five locations in stratum 5. The eastern end of stratum 5 saw the largest catches of plaice on the entire survey, with one station accounting for around 25% of the species caught in total. Other species observed in large quantities were lemon sole (*Microstomus kitt),* whiting and dover sole.

A further eight sampling locations were completed successfully on 13 March, including the six in stratum 5 that completed the work in that area. The catches in this stratum were dominated once again by plaice and sole, with the addition of lesser-spotted dogfish. This stratum also saw the highest survey catches of thornback ray (*Raja clavata)* with this species being observed at all eight sampling locations in the stratum. The following day was spent working offshore in strata 6, 7 and 9, completing a total of six sampling locations, with catches comprised primarily of lesser-spotted dogfish and anglerfish (*Lophius piscatorius).* At stratum 6; station 4, six good-sized undulate rays (*Raja undulata)* were tagged and released. On 15 March, a total of eight locations were completed along with a caesium and tritium water sample taken at the Hurd Deep. At stratum 6 station 1, strong tides meant that the environmental work planned was abandoned. Stratum 7 yielded the largest catches of both common cuttlefish (*Sepia officinalis)* and red gurnard (*Aspitrigla cuculus)* observed during the survey. Work on the

16 March was hampered by heavy fog which forced the abandonment of several locations as these were areas of known static gear. Despite this, a total of seven locations were completed. At stratum 10; station 7, a total of eight common spiny lobsters (*Palinurus elephas)* were caught, the most caught in a single haul over the survey series.

All were juvenile and were safely returned to the sea once measurements had been recorded (Figure 1). The following day also saw the abandonment of sampling locations due to the large amount of static gear observed, and as a result just five sampling locations were completed. On 18 March, work was halted at 0725h due to worsening sea conditions after the completion of just two sampling locations. With the mid-survey break due soon, the decision to head towards Falmouth was taken. Once close to Falmouth, the sea conditions eased allowing for some opportunistic drop camera video work to be completed. All five 2-metre beam trawl tows within stratum 3 off Falmouth were recorded providing almost 1.5 hours of valuable video footage. Docking in Falmouth took place at 0900h 19 March.

Figure 1 - Common spiny lobsters (Palinurus elephas) being returned to the sea.

Part 2.

After a changeover of scientific staff and crew, RV Cefas Endeavour left Falmouth at 2200h, 20 March with safety inductions for arriving staff taking place prior to sailing. Work recommenced at stratum 7, station 2 at 0908h, 21 March following full took-box and health and safety talks. After the completion of two sampling locations, sea conditions deteriorated meaning the environmental work at the third location (stratum 13; station 2) were abandoned and the vessel headed towards the French coast with the intention of re-starting work at first light and this commenced at Stratum 10 station 10 at 0706h 22 March. The catch at this location included many elasmobranchs of which several were tagged and released including specimens of starry smooth-hound (*Mustelus asterias*), spotted ray (*Raja montagui),* blonde ray (*Raja brachyura*) and undulate ray. At the second station of this day, a hydraulic leak was observed on the stern 'A' frame, rendering it unable to be deployed outbound making subsequent gear inspections and repairs more awkward. A total of four sampling locations in strata 10, 12 and 13 were completed on this day and with sampling on the 23 March affected by weather, just four sampling

locations were completed then too, with the environmental sampling abandoned at the last location (stratum 8; station 3). Catches in these strata consisted of mainly scallops, red gurnard and lesser-spotted dogfish.

On 24 March, a total of five sampling locations were completed including the environmental sampling not completed the previous day. This completed the remaining locations in stratum 8 and the catches consisted of haddock (*Melanogrammus aeglefinus*), hake (*Merluccius merluccius*) and megrim (*Lepidorhombus whiffiagonis*) along with reasonable catches of common cuttlefish. The next day was spent working the five locations in and around the Isles of Scilly and with the assistance of the local IFCA and a commercial skipper, we were able to safely negotiate the static gear deployed to the NE of the islands. Catches at these stations were light and were made up of anglerfish, haddock, megrim and cuckoo ray (*Leucoraja naevus).* During the day, an attempt to recover and replace a Cefas wave-rider buoy at a position SW of the Isles of Scilly was aborted, due to the issue with the A frame and the sea conditions encountered upon arrival.

With the western Channel survey sampling completed, RV Cefas Endeavour headed back into the Celtic Sea. On 26 March, three locations were sampled in stratum F and another two in stratum B, all of which were completed without incident. Several commercial fishing vessels were spotted working in the vicinity of these stations. At stratum F; station 3, a rare capture of a scale-rayed wrasse (*Acantholabrus palloni)* was made with this being only the second specimen observed on the survey series since it began in 2006. In the early hours of 27 March, survey operations were suspended whilst the vessel made a small detour to a position in the Celtic Deep where a whale carcass had been ‘sunk’ and anchored to facilitate shark feeding observations for a UK television programme. The intention was to locate the site using the multi-beam system and then attempt to re-visit the carcass using the drop-camera. Unfortunately, the whale could not be located using the multi-beam and no sightings were made with the drop camera.

Survey operations resumed at 0612h the same day at stratum D station 4. A further 3 complete locations were worked during this day within stratum D with the main catch components being haddock, lesser-spotted dogfish, starry smooth-hound and whiting. A total of eight sampling locations were completed in the northern Celtic Sea in stratum B, D, E, and F over the course of the 28/29 March. At stratum E; station 3, a second rarely observed scale-rayed wrasse was caught along with an equally unusual pearlfish (*Echiodon drummondi)* – Figure 2*.* the first specimen observed on the survey series. On 30 March, survey work in stratum G was completed with all five planned locations being successfully completed. Catches of black-bellied anglerfish (*Lophius budegassa)*, megrim, hake and common cuttlefish were prevalent in this stratum. The 31 March was spent working in stratum E and H with a total of five sampling locations being completed on this day. Here, *Lophius piscatorius* replaced *Lophius budegassa* as the major species caught, with large catches of hake and megrim also observed.

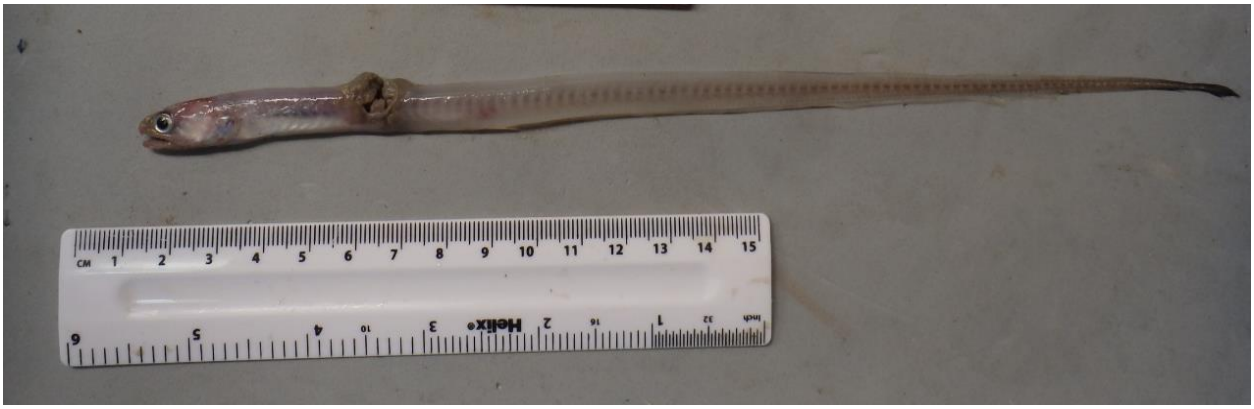


Figure 2 - Pearlfish (Echiodon drummondi)

On the following day, the remaining sampling locations in Stratum H were completed along with just three locations in stratum I. Only three locations were worked within stratum I due to time constraints and the steaming distances required to get to the remaining two locations. In addition, colleagues from the Marine Institute (ROI) on the recent RV Celtic Explorer survey had already successfully worked the two locations that could not be sampled. The three locations worked in stratum I yielded some of the largest catches of cuckoo ray seen on the survey. On 2 April, the four remaining sampling locations in stratum K were completed followed by two locations within stratum J. The work in stratum K was heavily affected by the traffic separation scheme (TSS) off Ushant, with all four sampling locations worked on this day being situated either in the traffic zones or in the separation areas. This meant that transiting between these locations took longer than originally expected.

At the second location in stratum J (station 4), beam trawl operations were postponed until daylight, as static gear was observed close to the location. The time was spent searching for potential tows to fish in daylight in what was a rough ground area. Once a suitable tow had been located, an opportunistic drop camera deployment was made with 16 minutes of video footage being recorded of the location's seabed. Early on 3 April, a second inshore location in stratum J (station 1) was visited with CTD and plankton nets being deployed upon arrival followed by some time finding a suitable tow location. Again, once completed, the time until sun-rise was used to conduct three further opportunistic drop camera deployments in the vicinity at a rocky out-crop called Basse Wenn. At first light, the 4m beam trawls were deployed at the two tow locations found the previous night at both these stratum J locations. This was followed by the beams being deployed at the first stratum J tow location. This was followed by the completion of work at the third location in the stratum but with a tow length of a reduced distance of 1nm due to the poor ground encountered. En-route to the forth sampling location in the stratum at station 3 close to the island of Ushant, RV Cefas Endeavour was asked to abandon operations at the location and alternative sampling locations north of the Ushant TSS were sampled instead after initially seeking suitable ground to deploy the gear.

This completed the survey 4m beam trawl operations and with time available, the decision to head back to locations already visited to conduct survey operations that could not be completed at the first visit was made. This began at stratum 13 station 2 where rough seas had meant that the environmental sampling was initially abandoned. Operations here were completed at 0025h 4 April. This was followed by an opportunistic drop camera deployment on the Langoustine Bank. A short deviation off course meant that this operation was possible and yielded 12 minutes of video footage of this seabed feature. The final survey operations took place stratum 6 station 1 where the initial visit saw the environmental operations abandoned due to strong tidal conditions. These operations were successfully completed at 1330h 4 April. With all survey operations now completed, RV Cefas Endeavour made a course for Lowestoft and, after a small course deviation to collect a water sample at the West Gabbard smart buoy location, docking took place in Lowestoft at 1640h, 5 April.

RESULTS BY AIM:

A survey sampling location was sampled to two differing sets of deployments. At an environmentally sampled location, the operations consisted of ESM2/Niskin sampling, plankton sampling, 2 x 4m beam trawls, mini-Mini-Hamon grab sampling, SPI camera deployment and 2m beam trawl deployment. Alternatively, a location was sampled using just the ESM2/Niskin sampler, plankton nets and the 2 x 4m beam trawls. Environmentally sampled locations were selected as follows:

- 5 locations within each stratum in UK EEZ.
- Stratum that straddled EEZ borders were also sampled in French and Irish EEZ's.

The fishing gear used on this survey were the (survey) standard 4m-beam trawls (number 1) with chain mat, flip-up ropes and the net was fitted with a 40mm cod-end liner and 3m cod-end extension (starboard side), and the same gear (number 2) but without the 40mm con-end liner on the port side. All fish and selected commercial shellfish were identified to species, weighed and measured with large catches of an individual species being sub-sampled. A SAIV micro CTD unit was attached to the headline on the port 4m-beam trawl in order to record the temperature and salinity depth profile at each station fished. In addition, at each location, a surface salinity sample was taken simultaneously with a Niskin bottom water sample and an ESM2 logger profile. Additionally, a SAIV Micro CTD unit was used to obtain a SVP for calibration of the multibeam.

All catch details and sample data were entered directly into the Fisheries Electronic Data Capture (FEDC) system and uploaded directly into the Fishing Survey System (FSS). Station details were manually entered into the FSS using information collected from the Transas bridge logging system and bridge logbook. Benthic catches were sorted by species and weighed and counted as appropriate. Any benthic species seen in the port gear catch not already seen in the starboard gear catch were added to the starboard catch as observations only to enable these to be identified as being port catch. Photographs of both gear catches were taken prior to sorting along with photographs of the bulk benthic catch prior to sub-sampling and sorting.

Primary aims

Aim 1) To carry out an integrated monitoring survey of the Celtic Sea, south-western approaches and the western Channel using a random stratified survey design for the purposes of providing fish stock assessment data and the collection of associated ecosystem information.

> *A)* Deployment of two standardised 4m beam trawls.
> *Both beam trawls with 75mm cod-end – one with a 40mm blinder fitted; one without. Catches from the trawls will be processed to obtain information on:*
> - *Distribution, size composition and relative abundance of fish, shellfish, cephalopods, and benthic invertebrates.*
> - *Age-length distribution of selected fish species.*
> - *Biological parameters of selected species.*
> - *Distribution of fish in relation to their environment.*
> - *Distribution of macro-benthos and anthropogenic debris.*
> - *Length, weight and maturity information in support of the EU Data Regulation.*
>
> *The data obtained from processing the trawl catches is collected in support of the EU Data Collection Framework (DCF) and will be submitted to ICES Expert Groups and will also support other Cefas projects.*

A total of 128 successful tows were completed out of a total of 131 planned for the survey. This comprised 80 of the 81 planned tows in the western English Channel and 48 of the 50 planned tows in the Celtic Sea. The location not sampled in the western English Channel was in stratum 11, where operations were heavily affected by both the widespread deployment of commercial static gear and the 'foggy' conditions encountered. The two locations not fished in the Celtic Sea were both in stratum I, and the exclusion of these locations from the survey had been pre-planned, as colleagues from the Marine institute in Ireland had already successfully worked these locations on their associated survey. The gear deployments by survey area and validity are shown in Table 1, with the sampled and non-sampled catches of each species caught on the survey shown in Tables 2–3. Biological sample collections are shown in Table 4.

Figure 7 shows the positions of all 4m beam trawl fishing stations, with Figure 8 showing the survey track each day with the relevant tow validities of these 4m beam deployments. Species composition pie plots for the entire survey is shown on Figure 9. The distribution of six major commercial species for the survey are shown in Figure 10 along with the length distributions of the same species, along with total catch numbers for the two different gears (Figure 11). Appendix 1 gives the station details of each survey station including date/time, shooting and hauling coordinates and various weather/sea-state observational data.

The largest catches of sole were observed in the western English Channel close to Start Point and off the north Cornwall coast, with smaller numbers caught around the Channel Islands and off the northern French coast. Few sole were caught in the outer Celtic Sea as observed in previous years. Plaice was caught predominantly at the western part of

Lyme Bay and off the north Cornish coast, with a large catch also observed at a single station located south of Wexford (Ireland). As observed in previous years, few plaice were caught in French waters and in the Celtic Sea. Anglerfish was observed in greatest abundance in the western English Channel and in the Celtic Sea, southeast of Ireland. Catch numbers were much less than observed in 2016 but were generally observed as being of a similar size fish. Black-bellied anglerfish was caught in greater numbers in the Celtic Sea, with a few individuals caught in the western Channel. Lemon sole was caught predominantly off the Cornish coast, and further offshore north-west of Brittany and south-east of Ireland. Common cuttlefish catches were almost entirely seen in the western English Channel, with the largest catches taken offshore from Start Point and north-west of Brittany. Few cuttlefish were caught in the Celtic Sea.

Table 1: Gear deployments and validity by area

Area	Gear	Validity	Number of Deployments
Celtic Sea	4m Beam Trawl with blinder	V	48
Celtic Sea	4m Beam Trawl no blinder	V	48
Celtic Sea	ESM2 logger, CTD and Niskin	V	13
Celtic Sea	ESM2 logger and Niskin	V	36
Celtic Sea	Flow cytometer/Ferrybox calibrations	V	8
Celtic Sea	2m Jennings beam trawl	V	24
Celtic Sea	2m Jennings beam trawl	I	1
Celtic Sea	Mini Mini-Hamon grab	V	24
Celtic Sea	Mini Mini-Hamon grab	I	5
Celtic Sea	SPI Camera	V	13
Celtic Sea	Drop camera	V	3
Celtic Sea	200um/1mm plankton nets	V	48
Western Channel	4m Beam Trawl with blinder	V	80
Western Channel	4m Beam Trawl with blinder	I	1
Western Channel	4m Beam Trawl no blinder	V	80
Western Channel	4m Beam Trawl no blinder	I	1
Western Channel	ESM2 logger, CTD and Niskin	V	26
Western Channel	ESM2 logger and Niskin	V	55
Western Channel	Flow cytometer/Ferrybox calibrations	V	17
Western Channel	2m Jennings beam trawl	V	45
Western Channel	2m Jennings beam trawl	I	2
Western Channel	Mini Mini-Hamon grab	V	40
Western Channel	Mini Mini-Hamon grab	I	9
Western Channel	SPI Camera	V	22
Western Channel	SPI Camera	I	1
Western Channel	Drop camera	V	6
Western Channel	200um/1mm plankton nets	V	78
Western Channel	Caesium/Tritium water samples	V	11

Table 2: Total catch of sampled species, ordered by size of total catch

COMMON NAME	SCIENTIFIC NAME	Cefas Code	Sampled Catch	Total Catch
Lesser spotted dogfish	*Scyliorhinus canicula*	LSD	646.973	646.973
Plaice	*Pleuronectes platessa*	PLE	434.426	434.426
Monkfish	*Lophius piscatorius*	MON	381.434	381.434
Greater spider crab	*Maja squinado*	SCR	271.403	271.843
Poor cod	*Trisopterus minutus*	POD	269.909	276.484
Common skate complex (Blue skate)	*Dipturus* batis	SKT	236.109	236.109
Haddock	*Melanogrammus aeglefinus*	HAD	235.251	235.251
Megrim	*Lepidorhombus whiffiagonis*	MEG	185.118	185.118
Whiting	*Merlangius merlangus*	WHG	182.192	182.192
Common cuttlefish	*Sepia officinalis*	CTC	164.638	164.638
Pout whiting	*Trisopterus luscus*	BIB	159.86	159.86
Red gurnard	*Aspitrigla (chelidonichthys) cuculus*	GUR	143.734	143.734
Sole	*Solea solea*	SOL	125.593	125.593
Scallop	*Pecten maximus*	SCE	115.469	115.889
White bellied anglerfish	*Lophius budegassa*	WAF	94.651	94.651
Hake	*Merluccius merluccius*	HKE	92.155	92.155
Lemon sole	*Microstomus kitt*	LEM	91.737	91.737
Thick back sole	*Microchirus variegatus*	TBS	79.436	84.306
Undulate ray	*Raja undulata*	UNR	72.153	72.153
Boarfish	*Capros aper*	BOF	71.929	88.709
Starry smooth-hound	*Mustelus asterias*	SDS	64.324	64.324
Common dragonet	*Callionymus lyra*	CDT	64.259	64.259
Cuckoo ray	*Leucoraja naevus*	CUR	64.172	64.172
Edible crab	*Cancer pagurus*	CRE	56.065	56.715
Norway pout	*Trisopterus esmarki*	NOP	48.362	48.362
Spotted ray	*Raja montagui*	SDR	47.691	47.691
Thornback ray	*Raja clavata*	THR	45.584	45.584
Conger eel	*Conger conger*	COE	43.346	43.346
Blonde ray	*Raja brachyura*	BLR	43.043	43.043
Dab	*Limanda limanda*	DAB	42.074	53.909
Tub Gurnard	*Trigla (Chelidonichthys) lucerna*	TUB	40.673	40.673
Black sea-bream	*Spondyliosoma cantharus*	BKS	38.706	38.706
Grey gurnard	*Eutrigla gurnardus*	GUG	32.809	32.809
Brill	*Scophthalmus rhombus*	BLL	32.729	32.729
Nursehound	*Scyliorhinus stellaris*	DGN	25.563	25.563
Turbot	*Scophthalmus maximus*	TUR	20.516	20.516
Witch	*Glyptocephalus cynoglossus*	WIT	20.347	20.347
Blue whiting	*Micromesistius poutassou*	WHB	18.762	18.762
Solenette	*Buglossidium luteum*	SOT	18.316	29.36
Imperial scaldfish	*Arnoglossus imperialis*	ISF	17.619	17.619
Norwegian lobster	*Nephrops norvegicus*	NEP	16.616	16.655
Barrel jellyfish	*Rhizostoma octopus*	BAR	15.22	15.22
Red mullet	*Mullus surmuletus*	MUR	15.215	15.215
Marbled electric ray	*Torpedo marmorata*	MER	13.71	13.71
Cod	*Gadus morhua*	COD	13.03	13.03
Scaldfish	*Arnoglossus laterna*	SDF	12.856	12.856
Shagreen ray	*Leucoraja fullonica*	SHR	11.825	11.825
Streaked gurnard	*Trigloporus (Chelidonichthys) lastoviza*	GUS	11.301	11.301
Sandsole	*Pegusa lascaris*	SOS	9.389	9.389
John dory	*Zeus faber*	JOD	8.93	8.93

COMMON NAME	SCIENTIFIC NAME	Cefas Code	Sampled Catch	Total Catch
Flounder	*Platichthys flesus*	FLE	8.455	8.455
Small-eyed ray	*Raja microocellata*	PTR	8.443	8.443
Common electric ray	*Torpedo nobiliana*	ECR	7.36	7.36
European lobster	*Homarus gammarus*	LBE	5.669	5.984
Long-rough dab	*Hippoglossoides platessoides*	PLA	5.342	5.342
European sea-bass	*Dicentrarchus labrax*	ESB	4.87	4.87
Pollack	*Pollachius pollachius*	POL	4.3	4.3
Ballan wrasse	*Labrus bergylta*	BNW	3.955	3.955
Three-bearded rockling	*Gaidropsarus vulgaris*	TBR	3.793	3.793
Ling	*Molva molva*	LIN	3.41	3.41
Greater forkbeard	*Phycis blennoides*	GFB	3.369	3.369
Lesser weever	*Echiichthys vipera*	WEL	3.348	3.348
Sprat	*Sprattus sprattus*	SPR	2.925	2.925
Spurdog	*Squalus acanthias*	DGS	2.726	2.726
Velvet swimming crab	*Necora puber*	MLP	2.601	2.616
Cuckoo wrasse	*Labrus mixtus (l. bimaculatus)*	CUW	2.595	2.595
Long-finned squid	*Loligo vulgaris*	LLV	2.541	2.541
Common spiny lobster	*Palinurus elephas*	SLO	2.375	2.375
Horse mackerel	*Trachurus trachurus*	HOM	2.305	2.305
Goldsinny	*Ctenolabrus rupestris*	GDY	2.024	2.024
Northern squid	*Loligo forbesi*	NSQ	1.952	1.952
Common topknot	*Zeugopterus punctatus*	TKT	1.661	1.661
Long-finned gurnard	*Aspitrigla (Chelidonichthys) obscura*	GUL	1.45	1.45
Black-mouthed dogfish	*Galeus melastomus*	DBM	1.4	1.4
Argentine	*Argentinidae*	ARG	1.058	1.058
Mackerel	*Scomber scombrus*	MAC	0.776	0.776
Immaculate sandeel	*Hyperoplus immaculatus*	ISE	0.773	0.773
Spotted dragonet	*Callionymus maculatus*	SDT	0.673	0.673
Herring	*Clupea harengus*	HER	0.657	0.657
Pogge	*Agonus cataphractus*	POG	0.655	0.655
Lesser flying squid	*Todaropsis eblanae*	OME	0.613	0.613
Four-spot megrim	*Lepidorhombus boscii*	LBI	0.47	0.47
Norwegian topknot	*Zeugopterus (Phrynorhombus) norvegius*	NKT	0.437	0.437
Elegant cuttlefish	*Sepia elegans*	SEE	0.408	0.408
Butterfly blenny	*Blennius ocellaris*	BBY	0.369	0.369
Sand goby	*Pomatoschistus spp*	POM	0.336	0.337
European common squid	*Alloteuthis subulata*	ATS	0.308	0.311
Greater weever	*Trachinus draco*	WEG	0.3	0.3
Baillons wrasse	*Symphodus (crenilabrus) balloni*	BLW	0.299	0.299
Corkwing wrasse	*Symphodus (crenilabrus) melops*	CWG	0.255	0.255
Crystal jellyfish	*Aequorea spp*	CRI	0.214	0.288
Greater sandeel	*Hyperoplus lanceolatus*	GSE	0.211	0.211
Ekstrom's topknot	*Zeugopterus (phrynorhombus) regius*	EKT	0.188	0.188
Greater pipefish	*Syngnathus acus*	GPF	0.166	0.166
Steven's goby	*Gobius gasteveni*	GSV	0.166	0.166
Scale-rayed wrasse	*Acantholabrus palloni*	SRW	0.154	0.154
Smooth sandeel	*Gymnammodytes semisquamatus*	SMS	0.149	0.149
Anchovy	*Engraulis encrasicolus*	ANE	0.143	0.143
Couch's seabream	*Pagrus pagrus*	SBC	0.143	0.143
Pink cuttlefish	*Sepia orbignyana*	SEO	0.141	0.141
Pilchard	*Sardina pilchardus*	PIL	0.138	0.138
Frie's goby	*Lesueurigobius friesii*	FSG	0.119	0.119
Northern shortfin squid	*Illex illecebrosus*	SQI	0.112	0.112

COMMON NAME	SCIENTIFIC NAME	Cefas Code	Sampled Catch	Total Catch
Mauve stinger	*Pelagia noctiluca*	PEL	0.091	0.096
Tompot blenny	*Parablennius gattorugine*	TBY	0.084	0.084
Garfish	*Belone belone*	GAR	0.073	0.073
Lesser forkbeard	*Raniceps raninus*	LFB	0.056	0.056
Black goby	*Gobius niger*	BLG	0.054	0.054
Four-bearded rockling	*Enchelyopus cimbrius*	FRR	0.045	0.045
Sea horse (short snouted)	*Hippocampus hippocampus*	SNH	0.03	0.03
Reticulated dragonet	*Callionymus reticulatus*	RDT	0.028	0.028
Red bandfish	*Cepola rubescens (c. macrophthalma)*	RPF	0.026	0.026
Northern rockling	*Ciliata septentrionalis*	NNR	0.021	0.031
Jeffrey's goby	*Buenia jeffreysii*	JYG	0.017	0.017
Yarrell’s blenny	*Chirolophis ascanii*	YBY	0.014	0.014
Seasnail	*Liparis liparis*	SSL	0.013	0.013
Moon jellyfish	*Aurelia aurita*	AUA	0.012	0.012
Blue jellyfish	*Cyanea lamarckii*	BLU	0.010	0.010
Sandeels	*Ammodytidae*	SAX	0.008	0.008
Pearlfish	*Echiodon drummondi*	PRL	0.007	0.007
Norway bullhead	*Micrenophrys (taurulus) lilljeborgi*	NVB	0.006	0.006
Squid	*Ommastrephidae*	OMX	0.005	0.005
Two spot clingfish	*Diplecogaster bimaculata*	TSC	0.005	0.005
Ctenophores	*Ctenophora*	CTA	0.004	0.009
Crystal goby	*Crystallogobius linearis*	CLG	0.003	0.003
Worm pipefish	*Nerophis lumbriciformis*	WPF	0.001	0.001
Codlike fishes	*Gadidae*	GAD	0.001	0.001

Table 3: Total catches of non-sampled species, ordered by size of total catch

Common Name	Scientific Name	Cefas Code	Weight
Assorted rocks	-	ROK	3938.486
Epibenthic mixture	-	BEN	3333.232
Broken shell	-	BSL	1047.444
Common starfish	*Asterias rubens*	STH	821.734
Common brittle star	*Ophiothrix fragilis*	OPF	475.199
Spiny starfish	*Marthasterias glacialis*	MAG	329.746
Edible sea urchin	*Echinus esculentus*	URS	313.411
Yellow boring sponge	*Cliona celata*	CLI	215.457
Sponges	*Porifera*	PFZ	158.507
-	*Pachymatisma johnstonia*	PMJ	124.705
Breadcrumb sponge	*Halichondria panicea*	BCS	103.093
Curled octopus	*Eledone cirrhosa*	EDC	92.477
-	*Diazona violacea*	DIV	91.317
Sea squirts	*Ascidiacea*	SSX	90.978
Dead-mens fingers	*Alcyonium digitatum*	DMF	77.829
Hornwrack	*Flustra foliacea*	FAF	57.118
-	*Axinella infundibuliformis*	AXI	50.499
Auger shell	*Turritella communis*	TUC	49.664
Bryozoan	*Cellariidae*	CEL	47.424
-	*Luidia ciliaris*	LDC	43.76
Queen scallop	*Aequipecten opercularis*	QSC	39.406
Sea mouse	*Aphrodite aculeata*	AAC	31.087
-	*Luidia sarsi*	LUS	29.407
Ross coral	*Pentapora foliacea*	PET	28.793
Gravel	-	GRV	28.4
Hermit in adamsia	*Pagurus prideaux / Adamsiaa*	HIA	25.397
Whelk eggs	-	WES	25.006
Sand star	*Astropecten irregularis*	API	21.517
-	*Nemertesia antennina*	NEA	18.032
Swimming crab	*Liocarcinus depurator*	LMD	16.457
Kelps-tangles-oarweeds	*Phaeophyceae-laminariales*	KEL	14.633
Wracks	*Fucus spp*	FUX	14.49
Common sunstar	*Crossaster papposus*	CTP	14.363
Kelp	*Laminaria spp*	LMX	14.282
Plumose anemone	*Metridium senile*	PMA	13.887
Squid eggs	-	SQS	13.288
Parchment worm tubes	*Chaetopterus tubes*	CVT	12.865
Hydroids	*Hydroida (order)*	HYD	11.65
-	*Polymastiidae*	PMX	11.632
-	*Echinus acutus*	URA	10.169
-	*Raspailia spp*	RAS	9.921
-	*Philine aperta*	PHP	9.49
-	*Ophiura ophiura*	OHT	9.401
Red cushion star	*Porania pulvillus*	PPV	9.125
Purple heart urchin	*Spatangus purpureus*	SPG	8.841
Curly weed	*Alcyonidium diaphanum*	ALG	8.423
American slipper limpet	*Crepidula fornicate*	ASL	7.558
Common whelk	*Buccinum undatum*	WHE	7.101
Hermit crabs	*Paguridae*	PAY	6.547
Goose-foot star	*Anseropoda placenta*	PLM	5.253
-	*Ophiocomina nigra*	OPN	4.948

Common Name	Scientific Name	Cefas Code	Weight
-	*Bolocera tuediae*	BCT	4.807
-	*Scaphander lignarius*	SDL	4.364
Sea slugs	*Nudibranchia*	NBX	3.9
-	*Stichastrella rosea*	SLR	3.88
Cotton spinner	*Holothuria forskali*	COT	3.699
Common swimming crab	*Polybius (liocarcinus) holsatus*	LMH	3.696
-	*Psammechinus miliaris*	PMM	2.94
-	*Molgulidae*	MGX	2.64
-	*Nemertesia ramose*	NER	2.519
Sea lemon	*Archidoris pseudoargus*	ADP	2.396
Gibbs sea spider	*Pisa armata*	PAA	2.237
-	*Polycarpa pomeria*	PCP	2.08
Hermit in whelk	*Eupagurus / pagurus in buccinum*	HIW	2.037
Slender-leg spider crab	*Inachus leptochirus*	INL	2.02
Star ascidian	*Botryllus schlosseri*	BIS	1.945
Circular crab	*Atelycyclus rotundatus*	ALR	1.915
Scorpion spider crab	*Inachus dorsettensis*	IND	1.875
-	*Henricia oculata*	HEO	1.866
Sponge	*Suberites spp*	SUB	1.829
Dahlia anemone	*Urticina (tealia) felina*	DHA	1.809
-	*Actinauge richardi*	ACR	1.781
-	*Crangon allmanni*	CGA	1.743
Hermit in suberites	*Eupagurus / pagurus in suberites*	HIS	1.74
-	*Calliactis parasitica*	CAR	1.643
-	*Tethya aurantia*	TAA	1.584
-	*Parastichopus tremulus*	STT	1.54
Red seaweeds (nei)	*Rhodophyceae*	SWR	1.529
Swimming crab	*Macropipus tuberculatus*	MPT	1.515
Slender spider crab	*Macropodia tenuirostris*	MCT	1.291
-	*Echinocardium spp*	ECV	1.198
-	*Tritonia hombergi*	TNH	1.19
Variegated scallop	*Chlamys varia*	CHV	1.104
Sickle hydroid	*Hydrallmania falcata*	HYH	1.059
Broad clawed burrowing shrimp	*Alpheus macrocheles*	ALM	1.028
-	*Dysidea fragilis*	DYS	1.009
Sponge crab	*Dromia personata*	DRP	0.912
Heart cockle	*Glossus humanus*	GLO	0.841
Dog cockle	*Glycymeris*	GLG	0.818
-	*Inachus spp*	INX	0.805
-	*Diphasia nigra*	DIN	0.8
Squat lobster	*Munida rugosa*	MNR	0.768
-	*Nucula sulcate*	NUS	0.754
Masked crab	*Corystes cassivelaunus*	CCV	0.652
-	*Sagartia spp*	SAG	0.623
-	*Filograna implexa*	FII	0.622
Bobtail squid	*Rossia macrosoma*	ROM	0.555
-	*Dichelopandalus bonnieri*	PDB	0.553
Contracted crab	*Hyas coarctatus*	HYC	0.533
-	*Ascidia mentula*	ASM	0.531
Sponge	*Haliclona oculata*	HAO	0.505
Atlantic mud shrimp	*Solenocera membranacea*	SOA	0.487
Common pelicans foot	*Aporrhais pespelicani*	APP	0.48
Common nut shell	*Nucula nucleus*	NNU	0.467

Common Name	Scientific Name	Cefas Code	Weight
-	*Hyalinoecia tubicola*	HYT	0.463
Hermit crab	*Pagurus bernhardus*	PEB	0.461
Anemone unidentified	*Anemone unidentified*	AMU	0.455
Great spider crab	*Hyas araneus*	HYA	0.446
-	*Limaria hians*	LIM	0.443
-	*Processidae*	PCY	0.432
Knotted wrack	*Ascophyllum nodosum*	ANO	0.403
Blunt tellin	*Arcopagia crassa*	TCR	0.403
Pink seafan	*Eunicella verrucosa*	EUV	0.351
-	*Colus gracilis*	CSG	0.35
Sea cucumbers	*Holothuroidea*	HTZ	0.34
-	*Pleurobranchus membranaceus*	PBM	0.311
Dogfish egg case	-	DEG	0.295
Pink shrimp	*Pandalus montagui*	PRM	0.278
Barnacles	*Cirrepedia*	CIZ	0.268
Painted top shell	*Calliostoma zizyphinum*	PTS	0.255
Calcareous sponges	*Calcarea*	CCZ	0.247
Scaleworm	*Laetmonice (hermione) histrix*	HMH	0.244
Angular crab	*Goneplax rhomboides*	GOR	0.241
-	*Porella compressa*	PCO	0.239
Xanthidae	*Xanthid crab*	XAN	0.236
Pheasant tail hydroid	*Lytocarpia myriophyllum*	HYL	0.218
Banded venus shell	*Clausinella fasciata*	VFR	0.218
-	*Astarte sulcata*	AES	0.217
-	*Echinaster sepositus*	ECS	0.204
Lyre-urchin	*Brissopsis lyrifera*	BRL	0.197
Toothed wrack	*Fucus serratus*	WRS	0.195
Feather star	*Antedon bifida*	ADB	0.193
-	*Processa canaliculata*	PCC	0.177
Squat lobsters	*Galathea spp*	GLX	0.167
Long-leg spider crab	*Macropodia rostrata*	MCR	0.167
-	*Pontobdella muricata*	PDM	0.167
Bladder wrack	*Fucus vesiculosus*	WRB	0.164
Green seaweeds	*Chlorophyceae*	CHZ	0.16
Necklace shell	*Euspira (polinices) catena*	PNC	0.159
-	*Thyone fusus*	THH	0.146
-	*Circomphalus casina*	CIA	0.142
-	*Pandalus propinquus*	PDP	0.142
Marbled swimming crab	*Liocarcinus marmoreus*	LMM	0.139
Japweed	*Sargassum muticum*	SAM	0.137
-	*Macropodia linaresi*	MCL	0.126
Wracks	*Phaeophyceae-fucales*	WRK	0.122
Polinices eggs	*Euspira (polinices) eggs*	NAE	0.107
Norway cockle	*Laevicardium crassum*	LCC	0.105
-	*Pontophilus spinosus*	PPS	0.103
Sea potato	*Echinocardium cordatum*	ECC	0.102
Devonshire cup-coral	*Caryophyllia smithii*	DCC	0.1
-	*Scalpellum*	SCA	0.098
Hermit crab	*Anapagurus laevis*	APL	0.09
Long clawed porcelain crab	*Pisidia longgicornis*	PIS	0.084
Common basket shell	*Corbula gibba*	CGB	0.082
Red dead man's finger	*Alcyonium glomeratum*	AYG	0.078
Dwarf-swimming crab	*Liocarcinus pusillus*	LPU	0.078

Common Name	Scientific Name	Cefas Code	Weight
Hydroid	*Nemertesia spp*	NEM	0.07
-	*Tethya spp*	TTA	0.063
Goose barnacles	*Lepadidae*	GOZ	0.059
-	*Pandalina brevirostris*	PDW	0.058
Little cuttlefish	*Sepiola atlantica*	SPA	0.057
Trough shell	*Spisula spp*	SPS	0.057
Hairy crab	*Pilumnus hirtellus*	PNH	0.056
Cuttle eggs	-	CEG	0.051
-	*Cirolana cranchii*	CIB	0.048
Rough crab	*Eurynome aspersa*	EUA	0.048
Squat lobster	*Galathea intermedia*	GLI	0.045
Cranchs nut-crab	*Ebalia cranchii*	EBC	0.045
Corrugated swimming crab	*Liocarcinus corrugatus*	LIC	0.044
-	*Sepiolidae*	SPY	0.042
-	*Pasiphaea spp*	PAS	0.041
Bryers nut-crab	*Ebalia tumefacta*	EBM	0.041
Pennants nut-crab	*Ebalia tuberosa*	EBT	0.04
Brown seaweeds (nei)	*Phaeophyceae*	SWB	0.038
Faroe sunset-shell	*Gari fervensis*	GIF	0.038
-	*Ophiura affinis*	OHF	0.038
Sea lettuce	*Ulva lactuca*	ULL	0.038
European sting winkle (drill)	*Ocenebra erinacea*	OCE	0.037
-	*Acanthodoris pilosa*	ACP	0.036
Red snapping shrimp	*Alpheus glaber*	ALP	0.036
Red whelk	*Neptunea antiqua*	RWK	0.035
Common otter shell	*Lutraria lutraria*	LUL	0.034
-	*Ascidiidae*	ASY	0.032
Oval venus	*Timoclea ovata*	VEO	0.031
-	*Ascidia virginea*	ASV	0.031
Common prawn	*Palaemon serratus*	CPR	0.03
-	*Ascidiella aspersa*	ASB	0.03
Hermit crab in epizoanthus	*Anapagurus in epizoanthus*	HIE	0.029
-	*Ascidiella scabra*	ASS	0.029
-	*Ophiura albida*	OHA	0.027
-	*Abra prismatica*	APM	0.026
Razor shell	*Ensis arcuatus*	ESA	0.025
Banded carpet-shell	*Paphia rhomboides*	TVR	0.022
-	*Calliostoma granulatum (=c. papillosum)*	PTQ	0.02
Sea hare	*Aplysia punctate*	AYP	0.02
Seapen (pinnate)	*Virgularia mirabilis*	VAM	0.019
-	*Euspira fusca*	EFU	0.019
-	*Dendronotus frondosus*	DDF	0.018
Hydroid	*Tubularia spp*	TUI	0.017
-	*Phaxus pellucidus*	CUP	0.017
Echurian worms	*Echiura spp*	EAZ	0.017
Tusk shells	*Scaphopoda*	SPZ	0.016
Netted dogwhelk	*Hinia (nassarius) reticulatua*	NSR	0.015
Sea spider	*Pycnogonum littorale*	PGL	0.015
Sea squirts	*Molgula spp*	MOA	0.015
By the wind sailor	*Velella velella*	BWS	0.015
Arch-front swimming crab	*Liocarcinus arcuatus*	LMA	0.014
Hairy crab	*Pilumnus spinifer*	PNS	0.014

Common Name	Scientific Name	Cefas Code	Weight
Risso's crab	*Xantho pilipes*	XAP	0.013
-	*Sipunculidae*	SIY	0.013
Sea cucumber	*Cucumaria elongata*	CUE	0.013
Bristle worms	*Polychaeta*	BWX	0.012
-	*Pontophilus spp*	PNZ	0.012
Anemome	*Epizoanthus incrustatus*	EPS	0.011
Ross worm (colonies)	*Sabellaria spinulosa*	RCL	0.011
-	*Simnia patula*	SIM	0.011
Common necklace shell	*Euspira pulchella (polinices polianus / alderi)*	NKS	0.011
Anemome	*Paraphellia expansa*	PAE	0.011
-	*Turridae*	TUX	0.01
Leachs spider crab	*Inachus phalangium*	INP	0.01
-	*Amphiuridae*	AMY	0.01
-	*Pagurus variabilis*	PEV	0.01
Peacock worm	*Sabellidae*	PWX	0.009
Common saddle oyster	*Anomia ephippium*	AEP	0.009
Hunchback scallop	*Chlamys distorta*	CHD	0.008
-	*Pagurus prideaux*	PEX	0.008
Sea mats	*Bryozoa*	EPZ	0.008
-	*Alcyonidium parasiticum*	ALA	0.008
Lancet	*Branchiostoma (amphioxus) lanceolatum*	LCT	0.008
Sea anemone	*Actinia spp*	AII	0.007
Elliptical trough shell	*Spisula elliptica*	ETS	0.007
Cut trough shell	*Spisula subtruncata*	CTH	0.007
-	*Ebalia granulosa*	EBG	0.007
Nemertean worm	*Nemertea*	NEY	0.007
Hornwrack	*Securiflustra securifrons*	FAS	0.006
-	*Ascidia conchilega*	ASD	0.006
-	*Bathynectes longipes*	BAL	0.006
Ray egg cases	-	RES	0.006
Fan mussel	*Atrina fragilis*	AFR	0.005
-	*Abra spp*	ABR	0.005
-	*Eurydice pulchra*	EDP	0.005
-	*Portunidae*	PUZ	0.005
-	*Tellina spp*	TAX	0.005
Wentle-trap	*Epitonium (clathrus) clathrus*	EPC	0.004
-	*Buccinum humphreysianum*	WHH	0.004
-	*Abra alba*	ABA	0.004
-	*Eurydice spp*	EDX	0.004
-	*Henricia spp*	HEX	0.004
-	*Chaetopterus variopedatus*	CPV	0.003
Keyhole limpet	*Diodora graeca*	KYL	0.003
-	*Armina loveni*	AAL	0.003
Tiger scallop	*Palliolum tigerinum*	CYT	0.003
-	*Euphausiacea*	KRZ	0.003
-	*Spirontocaris lilljeborgii*	SPL	0.003
-	*Philocheras bispinosus*	PPB	0.003
Nut crab	*Ebalia spp*	EBA	0.003
Brittle-stars	*Ophiuroidea*	BSY	0.003
-	*Antedonidae*	ADX	0.003
-	*Lagis (pectinaria) koreni*	PEK	0.002

Common Name	Scientific Name	Cefas Code	Weight
Sand mason	*Lanice conchilega*	LCE	0.002
-	*Gastropoda*	GAS	0.002
Limpets	*Patellidae spp*	LSX	0.002
-	*Erato voluta*	ERA	0.002
Arctic cowrie	*Trivia arctica*	TRA	0.002
Thick-lipped dogwhelk	*Hinia (nassarius) incrassatus*	NAI	0.002
Banded wedge shell	*Donax vittatus*	DOV	0.002
Wrinkled rock borer	*Hiatella arctica*	HSA	0.002
Goose barnacles	*Lepas spp*	GOO	0.002
-	*Amphipoda*	AAZ	0.002
Common(brown)shrimp	*Crangon crangon*	CSH	0.002
-	*Philocheras fasciatus*	PTF	0.002
-	*Jaxea nocturna*	JAN	0.002
Anemone	*Parazoanthus spp*	ZOA	0.002
-	*Ditrupa arientina*	DTA	0.001
-	*Emarginula fissura*	EMA	0.001
Grey top shell	*Gibbula cineraria*	GTC	0.001
Spotted cowrie	*Trivia monacha*	TRM	0.001
Scallop	*Pseudamussium septemradiatum*	CYS	0.001
Prickly cockle	*Acanthocardia echinata*	CPY	0.001
-	*Acanthocardia spp*	ACY	0.001
Common razor shell	*Ensis ensis*	ESE	0.001
Rayed artemis	*Dosinia exoleta*	DSE	0.001
Sea spider	*Spirontocaris spp*	PYG	0.001
-	*Philocheras trispinosus*	SSZ	0.001
-	*Eurynome spinosa*	PPT	0.001
-	*Chartella spp*	EUS	0.001
-	*Echinocyamus pusillus*	CHA	0.001
Green sea urchin	*Bugula spp*	ECP	0.001
Bryzoan	*Laetmatonice filicornis*	BUG	0.001
-	*Laetmatonice*	LAF	0.001
-	*Spinulosida (order)*	SPI	0.001
-	*Macropodia spp*	MCX	0.001
Bivalve	*Spenia binghami*	SBI	0.001

Table 4: Biological information and samples collected by sex and area - alphabetical order

Common Name	Scientific Name	Sex	Celtic Sea	Western Channel
Red gurnard	*Aspitrigla (Chelidonichthys) cuculus*	F	97	182
Red gurnard	*Aspitrigla (Chelidonichthys) cuculus*	M	99	149
Red gurnard	*Aspitrigla (Chelidonichthys) cuculus*	U	4	24
Lon-finned gurnard	*Aspitrigla (Chelidonichthys) obscura*	F	0	3
Lon-finned gurnard	*Aspitrigla (Chelidonichthys) obscura*	M	0	6
Conger eel	*Conger conger*	U	3	33
European Seabass	*Dicentrarchus labrax*	M	1	4
Common Skate complex (Blue skate)	*Dipturus batis*	F	22	5
Common Skate complex (Blue skate)	*Dipturus batis*	M	24	4
Grey Gurnard	*Eutrigla gurnardus*	F	198	74
Grey Gurnard	*Eutrigla gurnardus*	M	93	35
Grey Gurnard	*Eutrigla gurnardus*	U	5	22
Cod	*Gadus morhua*	F	1	1
Cod	*Gadus morhua*	M	2	0
Black-mouthed dogfish	*Galeus melastomus*	F	0	1
Witch	*Glyptocephalus cynoglossus*	F	59	3
Witch	*Glyptocephalus cynoglossus*	M	28	3
Witch	*Glyptocephalus cynoglossus*	U	1	0
Four-spot megrim	*Lepidorhombus boscii*	F	1	0
Megrim	*Lepidorhombus whiffiagonis*	F	432	165
Megrim	*Lepidorhombus whiffiagonis*	M	233	29
Shagreen Ray	*Leucoraja fullonica*	F	3	0
Shagreen Ray	*Leucoraja fullonica*	M	3	1
Cuckoo Ray	*Leucoraja naevus*	F	3	0
Cuckoo Ray	*Leucoraja naevus*	M	3	1
Black bellied Anglerfish	*Lophius budegassa*	F	23	12
Black bellied Anglerfish	*Lophius budegassa*	M	27	14
Black bellied Anglerfish	*Lophius budegassa*	U	54	5
Anglerfish	*Lophius piscatorius*	F	48	9
Anglerfish	*Lophius piscatorius*	M	9	1
Anglerfish	*Lophius piscatorius*	U	66	72
Haddock	*Melanogrammus aeglefinus*	F	46	65
Haddock	*Melanogrammus aeglefinus*	M	2	3
Haddock	*Melanogrammus aeglefinus*	U	199	57
Whiting	*Merlangius merlangus*	F	151	34
Whiting	*Merlangius merlangus*	M	7	3
Whiting	*Merlangius merlangus*	U	221	133
Hake	*Merluccius merluccius*	F	116	75
Hake	*Merluccius merluccius*	M	4	4
Hake	*Merluccius merluccius*	U	45	15
Lemon Sole	*Microstomus kitt*	F	72	86
Lemon Sole	*Microstomus kitt*	M	64	84
Ling	*Molva molva*	F	2	0
Ling	*Molva molva*	M	0	1
Red Mullet	*Mullus surmuletus*	F	9	27
Red Mullet	*Mullus surmuletus*	M	5	30
Red Mullet	*Mullus surmuletus*	U	0	2
Starry Smooth-hound	*Mustelus asterias*	F	2	34
Starry Smooth-hound	*Mustelus asterias*	M	2	29

Common Name	Scientific Name	Sex	Celtic Sea	Western Channel
Plaice	*Pleuronectes platessa*	F	207	310
Plaice	*Pleuronectes platessa*	M	161	225
Blonde Ray	*Raja brachyura*	F	4	5
Blonde Ray	*Raja brachyura*	M	3	6
Thornback Ray	*Raja clavata*	F	1	32
Thornback Ray	*Raja clavata*	M	3	24
Small-eyed Ray	*Raja microocellata*	F	1	1
Small-eyed Ray	*Raja microocellata*	M	3	2
Spotted Ray	*Raja montagui*	F	37	10
Spotted Ray	*Raja montagui*	M	38	13
Undulate Ray	*Raja undulata*	F	0	14
Undulate Ray	*Raja undulata*	M	0	13
Turbot	*Scophthalmus maximus*	F	3	3
Turbot	*Scophthalmus maximus*	M	3	3
Brill	*Scophthalmus rhombus*	F	2	5
Brill	*Scophthalmus rhombus*	M	4	9
Nursehound	*Scyliorhinus stellaris*	F	1	1
Nursehound	*Scyliorhinus stellaris*	M	5	4
Sole	*Solea solea*	F	83	148
Sole	*Solea solea*	M	53	119
Spurdog	*Squalus acanthias*	F	3	1
Spurdog	*Squalus acanthias*	M	2	1
Marbled Electric Ray	*Torpedo marmorata*	F	1	5
Marbled Electric Ray	*Torpedo marmorata*	M	0	12
Electric Ray	*Torpedo nobiliana*	F	1	0
Tub Gurnard	*Trigla (Chelidonichthys) lucerna*	F	11	44
Tub Gurnard	*Trigla (Chelidonichthys) lucerna*	M	6	30
Streaked Gurnard	*Trigloporus (Chelidonichthys) lastoviza*	F	1	35
Streaked Gurnard	*Trigloporus (Chelidonichthys) lastoviza*	M	1	25
Streaked Gurnard	*Trigloporus (Chelidonichthys) lastoviza*	U	0	7
John dory	*Zeus faber*	F	15	29
John dory	*Zeus faber*	M	6	15
John dory	*Zeus faber*	U	0	1

B) Water column sampling.

Water column profile and water samples using a Niskin with an ESM2 logger will be collected at each trawl station, providing profile information for chlorophyll, oxygen, salinity temperature, nutrient samples and the relevant QAQC samples for calibration of the equipment. Water samples will be collected and fixed on board for analysis post-hoc. Vertical plankton nets/ring nets will also be deployed.

At 130 sampling locations (81 in the western Channel and 49 in the Celtic Sea), a CTD profile using an ESM2 logger along with a Niskin water sampler were deployed. Salinity samples from the 'bottom' were collected at each location using the Niskin sampler deployed using the starboard gantry with the 'hydrographic' wire. In addition, surface seawater samples were collected for salinity using the 'feed' from the Ferrybox. Additionally, at 126 sampling locations (78 in the western Channel and 48 in the Celtic Sea), plankton samples were taken using a pair or ring nets. The first ring net was the 'standard' 0.5 m diameter; 200 µm mesh to collect samples of zooplankton for calibration of the Plankton Image Analyser (PIA) operating on board (see aim number 2). These samples were fixed in ethanol for subsequent analysis by Plymouth University. The second ring net was a 1 m diameter; 1 mm mesh net used to collect small gelatinous

plankton. These captures were identified to species and measured before disposal. Any incidental zooplankton was fixed in a formalin solution for subsequent analysis at Cefas. Figure 3 below shows the two plankton nets being deployed over the starboard side of the vessel, along with the 'end-bag' containing the plankton sample collected.

Figure 3 - Deployment of the two plankton 'ring' nets and the resulting plankton sample

C) Sediment and benthos at a station.

Sediment sample(s) will be collected at one end of the tows along the trawl transect using a mini-Mini-Hamon grab or NIOZ corer. These samples will be used for collecting the following data:

- *The benthic macro infauna (5mm sieve)*
- *Benthic infauna (1mm sieve)*
- *Sediment particle size analysis*
- *Bulk Chlorophyll*
- *Bulk Nutrients*
- *Meiofaunal sample /core*

Sea-bed sediment samples were collected using a 0.1 m^2 mini Mini-Hamon grab only and were collected close to the end of the 4 m beam trawl track. A sample was considered as valid if the bulk volume was ~5 litres and there was no evidence of sediment wash-out during sample recovery. At each sampling location, a maximum of three attempts were carried out to get a valid sample. A total of 29 deployments were carried out in the Celtic Sea with 24 of these yielding a valid sample. In the western Channel, a total of 49 deployments were carried out with 40 of these yielding a valid sample.

Valid samples were initially sampled for sediment particle size analysis (PSA) where a mixed sub-sample of material (~0.5 l) was extracted and frozen for subsequent analysis back in Lowestoft. The remaining sample was then sieved through 5mm and 1mm sieves to retain the macro infauna. These retained sediment and faunal fractions were transferred to a sample container and were preserved in formalin for transport back to the laboratory for subsequent faunal extraction and identification. Photographs at all stages of this sample collection were taken. Figure 4 shows the mini-Mini-Hamon grab samplers and typical sieved samples on both the 1mm and the 5mm mesh screens.

No bulk chlorophyll, bulk nutrients or meiofaunal samples were collected on this survey.

Figure 4 The mini-Mini-Hamon grab sampler plus the 1mm and 5mm sieved sample from a typical sampling location

D) Sediment redox.

SPI camera dips (with up to 5 replicates at each location) will be collected at one end of the tow where sediments were appropriate for the deployment of this gear type. These data will be linked to the sediment and benthic samples so should occur at an equivalent site to those samples.

At each environmentally sampled location, the decision on whether to deploy the SPI camera was taken based on the sample observed from the mini-Mini-Hamon grab and the catch observed from the 4 m beam trawl deployment. The SPI was not deployed where there was any chance of causing damage to it. A total of 13 deployments were carried out in the Celtic Sea area with a further 23 in the western Channel. At each site, a total of five ‘hops’ were made with the camera penetrating the sediment and taking

two still photographs at each hop. These still photographs were stored for subsequent analysis back at Lowestoft. Figure 5 below shows the sediment profile images taken at two survey sites (five 'hops' at each).

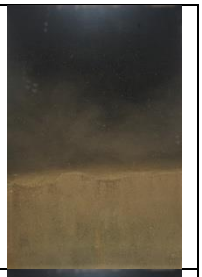
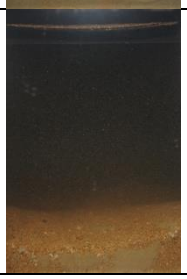
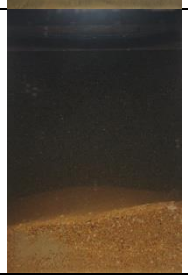
MONT_CEND0417_ST5SN6_STN_164_A					
MONT_CEND0417_ST5SN4_STN_170_A1					

Figure 5 Typical SPI camera images taken at two survey locations

E) 2 m beam trawl deployments.

Where SPI camera deployment is not possible, a 2m beam trawl may be deployed to supplement and provide contrast to the fish/benthic catches observed in the 4m beams.

A 2 m Jennings beam trawl deployment was attempted at every environmental sampling location where the ground allowed at a speed of around 0.5 knots and using a warp to to depth ration of 3:1. A total of 25 deployments were carried out in the Celtic Sea with one of those being deemed invalid due to a large catch of mud. In the western Channel, a total 47 deployments were carried out with just two of these being invalid.

The catch was photographed and then washed over a 5 mm sieve. The resulting sample was then sorted and identified by species and then individual weights recorded. Additionally, the catches were weighed and measured (as appropriate) and recorded using the EDC system for subsequent uploading into the FSS. Figure 6 (below) shows the 2 m Jennings beam trawl used on the survey, along with a typical catch on the 5 mm sieve ready for washing and sorting.

Figure 6 - A 2m Jennings's beam trawl with a typical catch ready for sieving.

Aim 2) To continuously log sub-surface (3m) salinity, temperature, fluorometry and other environmental data using the 'Ferrybox'. Additionally, a Flow-cytometer (phytoplankton) and Plankton Image Analyser (PIA) (zooplankton) may be run in conjunction with the Ferrybox.

The Ferrybox system was set up and running for the duration of the survey sending data back 'real time' to Cefas Lowestoft. In addition, the flow cytometer was set up in the CTD annex on the vessel to constantly monitor phytoplankton at and just below the surface with data again being remotely available at Cefas Lowestoft. Calibration of this equipment took place in the form of a filtration of surface seawater for chlorophyll daily between the hours of 1100h and 1300h following an SOP provided. In addition, a suspended particle analysis (SPA) sample was taken and frozen in a -20°C freezer for subsequent analysis.

The Plankton Image Analyser (PIA) is a real-time high-speed instrument developed by Phil Culverhouse (University of Plymouth) that continuously takes samples from the same inlet as the CALPS and Ferrybox systems and was set-up in the ship's 'garage'. This was set up with the help of Julian Tilbury (University of Plymouth) who also remained in touch daily with staff operating the kit in order to continue the process of

improvement. The PIA takes images of the passing particles within the water, recording them to a file that is sent to a piece of recognition software which classifies them into categories corresponding zooplankton taxonomic groups. A great deal of effort went into this kit meaning that good progress was made in the collection of quality images.

Aim 3) To record details of surface sightings of any marine mammals, sea turtles and large pelagic fish, and record observations on jellyfish aggregations.

A single sighting of one common dolphin (*Delphinus delphis*) was recorded and details provided to the Sea Watch Foundation. No sightings of sea turtles, large pelagic fish or jellyfish aggregations were made.

SECONDARY SURVEY AIMS:

Aim 4) Collect water samples for caesium and tritium analysis under SLA22 (T Bailey – Cefas Lowestoft).

All eleven samples targeted were successfully collected. At each of the selected locations, 2 x 25 litre carboys and a 1 litre bottle of seawater were collected.

Aim 5) To tag/release specimens of various commercially exploited skates (Rajidae) and other selected elasmobranches.

Over the course of the survey a total of 46 elasmobranch specimens were tagged and released. These are detailed in Table 5 below.

Table 5 : Tagging of elasmobranch species

Common Name	Scientific name	Number tagged/released
Starry smooth-hound	*Mustelus asterias*	12
Undulate Ray	*Raja undulata*	11
Cuckoo ray	*Leucoraja naevus*	6
Common (Blue) skate	*Dipturus batis*	6
Blonde Ray	*Raja brachyura*	5
Shagreen ray	*Leucoraja fullonica*	2
Spotted ray	*Raja montagui*	2
Small-eyed ray	*Raja microocellata*	1
Nursehound	*Scyliorhinus stellaris*	1
	Total	46

Aim 6) Collect specimens of selected species for ID purposes as well as length-weight measurements where still required.

A total of 295 individual length/weight measurements were taken from a range of fish and shellfish species and these are detailed in Table 6 below.

Table 6: Individual length/weight measurements taken

Common Name	**Scientific name**	**Number measured**	**Common Name**	**Scientific name**	**Number measured**
Norwegian lobster	*Nephrops norvegicus*	84	Red bandfish	*Cepola rubescens (c. macrophthalma)*	1
Norwegian topknot	*Zeugopterus norvegius*	34	Common topknot	*Zeugopterus punctatus*	1
Sand goby	*Pomatoschistus spp*	33	Four-bearded rockling	*Enchelyopus cimbrius*	1
Common skate complex (Blue skate)	*Dipturus* cf. *flossada*	19	Spurdog	*Squalus acanthias*	1
Jeffrey's goby	*Buenia jeffreysii*	19	Tompot blenny	*Parablennius gattorugine*	1
Steven's goby	*Gobius gasteveni*	15	Couch's sea-bream	*Pagrus pagrus*	1
Ekstrom's topknot	*Zeugopterus regius*	10	Worm pipefish	*Nerophis*	1
Common spiny lobster	*Palinurus elephas*	9	Cuckoo ray	*Leucoraja naevus*	1
Northern rockling	*Ciliata septentrionalis*	7	Crystal goby	*Crystallogobius linearis*	1
Greater fork-beard	*Phycis blennoides*	6	Spotted ray	*Raja montagui*	1
Frie's goby	*Lesueurigobius friesii*	6	Long-rough dab	*Hippoglossoides platessoides*	1
Two spot clingfish	*Diplecogaster bimaculata*	6	Horse mackerel	*Trachurus trachurus*	1
Spotted dragonet	*Callionymus maculatus*	4	Hake	*Merluccius merluccius*	1
Norway bullhead	*Micrenophrys*	4	Immaculate sandeel	*Hyperoplus immaculatus*	1
Black goby	*Gobius niger*	3	Tompot blenny	*Parablennius gattorugine*	1
Boarfish	*Capros aper*	3	Couch's seabream	*Pagrus pagrus*	1
Yarrell's blenny	*Chirolophis ascanii*	2	Garfish	*Belone belone*	1
Lesser forkbeard	*Raniceps raninus*	2	Reticulated dragonet	*Callionymus reticulatus*	1
Butterfly blenny	*Blennius ocellaris*	2	Blonde ray	*Raja brachyura*	1
Seasnail	*Liparis liparis*	2	Pearlfish	*Echiodon drummondi*	1
Scale-rayed wrasse	*Acantholabrus palloni*	2	Blue whiting	*Micromesistius poutassou*	1
Common dragonet	*Callionymus lyra*	2			
				Total	**295**

Aim 7) To collect length and weight measurements of jellyfish caught.

All jellyfish caught were measured where possible as many were not intact. These were entered as part of the total catch into the EDC system.

Aim 8) To collect specimens of cuttlefish to aid identification and for Cefas on-going projects.

A total of 20 samples of cuttlefish were retained providing a representative collection of species common cuttlefish (*Sepia officinalis),* Elegant cuttlefish (*Sepia elegans*) and Pink cuttlefish (*Sepia orbignyana*) were collected to as part of on-going Cefas cephalopod projects. (V Laptikhovsky – Cefas, Lowestoft).

Aim 9) To collect other samples in support of active Cefas projects.

a) *Fish disease collection.* As part of the integrated monitoring survey, the opportunity was taken to determine the possibility of carrying out fish disease sample collection in support of the CSEMP programme of work on DCF fisheries surveys. Two Cefas staff members involved with CSEMP participated on the survey to assess this likelihood and to collect fish/shellfish samples as possible.

b) *Acoustics information.* Fisheries acoustic data at four operating frequencies (38, 120, 200 and 333kHz) were recorded throughout the survey at an operational depth of 150m. (J Van Der Kooij – Cefas, Lowestoft)

c) *Multi-beam data*. Multibeam echosounder (MBES) data was continuously recorded throughout the survey. (S Kupschus - Cefas, Lowestoft). The MBES data associated with the trawl transects were cleaned and processed according to the relevant SOP.

d) *Whelk sample collection*. A total of 14 samples of mixed whelks (*Buccinum undatum)* and hermit crab in whelk (*Eupagurus bernhardus)* shells were retained as part on on-going shellfish projects (V Laptivhovsky – Cefas Lowestoft).

e) *Squid sample collection.* A total of 34 whole squid samples were retained for demonstrations of cephalopod ageing techniques. In addition, a further 5 samples of squid-eggs were retained to allow for species identification, embryonic stage ID and analysis of deposition time. (V Laptivhovsky – Cefas, Lowestoft).

f) *Rare species.* Two specimen of scale-rayed wrasse (*Acantholabrus palloni)* were retained for delivery to the British Natural History Museum in London.

g) *Elasmobranch collection.* A total of 22 specimens of moribund elasmobranchs found to be dead upon hauling were retained for on-going elasmobranch biological studies. These were 11 starry smooth-hound (*Mustelus asterias*); 3 small-eyed ray *(Raja microocellata),* 3 common skate (*Dipturus batis complex),* 2 blonde ray (*Raja brachyura*), 2 undulate ray (*Raja undulata)* and 1 shagreen ray (*Leucoraja fullonica).* (J Ellis / S McCully Phillips – Cefas, Lowestoft).

h) *Elasmobranch egg*-case collection. A total of 28 ‘empty’ ray and dogfish egg cases were retained for delivery to The Shark Trust.

i) *Sample identification.* A total of 67 samples of benthic and fish species requiring confirmation of species identification were retained (J Ellis, Cefas, Lowestoft).

j) *Four-bearded rockling collection.* Two samples of four-bearded rockling *(Enchelyopus cimbrius)* were collected as part on an on-going study. (L Cox - Cefas, Lowestoft)

Litter by-catch information.

Details of the bycatch of litter caught at all fishing stations were recorded separately by gear. Litter bycatch was categorized by 'type', weighed, photographed and categorized by size at every fishing station with, details of any attached organisms being recorded. In addition, a new Electronic 'App' loaded onto a small laptop was tested alongside the manual method of recording this information to test for accuracy and ease of use.

Litter was recorded at 129 of the 4m beam trawl stations (94.6%) and at 14 of the 2m beam trawl station (19.4%). The majority of the litter items caught were classified as plastic in line with previous surveys.

Micro CTD

The SAIV Micro CTD unit was attached to the 4m-beam trawl in order to record the temperature, salinity and depth profile at each station fished and this was successful in recording data on most fishing days. A total of 116 successful CTD data collections were made.

Our thanks once again go to all the officers and crew of RV Cefas Endeavour for their help, support and advice given during this survey and it is largely due to their skill and co-operation that all survey aims were achieved again this year. Additionally, our thanks also go to the shore-based P & O staff who ensured that all the equipment needed for the survey arrived to specification.

Ian Holmes
26 June 2017

INITIALLED: S Kupschus
SEEN IN DRAFT: N/A

DISTRIBUTION:

Survey participants +

S Kupschus
Cefas Fisheries Survey's SICs/2ICs
Gary Burt (for Cefas Trim)
T Bailey
J Maitland (P&O)
B Salter (P&O)
Master (Cefas Endeavour)
FCO (for France & Republic of Ireland)
Marine Management Organisation (MMO)
Welsh Government (WG)
Devon & Severn IFCA
Cornwall IFCA
Isles of Scilly IFCA
Southern IFCA
A Knights (Natural England)
Crown Estate
States of Jersey
Bailiwick of Guernsey

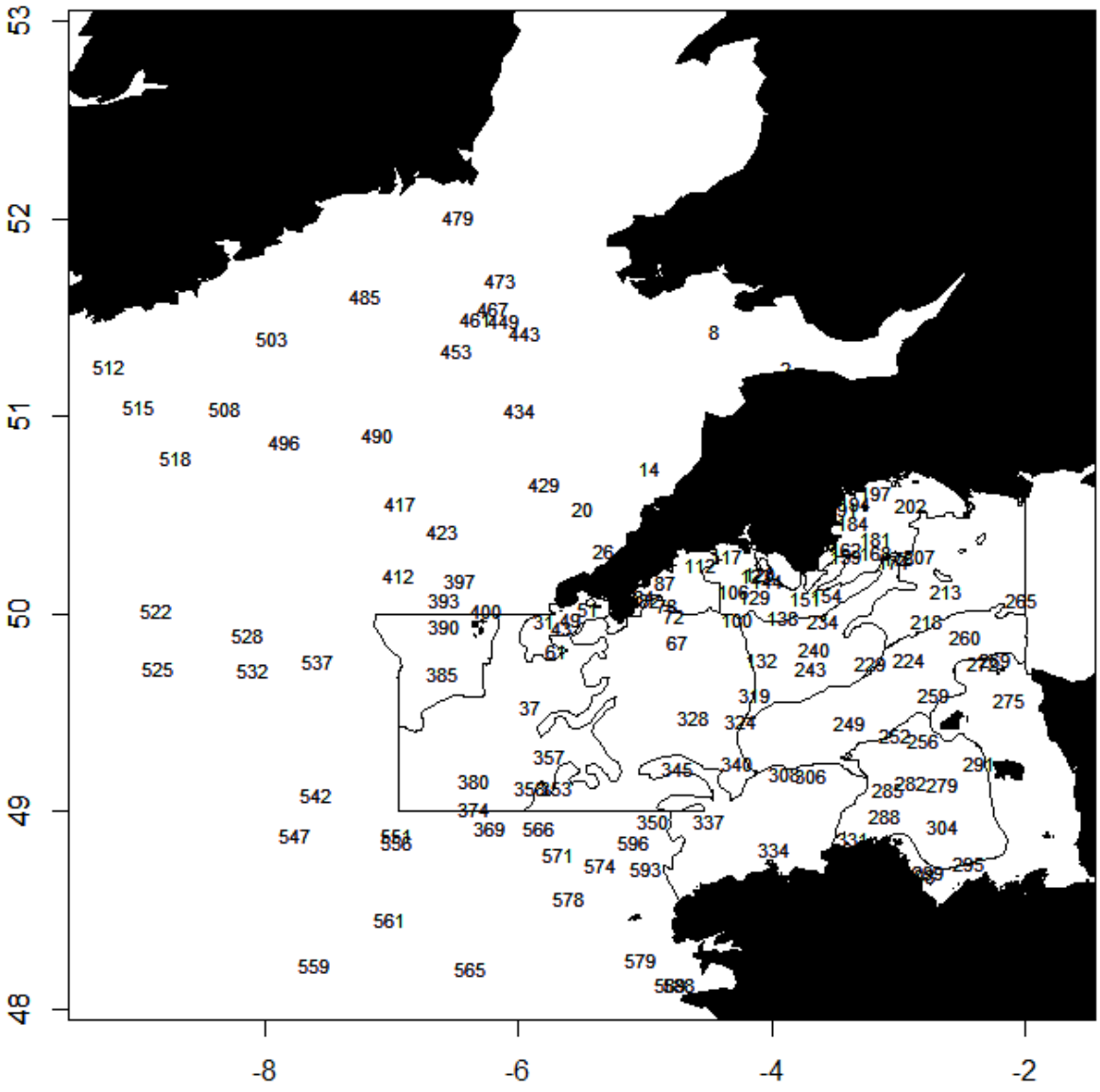


Figure 7: Chart of survey station numbers for CEND 4/17 (4m beam trawl stations only).

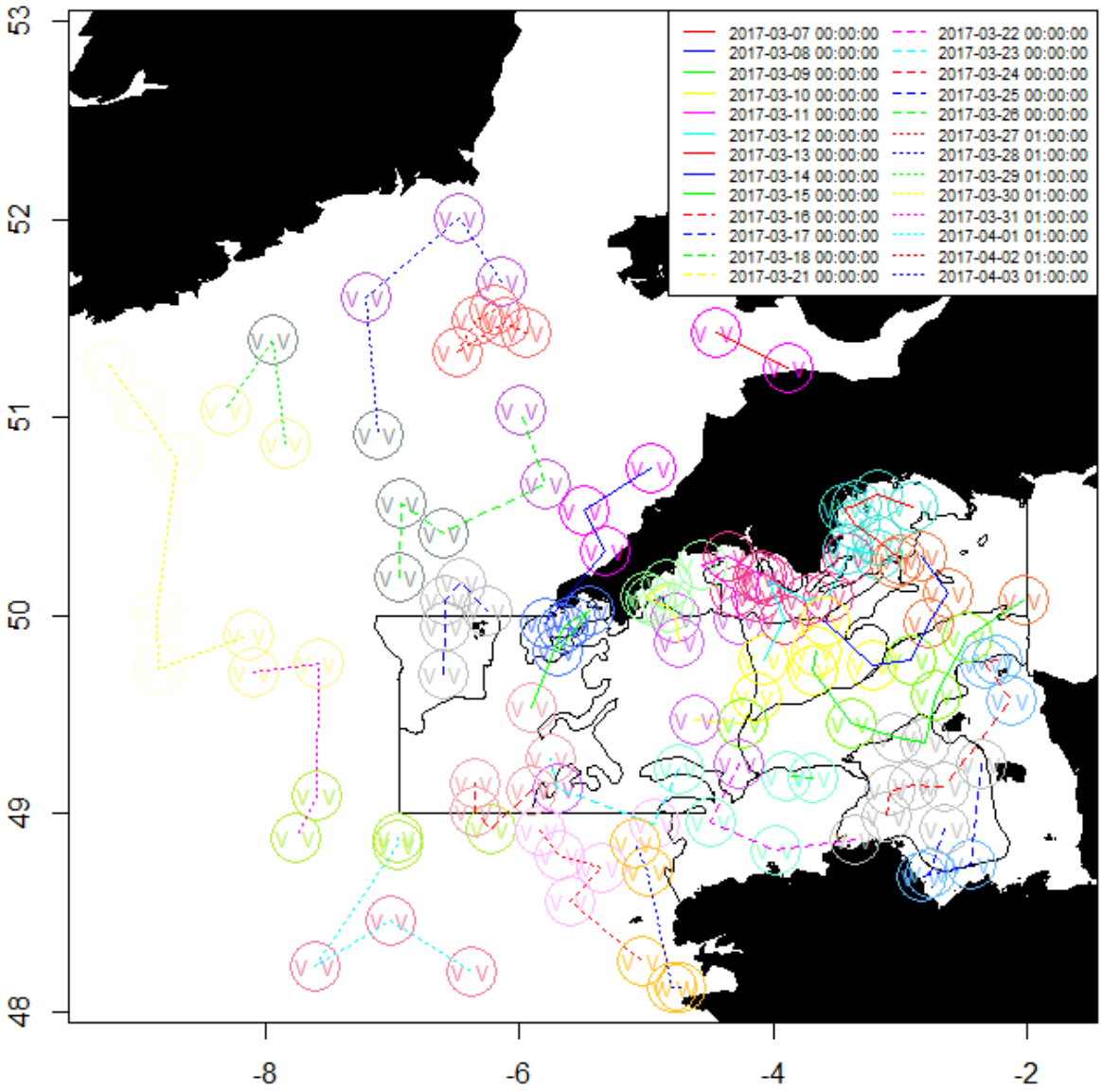


Figure 8: Survey track showing 4m beam trawl stations and deployment validity codes (V = valid; I = invalid) by day.

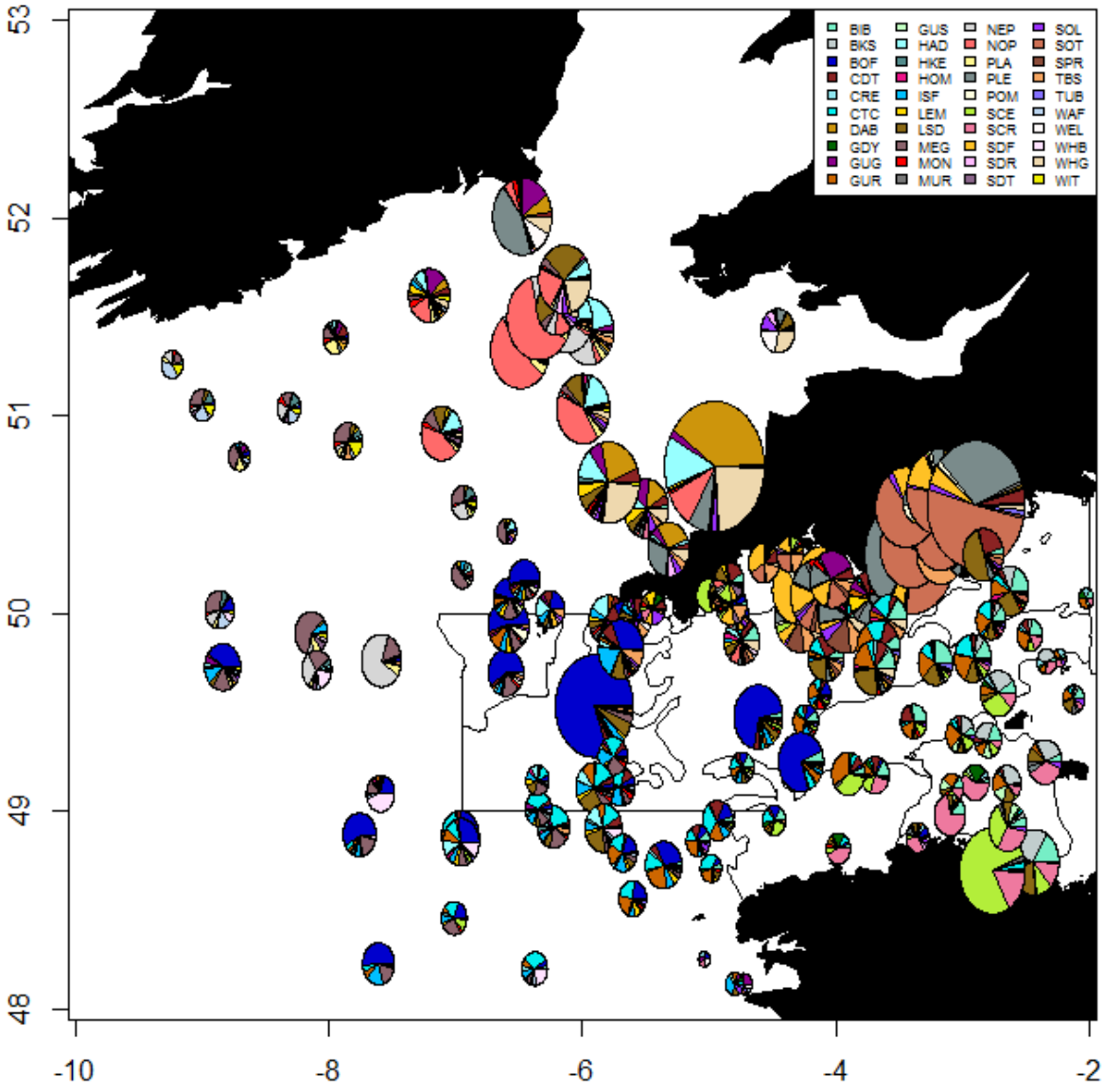


Figure 9: Species composition pie plots for Cend 4/17. Size of circles represents the size of the overall catch in numbers of the 40 most abundant species at a station with the size of the slice representing the relative proportion of each species encountered. For Cefas species codes see Table 2.

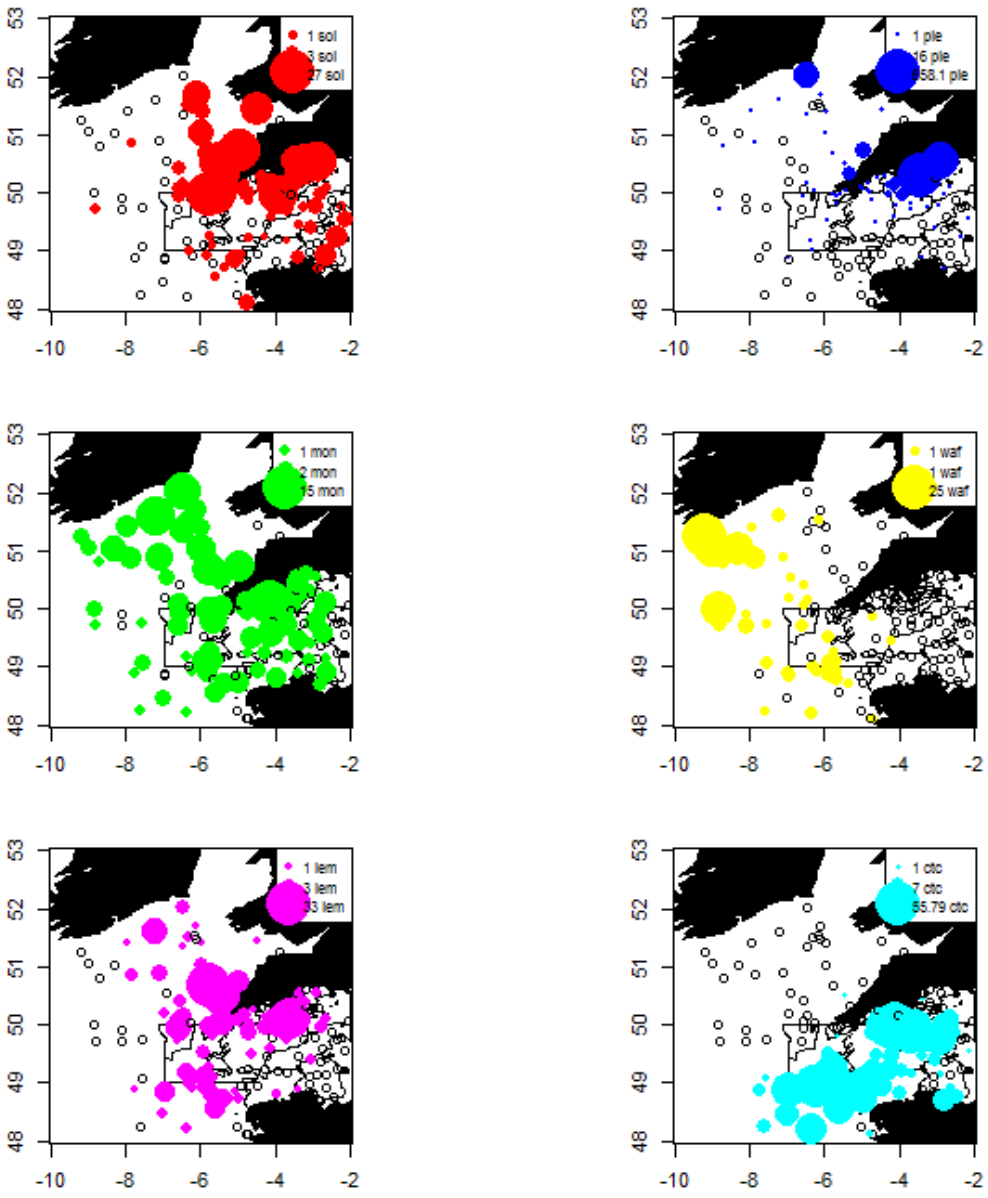


Figure 10: Distribution and numbers of major commercial species by station (see Table 2, for species codes).

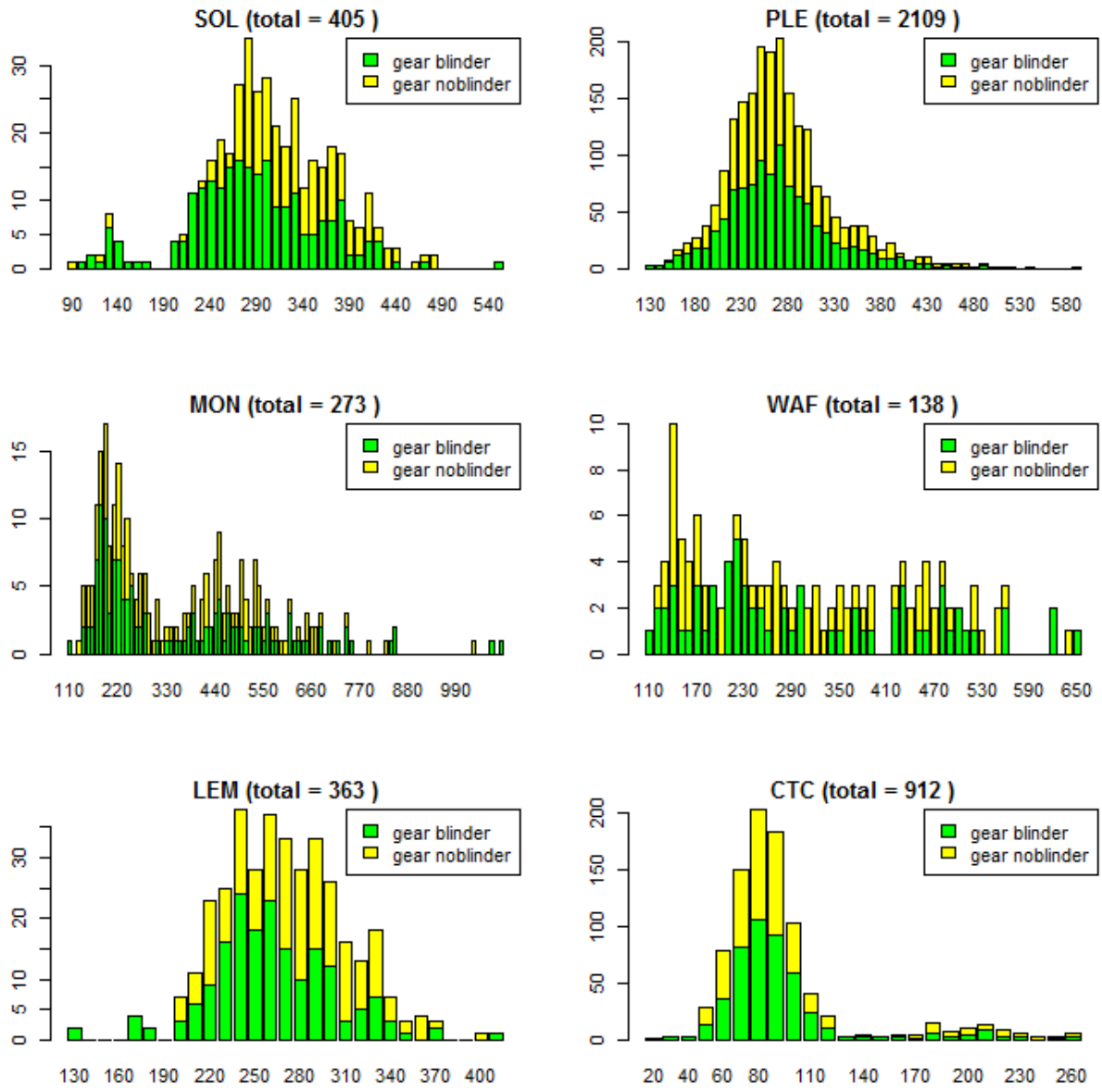


Figure 11: Length distributions (mm) for the major commercial species with total catch numbers by the two different gear types.

Appendix 1: Station Log information

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
1	07/03/2017 08:32	51.251	-3.877	51.251	-3.877	0	42.8	42.8	27	27	92	1	0	0	0.5	280	2	1009	ESM2 and Niskin
2	07/03/2017 09:02	51.248	-3.886	51.252	-3.938	2.1	43.7	45.8	28	29	94	1.3	0	0	0.5	280	2	1008	4m Beam
3	07/03/2017 13:14	51.252	-3.937	51.252	-3.937				35	35			0	0	0.5	280	2	1008	Mini-Hamon grab
4	07/03/2017 13:35	51.252	-3.937	51.252	-3.939				34	34					0.5	280	2	1008	2m Beam
5	07/03/2017 14:10	51.253	-3.942	51.253	-3.942				35	35			170	14	0.5	280	2	1007.5	Ring nets
6	07/03/2017 16:19	51.431	-4.463	51.431	-4.463				47				180	21	1		2	1006	ESM2 and Niskin
7	07/03/2017 16:31	51.433	-4.469	51.433	-4.469				46	46			180	21	1		2	1006	Ring nets
8	07/03/2017 17:03	51.430	-4.458	51.434	-4.405	2	74.9	76.9	47	45	290	1.1	180	20	1		2	1006	4m Beam
9	07/03/2017 18:24	51.434	-4.410	51.434	-4.410				47	47			180	18	1		2	1006	Mini-Hamon grab
10	07/03/2017 18:47	51.434	-4.411	51.434	-4.411				47	47			180	23	1		2	1005	SPI camera
11	07/03/2017 19:14	51.433	-4.410	51.432	-4.408				46	46			180	23	1		2	1005	2m Beam
12	08/03/2017 01:07	50.738	-4.958	50.738	-4.958	0	128.6	128.6	61	61	83	0.1	240	23	1.5	220	1.5	1004	ESM2 and Niskin
13	08/03/2017 01:20	50.743	-4.951	50.743	-4.951	0	128.9	128.9	61	61	104	0	240	23	1.5	220	1.5	1004	Ring nets
14	08/03/2017 01:50	50.742	-4.959	50.770	-4.930	2	130.9	132.9	60	58	233	1.9	240	23	1.5	220	1.5	1004	4m Beam
15	08/03/2017 03:17	50.769	-4.932	50.769	-4.932				58	58			240	27	1.5	240	1.5	1003	Mini-Hamon grab
16	08/03/2017 03:36	50.769	-4.932	50.769	-4.932				58	58			240	27	1.5	240	1.5	1003	SPI camera
17	08/03/2017 04:34	50.769	-4.932	50.770	-4.930				57	57	232	0.5	240	27	1.5	240	1.5	1003	2m Beam
18	08/03/2017 08:11	50.530	-5.497	50.530	-5.497	0	163	163	64	64	237	0.1	24	24	1	240	2.5	1004.5	ESM2 and Niskin
19	08/03/2017 08:20	50.528	-5.492	50.528	-5.492	0	163.3	163.3	65	65	237	0.1	24	24	1	240	2.5	1004.5	Ring nets
20	08/03/2017 08:46	50.532	-5.500	50.515	-5.544	1.9	164.9	166.8	65	65	237	0.1	24	24	1	240	2.5	1004.5	4m Beam
21	08/03/2017 10:20	50.518	-5.538	50.518	-5.538				66	66			240	25	1.5	240	2.5	1005	Mini-Hamon grab
22	08/03/2017 10:35	50.518	-5.538	50.518	-5.540				66	66			240	25	1.5	240	2.5	1005	2m Beam
23	08/03/2017 12:50	50.387	-5.541	50.387	-5.541				59	59			230	20	2	240	2.5	1006.5	Flow cytometer calibration
24	08/03/2017 13:45	50.330	-5.322	50.330	-5.322				39	39			250	25	2	240	2.5	1006	ESM2 and Niskin
25	08/03/2017 13:55	50.331	-5.316	50.331	-5.316				39	39			250	25	2	240	2.5	1006	Ring nets
26	08/03/2017 14:12	50.323	-5.322	50.301	-5.360	1.9	193.3	195.2	40	37	30	0.1	250	25	2	240	2.5	1006	4m Beam
27	08/03/2017 16:06	50.307	-5.350	50.307	-5.350				36	36			250	19	1.5	240	2	1007	Mini-Hamon grab
28	08/03/2017 16:23	50.307	-5.349	50.307	-5.349				37	39	225	0.2	250	19	1.5	240	2	1007	2m Beam
29	08/03/2017 22:19	49.957	-5.796	49.957	-5.796				69	69	326	1.2			0.5	240	1.5	1009	ESM2 and Niskin
30	08/03/2017 22:36	49.961	-5.791	49.961	-5.791				69	69	327	1.2	240	10	1	240	1.5	1010	Ring nets
31	08/03/2017 22:59	49.963	-5.794	49.938	-5.762	2	258.8	260.8	70	74	330	1	240	10	1	240	1.5	1010	4m Beam
32	09/03/2017 00:14	49.941	-5.765	49.941	-5.765				74	74			250	23	1	240	1.5	1010.5	Mini-Hamon grab
33	09/03/2017 00:32	49.941	-5.765	49.941	-5.765				74	74			250	23	1	240	1.5	1010.5	SPI camera
34	09/03/2017 01:07	49.941	-5.764	49.940	-5.765				74	74			250	23	1	240	1.5	1010.5	2m Beam
35	09/03/2017 04:11	49.533	-5.899	49.533	-5.899	0	288.1	288.1	107	107			250	23	1	240	1.5	1010.5	ESM2 and Niskin
36	09/03/2017 04:25	49.533	-5.893	49.533	-5.893		288.4		107	107	165	0.4	250	23	1	240	1.5	1010.5	Ring nets
37	09/03/2017 04:49	49.532	-5.908	49.531	-5.959	2	289.4	291.4	107	107	182	0.4	250	23	1	240	1.5	1010.5	4m Beam
37	09/03/2017 04:49	49.532	-5.908	49.531	-5.959	2	289.4	291.4	107	107	182	0.4	250	23	1	240	1.5	1010.5	Caesium and Tritium

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
38	09/03/2017 05:48	49.532	-5.959	49.532	-5.959				107	107			230	15	0.5	240	1.5	1012	Mini-Hamon grab
39	09/03/2017 06:08	49.532	-5.959	49.532	-5.958				107	104			230	15	0.5	240	1.5	1012	SPI camera
40	09/03/2017 06:42	49.532	-5.957	49.532	-5.955				107	107	230	0.6	230	11	0.5	240	0.5	1012.5	2m Beam
41	09/03/2017 09:43	49.938	-5.673	49.938	-5.673	0	319.7	319.7	74	74	304	0.8	270	8	0.5	240	1.5	1013	ESM2 and Niskin
42	09/03/2017 09:58	49.939	-5.674	49.939	-5.674	0	319.7	319.7	74	74	304	0.8	270	8	0.5	240	1.5	1013	Ring nets
43	09/03/2017 10:25	49.931	-5.662	49.910	-5.621	2.1	320.6	322.7	74	74	304	0.7	270	8	0.5	240	1.5	1014	4m Beam
44	09/03/2017 11:38	49.910	-5.623	49.910	-5.627				76	76					0.5	240	1.5	1015	Mini-Hamon grab
45	09/03/2017 11:56	49.910	-5.623	49.910	-5.623				75	75					0.5	240	1.5	1015	SPI camera
46	09/03/2017 12:26	49.910	-5.622	49.910	-5.623				77	77					0.5	240	1.5	1015	2m Beam
47	09/03/2017 12:44	49.915	-5.623	49.915	-5.623				77						0.5	240	1.5	1015	Flow cytometer calibration
48	09/03/2017 13:11	49.980	-5.594	49.980	-5.594				70		325	0.1			0.5	240	1.5	1015	ESM2 and Niskin
49	09/03/2017 13:35	49.975	-5.584	49.946	-5.558	1.9	329.8	331.7	70	73	325	0.1			0.5	240	1.5	1015	4m Beam
50	09/03/2017 15:14	50.029	-5.441	50.029	-5.441				53						0.5	240	1.5	1014.5	ESM2 and Niskin
51	09/03/2017 15:29	50.026	-5.447	50.022	-5.498	2	339.9	341.9	57	58	94	0.4			0.5	240	1.5	1014.5	4m Beam
52	09/03/2017 16:55	50.026	-5.447	50.026	-5.447				56	56					0.5	240	1.5	1015	Ring nets
53	09/03/2017 17:48	50.026	-5.452	50.026	-5.452				55	55					0.5	230	1.5	1015.5	Mini-Hamon grab
54	09/03/2017 18:04	50.026	-5.453	50.026	-5.456				55	55	150	0.1			0.5	230	1.5	1015.5	2m Beam
55	09/03/2017 18:57	50.026	-5.453	50.026	-5.453				67	67			0	0	0.5	230	1.5	1015.5	Mini-Hamon grab
56	09/03/2017 19:09	50.026	-5.453	50.026	-5.453				67	67			0	0	0.5	230	1.5	1015.5	Ring nets
57	09/03/2017 19:22	49.974	-5.582	49.974	-5.582				67	67			0	0	0.5	230	1.5	1015.5	SPI camera
58	09/03/2017 19:45	49.974	-5.581	49.975	-5.579				67	67			0	0	0.5	230	1.5	1015.5	2m Beam
59	09/03/2017 22:30	49.833	-5.698	49.833	-5.698				86	86					0.5	230	1.5	1016	ESM2 and Niskin
60	09/03/2017 22:51	49.833	-5.698	49.833	-5.698				85	85					0.5	230	1.5	1016	Ring nets
61	09/03/2017 23:15	49.819	-5.699	49.794	-5.666	2	373.5	375.5	88	90	325	0.7			0.5	230	1.5	1016	4m Beam
62	10/03/2017 00:23	49.795	-5.669	49.795	-5.669				90	90			0	0	0.5	230	1.5	1016	Mini-Hamon grab
63	10/03/2017 00:40	49.795	-5.669	49.795	-5.669				91	90			0	0	0.5	230	1.5	1016	SPI camera
64	10/03/2017 01:17	49.795	-5.668	49.794	-5.669				90	90			0	0	0.5	230	1.5	1016	2m Beam
65	10/03/2017 04:47	49.860	-4.738	49.860	-4.738	0	413.9	413.9	87	87			0	0	0.5	280	1.1	1016	ESM2 and Niskin
66	10/03/2017 04:58	49.862	-4.733	49.862	-4.733	0	414.1	414.1	89	89			0	0	0.5	280	1.1	1016	Ring nets
67	10/03/2017 05:16	49.861	-4.744	49.850	-4.793	2	415	417	88	88	65	0.4	0	0	0.5	280	1.1	1016	4m Beam
68	10/03/2017 06:20	49.851	-4.792	49.851	-4.792				87	87					0.5	240	1.5	1016	Mini-Hamon grab
69	10/03/2017 06:34	49.851	-4.794	49.850	-4.796				87	87					0.5	240	1.5	1015	2m Beam
70	10/03/2017 08:08	49.984	-4.787	49.984	-4.787	0	426.8	426.8	79	79	222	0.5	0	0	0.5	240	1.5	1015	ESM2 and Niskin
71	10/03/2017 08:15	49.984	-4.789	49.984	-4.789				79	79	222	0.5			0.5	240	1.5	1015	Ring nets
72	10/03/2017 08:32	49.992	-4.779	50.018	-4.746	2	427.5	429.5	78	76	220	0.5	0	0	0.5	240	1.5	1015	4m Beam
73	10/03/2017 10:01	50.017	-4.748	50.017	-4.748				75	75			170	8	0.5	240	1.5	1015	Mini-Hamon grab
74	10/03/2017 10:15	50.017	-4.749	50.018	-4.748				75	75			170	8	0.5	240	1.5	1015	2m Beam
75	10/03/2017 11:10	50.044	-4.823	50.044	-4.823	0	435.1	435.1	74	74	223	0.3	170	14	0.5	240	1.5	1015	ESM2 and Niskin
76	10/03/2017 11:21	50.045	-4.827	50.045	-4.827	0	435.2	435.2	74	74	223	0.3	170	14	0.5	240	1.5	1015	Ring nets
77	10/03/2017 12:05	50.047	-4.830	50.047	-4.830				77				170	15	0.5	240	1.5	1015	Flow cytometer calibration

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
78	10/03/2017 13:12	50.046	-4.829	50.068	-4.791	2	441.5	443.5	77	76	326	0.1	160	15	0.5	240	1.5	1014	4m Beam
79	10/03/2017 14:22	50.066	-4.793	50.066	-4.793				76	76			180	12	0.5	210	1	1013.5	Mini-Hamon grab
80	10/03/2017 14:35	50.067	-4.793	50.066	-4.793				76	76	23	0.4	200	14	0.5	210	1	1012.5	2m Beam
81	10/03/2017 15:41	50.072	-4.960	50.072	-4.960				69	69			180	12	0.5	210	1	1012	ESM2 and Niskin
82	10/03/2017 15:54	50.076	-4.971	50.082	-5.022	2	452.9	454.9	68	58	33	0.5	180	12	0.5	210	1	1012	4m Beam
83	10/03/2017 16:42	50.095	-5.016	50.095	-5.016				47	47			180	10	0.5	210	1	1012	ESM2 and Niskin
84	10/03/2017 16:58	50.092	-5.002	50.111	-4.959	2.1	457.1	459.2	58	60	45	0.4	180	10	0.5	210	1	1012	4m Beam
85	10/03/2017 18:11	50.152	-4.856	50.152	-4.856	0	463.6	463.6	63	63	36	0.1	180	11	0.5	210	1	1012	ESM2 and Niskin
86	10/03/2017 18:22	50.153	-4.854	50.153	-4.854	0	464	464	62	62	188	0	180	11	0.5	210	1	1012	Ring nets
87	10/03/2017 18:33	50.160	-4.843	50.182	-4.804	2	464.6	466.6	62	60	190	0	180	11	0.5	210	1	1012	4m Beam
88	10/03/2017 19:35	50.180	-4.800	50.180	-4.800				60	60			160	10	0.5	210	1	1012	Mini-Hamon grab
89	10/03/2017 19:48	50.180	-4.799	50.179	-4.797				60	61	211	0.2	160	11	0.5	210	0.7	1011.5	2m Beam
90	10/03/2017 21:04	50.095	-5.023	50.095	-5.023				32	32			60	10	0.5	210	0.5	1011.5	Mini-Hamon grab
91	10/03/2017 21:11	50.096	-5.023	50.096	-5.023				32	32			60	10	0.5	210	0.7	1011.5	Ring nets
92	10/03/2017 21:22	50.095	-5.023	50.095	-5.023				32	32			60	10	0.5	210	0.8	1011.5	SPI camera
93	10/03/2017 21:49	50.095	-5.024	50.084	-5.018				31	30			60	10	0.5	210	0.7	1011.5	2m Beam
94	10/03/2017 22:34	50.084	-5.018	50.084	-5.018				54	54			100	15	0.5	210	0.5	1011.5	Ring nets
95	10/03/2017 22:43	50.084	-5.018	50.084	-5.018				54	54			100	15	0.5	210	0.5	1011.5	Mini-Hamon grab
96	10/03/2017 22:56	50.084	-5.018	50.084	-5.018				54	55			100	15	0.5	210	0.5	1011.5	SPI camera
97	10/03/2017 23:25	50.084	-5.018	50.155	-5.161				54	55	227	0.2	100	17	0.5	210	0.5	1011	2m Beam
98	11/03/2017 03:20	49.981	-4.282	49.981	-4.282	0	510	510	80	80	79	0.6	120	11	0.5	210	0.5	1008.5	ESM2 and Niskin
99	11/03/2017 03:31	49.984	-4.277	49.984	-4.277	0	510.2	510.2	79	79	81	0.6	120	11	0.5	210	0.5	1008.5	Ring nets
100	11/03/2017 03:52	49.977	-4.278	49.969	-4.328	1.9	511.4	513.3	80	80	79	0.8	120	11	0.5	210	0.5	1008.5	4m Beam
101	11/03/2017 04:47	50.055	-4.813	50.055	-4.813				80	80			120	11	0.5	210	0.5	1008.5	Mini-Hamon grab
102	11/03/2017 04:58	49.970	-4.324	49.970	-4.324				79	80			120	11	0.5	210	0.5	1008.5	SPI camera
103	11/03/2017 05:27	49.970	-4.325	49.969	-4.326				79	79			120	11	0.5	210	0.5	1008.5	2m Beam
104	11/03/2017 06:39	50.110	-4.291	50.110	-4.291	0	523.8	523.8	74	74	39	0.8	130	8	0.5	210	1.1	1008	ESM2 and Niskin
105	11/03/2017 06:51	50.112	-4.287	50.112	-4.287	0	524	524	74	74	114	0.3	130	8	0.5	210	1.1	1008	Ring nets
106	11/03/2017 07:10	50.118	-4.298	50.137	-4.340	2	524.8	526.8	74	73	120	0.2	130	6	0.5	210	1	1008	4m Beam
107	11/03/2017 08:35	50.135	-4.336	50.135	-4.336				70	70			0	0	0.5	210	1	1008	Mini-Hamon grab
108	11/03/2017 09:24	50.135	-4.336	50.135	-4.336				69	69			0	0	0.5	210	1	1008	SPI camera
109	11/03/2017 09:54	50.135	-4.336	50.136	-4.334				70	70	255	0.3	0	0	0.5	0	0	1008	2m Beam
110	11/03/2017 11:26	50.251	-4.569	50.251	-4.569	0	542.7	542.7	53	53			0	0	0.5	0	0	1008	ESM2 and Niskin
111	11/03/2017 11:30	50.251	-4.570	50.251	-4.570	0	542.8	542.8	53	53	254	0.4	0	0	0.5	0	0	1008	Ring nets
112	11/03/2017 11:53	50.255	-4.570	50.266	-4.521	1.9	543.7	545.6	54	52	258	0.4			0.5			1010	4m Beam
112	11/03/2017 11:53	50.255	-4.570	50.266	-4.521	1.9	543.7	545.6	54	52	258	0.4			0.5			1010	Flow cytometer calibration
113	11/03/2017 12:56	50.263	-4.518	50.263	-4.518				51	51			0	0	0.5	0	0	1010	Mini-Hamon grab
114	11/03/2017 13:09	50.263	-4.519	50.263	-4.517				52	51	273	0.3	0	0	0.5	0	0	1008	2m Beam
115	11/03/2017 14:20	50.303	-4.342	50.303	-4.342		554.6		48		340	0.2			0.2			1008	ESM2 and Niskin
116	11/03/2017 14:30	50.305	-4.346	50.305	-4.346		554.8		44	44	356	0.1			0.2			1008	Ring nets
117	11/03/2017 14:49	50.299	-4.361	50.279	-4.402	1.9	555.9	557.8	49	54	20	0.2			0.2			1007	4m Beam

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
118	11/03/2017 16:39	50.213	-4.102	50.213	-4.102		570.6		62		91	0.7			0.2			1007	ESM2 and Niskin
119	11/03/2017 16:48	50.214	-4.098	50.214	-4.098		570.7		62	62	92	0.7			0.2			1007	Ring nets
120	11/03/2017 17:04	50.207	-4.092	50.206	-4.144	2	571.9	573.9	63	63	95	0.7			0.2			1007	4m Beam
121	11/03/2017 18:04	50.194	-4.114	50.194	-4.114		575.8		64		109	0.7			0.2			1007	ESM2 and Niskin
122	11/03/2017 18:14	50.195	-4.110	50.195	-4.110		576		63	63	110	0.7			0.2			1007	Ring nets
123	11/03/2017 18:27	50.197	-4.120	50.210	-4.167	2	576.6	578.6	64	62	110	0.6			0.2			1007	4m Beam
124	11/03/2017 19:18	50.208	-4.161	50.208	-4.161				61	61			0	0	0.5	0	0	1006.5	Mini-Hamon grab
125	11/03/2017 19:28	50.208	-4.161	50.208	-4.161				61	61			0	0	0.5	0	0	1006.5	SPI camera
126	11/03/2017 19:47	50.208	-4.162	50.100	-4.128				61	61	135	0.3	0	0	0.5	0	0	1006.5	2m Beam
127	11/03/2017 20:54	50.100	-4.128	50.100	-4.128		586.8		72		259	0.1			0.2			1007	ESM2 and Niskin
128	11/03/2017 21:07	50.100	-4.130	50.100	-4.130	0	586.9	586.9	72	72	259	0.1			0.2			1007	Ring nets
129	11/03/2017 21:21	50.092	-4.134	50.061	-4.152	2	587.5	589.5	72	73	262	0.2			0.2			1007	4m Beam
130	12/03/2017 00:15	49.776	-4.095	49.776	-4.095	0	609	609	77	77	257	0.9	220	10	0.5	0	0	1007	ESM2 and Niskin
131	12/03/2017 00:25	49.775	-4.099	49.775	-4.099	0	609.1	609.1	78	78	257	0.9	220	10	0.5	0	0	1007	Ring nets
132	12/03/2017 00:47	49.774	-4.078	49.774	-4.078	2	610	612	79	78	256	0.8	220	10	0.5	0	0	1007	4m Beam
133	12/03/2017 01:52	49.773	-4.036	49.773	-4.036				78	78	257	0.9	220	10	0.5	0	0	1007	Mini-Hamon grab
134	12/03/2017 02:08	49.773	-4.036	49.773	-4.036				79	79			220	10	0.5	0	0	1007	SPI camera
135	12/03/2017 02:43	49.773	-4.036	49.773	-4.034				78	78	0	0	220	10	0.5	0	0	1007	2m Beam
136	12/03/2017 04:24	49.983	-3.919	49.983	-3.919		627		79		97	0.8	280	10	0.5			1005	ESM2 and Niskin
137	12/03/2017 04:31	49.984	-3.914	49.984	-3.914		627.3		79	79	97	0.8	280	10	0.5			1005	Ring nets
138	12/03/2017 04:50	49.984	-3.918	49.986	-3.969	2	628	630	78	78	96	1.2	280	1				1005	4m Beam
139	12/03/2017 05:45	49.986	-3.964	49.986	-3.964				77	77			280	0	0	0	0	1005	ESM2 and Niskin
140	12/03/2017 06:01	49.986	-3.964	49.986	-3.964				77	77			280	0	0	0	0	1005	SPI camera
141	12/03/2017 06:26	49.986	-3.965	49.986	-3.968				78	78	100	1.2	280	0	0	0	0	1005	2m Beam
142	12/03/2017 08:13	50.165	-4.034	50.165	-4.034	0	643.1	643.1	65	65	134	0.9	0	0	0	0	0	1005.5	ESM2 and Niskin
143	12/03/2017 08:29	50.165	-4.028	50.165	-4.028	0	643.36	643.36	65	65	145	0.2	0	0	0	0	0	1005.5	Ring nets
144	12/03/2017 08:53	50.172	-4.033	50.200	-4.062	2	644.1	646.1	64	62	191	0.1	0	0	0	0	0	1005.5	4m Beam
145	12/03/2017 09:54	50.197	-4.059	50.197	-4.059				64	64			290	12	0.5	0	0	1009	Mini-Hamon grab
146	12/03/2017 10:04	50.197	-4.059	50.197	-4.059				60	60			290	12	0.5	0	0	1009	SPI camera
147	12/03/2017 10:29	50.197	-4.060	50.197	-4.058				64	64	270	0.5	290	12	0.5	0	0	1009	2m Beam
148	12/03/2017 12:03	50.077	-3.786	50.077	-3.786				71	71			290	15	1			1009	Flow cytometer calibration
149	12/03/2017 12:24	50.085	-3.752	50.085	-3.752		662.9		72		260	1.2	290	15	1			1009	ESM2 and Niskin
150	12/03/2017 12:36	50.083	-3.757	50.083	-3.757		663.1		71	71	261	1.3	330	13	0.5			1008.5	Ring nets
151	12/03/2017 12:52	50.079	-3.738	50.078	-3.687	2	664	666	70	71	259	1.4	330	13	0.5			1008.5	4m Beam
151	12/03/2017 12:52	50.079	-3.738	50.078	-3.687	2	664	666	70	71	259	1.4	330	13	0.5			1008.5	Caesium and Tritium
152	12/03/2017 14:14	50.101	-3.582	50.101	-3.582		671		71		240	1.5	340	14	0.5			1008.5	ESM2 and Niskin
153	12/03/2017 14:23	50.098	-3.585	50.098	-3.585		671.1		70	70	240	1.5	330	19	0.5			1008.5	Ring nets
154	12/03/2017 14:37	50.100	-3.571	50.111	-3.522	2	671.9	673.9	70	68	234	1.3	330	19	0.5			1008.5	4m Beam
155	12/03/2017 15:32	50.111	-3.525	50.111	-3.525				67	67			320	22	0.5	310	1.5	1009.5	Mini-Hamon grab
156	12/03/2017 15:45	50.110	-3.527	50.111	-3.526				68	69	91	0.1	320	22	0.5	310	1.5	1009.5	2m Beam

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
157	12/03/2017 17:32	50.299	-3.398	50.299	-3.398		688.5		56		47	0.9	320	23	1	310	1.5	1010	ESM2 and Niskin
158	12/03/2017 17:42	50.297	-3.394	50.297	-3.394		688.6		56	56	47	0.9	320	19	0.5	310	1	1011	Ring nets
159	12/03/2017 17:56	50.295	-3.415	50.293	-3.466	2.1	689.4	691.5	60	59	40	0.8	320	19	0.5	310	1	1011	4m Beam
160	12/03/2017 19:08	50.337	-3.405	50.337	-3.405		695.9		57		58	1.1	320	14	0.5	310	0.5	1012	ESM2 and Niskin
161	12/03/2017 19:21	50.338	-3.398	50.338	-3.398		696.1		57		57	1.1	320	14	0.5	310	0.5	1012	Ring nets
162	12/03/2017 19:32	50.334	-3.407	50.314	-3.448	2	696.7	698.7	57	57	57	1.1	320	14	0.5	310	0.5	1012	4m Beam
163	12/03/2017 20:25	50.315	-3.445	50.315	-3.445				57	57			320	12	0.5	310	0.5	1013	Mini-Hamon grab
164	12/03/2017 20:39	50.315	-3.445	50.315	-3.445				56	56			320	12	0.5	310	0.5	1013	SPI camera
165	12/03/2017 20:56	50.315	-3.446	50.315	-3.450				56	56	73	0.4	320	12	0.5	310	0.5	1013	2m Beam
166	12/03/2017 22:54	50.316	-3.161	50.316	-3.161		711.6		58		188	0.1	330	15	0.5	310	0.5	1015	ESM2 and Niskin
167	12/03/2017 23:07	50.311	-3.159	50.311	-3.159		711.9		58		209	0.2	330	15	0.5	310	0.5	1015	Ring nets
168	12/03/2017 23:27	50.310	-3.172	50.320	-3.122	2	713.5	715.5	58	57	216	0.4	330	15	0.5	310	0.5	1015	4m Beam
169	13/03/2017 00:29	50.331	-3.121	50.331	-3.121				57	57			330	15	0.5	310	0.5	1015	Mini-Hamon grab
170	13/03/2017 00:45	50.331	-3.121	50.332	-3.124				56	56			330	15	0.5	310	0.5	1015	SPI camera
171	13/03/2017 01:15	50.331	-3.121	50.319	-3.121				57	57	232	1.4	330	15	0.5	310	0.5	1015	2m Beam
172	13/03/2017 02:08	50.268	-3.043	50.268	-3.043	0	722.1	722.1	58	58	220	0.9	340	16	0.5	310	0.5	1017.5	ESM2 and Niskin
173	13/03/2017 02:17	50.265	-3.046	50.265	-3.046	0	722.3	722.3	58	58			340	16	0.5	310	0.5	1017.5	Ring nets
174	13/03/2017 02:30	50.267	-3.037	50.271	-3.025	0.5	723	723.5	59	58	239	1.3	330	15	0.5	310	0.5	1015	4m Beam
175	13/03/2017 03:16	50.285	-2.993	50.301	-2.948	2	727.6	729.6	59	58	261	0.9	330	15	0.5	310	0.5	1015	4m Beam
175	13/03/2017 03:16	50.285	-2.993	50.301	-2.948	2	727.6	729.6	59	58	261	0.9	330	15	0.5	310	0.5	1015	Caesium and Tritium
176	13/03/2017 04:33	50.298	-2.956	50.298	-2.956				59	59			340	12	0.5	310	0.5	1019	Mini-Hamon grab
177	13/03/2017 04:45	50.298	-2.956	50.298	-2.955				59	59			340	12	0.5	310	0.5	1019	SPI camera
178	13/03/2017 05:10	50.298	-2.955	50.299	-2.956				59	59	4	0.3	340	12	0.5	310	0.5	1019	2m Beam
179	13/03/2017 06:53	50.388	-3.178	50.388	-3.178	0	742.2	742.2	57	57	53	1.2	340	11	0.5	310	1	1020	ESM2 and Niskin
180	13/03/2017 06:56	50.389	-3.176	50.389	-3.176	0	742.3	742.3	57	57			340	11	0.5	310	1	1020	Ring nets
181	13/03/2017 07:10	50.384	-3.178	50.366	-3.222	1.9	742.9	744.8	57	57	53	1.3	340	11	0.5	310	1	1020	4m Beam
182	13/03/2017 08:53	50.464	-3.358	50.464	-3.358	0	753.9	753.9	37	37	52	0.5	330	11	0.5	310	1	1021	ESM2 and Niskin
183	13/03/2017 08:59	50.465	-3.356	50.465	-3.356	0	754	754	36	36	54	0.5	330	11	0.5	310	1	1021	Ring nets
184	13/03/2017 09:15	50.461	-3.360	50.439	-3.399	2	754.5	756.5	37	37	59	0.5	330	10	0.5	310	1	1021	4m Beam
185	13/03/2017 10:13	50.439	-3.397	50.439	-3.397				37	37					0.2			1023	Mini-Hamon grab
186	13/03/2017 10:23	50.439	-3.397	50.439	-3.397				36	36					0.2			1023	SPI camera
187	13/03/2017 10:46	50.439	-3.396	50.439	-3.399				36	35	0	0			0.2			1024	2m Beam
188	13/03/2017 12:10	50.535	-3.455	50.535	-3.455				35						0.3			1024	Flow cytometer calibration
189	13/03/2017 12:12	50.535	-3.455	50.535	-3.455		765.6		18		180	0.4			0.2			1023.5	ESM2 and Niskin
190	13/03/2017 12:27	50.534	-3.455	50.534	-3.455		765.7		18		180	0.4			0.2			1023.5	Ring nets
191	13/03/2017 12:40	50.538	-3.446	50.530	-3.419	1.1	766.6	767.7	18	21	180	0.4			0.5			1023	4m Beam
191	13/03/2017 12:40	50.538	-3.446	50.530	-3.419	1.1	766.6	767.7	18	21	180	0.4			0.5			1023	Caesium and Tritium
192	13/03/2017 13:44	50.563	-3.360	50.563	-3.360		771.3		20		214	0.9			0.2			1023	ESM2 and Niskin
193	13/03/2017 13:57	50.563	-3.359	50.563	-3.359		771.4		20		214	0.9			0.2			1023	Ring nets
194	13/03/2017 14:03	50.561	-3.344	50.548	-3.295	2	772	774	24	25	219	0.9			0.2			1023	4m Beam

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
195	13/03/2017 15:29	50.613	-3.196	50.613	-3.196		779.9		28		258	0.6			0.2			1023	ESM2 and Niskin
196	13/03/2017 15:37	50.612	-3.198	50.612	-3.198		780		28		258	0.6			0.2			1023	Ring nets
197	13/03/2017 15:47	50.616	-3.183	50.639	-3.157	2	780.7	782.7	27	28	260	0.5			0.2			1023	4m Beam
198	13/03/2017 16:54	50.623	-3.165	50.623	-3.165				28	28					0.2			1023	Mini-Hamon grab
199	13/03/2017 17:33	50.623	-3.165	50.623	-3.165				28	28					0.2			1023.5	SPI camera
200	13/03/2017 19:29	50.551	-2.896	50.551	-2.896				40	40	68	0.8	0	0	0.2			1023.5	ESM2 and Niskin
201	13/03/2017 19:41	50.553	-2.891	50.553	-2.891				40	40					0.2			1023.5	Ring nets
202	13/03/2017 19:53	50.551	-2.895	50.539	-2.944	2	796.8	798.8	41	41	70	0.8			0.2			1023.5	4m Beam
202	13/03/2017 19:53	50.551	-2.895	50.539	-2.944	2	796.8	798.8	41	41	70	0.8			0.2			1023.5	Caesium and Tritium
203	13/03/2017 20:57	50.540	-2.889	50.540	-2.889				42	42					0.2			1023.5	Mini-Hamon grab
204	13/03/2017 21:08	50.540	-2.923	50.540	-2.923				42	42					0.2			1023.5	SPI camera
205	13/03/2017 23:43	50.285	-2.850	50.285	-2.850	0	817	817	57	57	192	0.1	0	0	0.5	0	0	1024	ESM2 and Niskin
206	14/03/2017 23:54	50.284	-2.848	50.284	-2.848	0	161.3	161.3	57	57	192	0.1	0	0	0.5	0	0	1024	Ring nets
207	14/03/2017 00:15	50.297	-2.836	50.320	-2.872	2.1	818.7	820.8	57	56	234	0.5			0.5			1024	4m Beam
208	14/03/2017 02:21	50.318	-2.870	50.318	-2.870				56	56			240	12	0.5			1025	Mini-Hamon grab
209	14/03/2017 02:44	50.318	-2.870	50.318	-2.870				57	56			240	12	0.5			1025	SPI camera
210	14/03/2017 03:19	50.318	-2.870	50.318	-2.869				57	57			240	12	0.5			1025	2m Beam
211	14/03/2017 05:14	50.115	-2.634	50.115	-2.634	0	844.4	844.4	66	66	306	0	280	13	0.5	0	0	1025	ESM2 and Niskin
212	14/03/2017 05:24	50.116	-2.633	50.116	-2.633	0	844.5	844.5	66	66	306	0	280	13	0.5	0	0	1025	Ring nets
213	14/03/2017 05:40	50.114	-2.627	50.116	-2.678	2	845.5	847.5	66	67	306	0	280	13	0.5	0	0	1025	4m Beam
214	14/03/2017 06:36	50.116	-2.675	50.116	-2.675				68	68			280	13	0.5	0	0	1025	Mini-Hamon grab
215	14/03/2017 06:59	50.116	-2.675	50.116	-2.677				67	67	70	1.3	280	13	0.5			1025	2m Beam
216	14/03/2017 08:50	49.966	-2.777	49.966	-2.777	0	862.3	862.3	72	72	69	2	280	14	0.5	280	1.5	1025	ESM2 and Niskin
217	14/03/2017 08:59	49.968	-2.767	49.968	-2.767	0	862.7	862.7	71	71	70	2	280	14	0.5	280	1.5	1025	Ring nets
218	14/03/2017 09:20	49.967	-2.776	49.956	-2.825	2	863.8	865.8	70	72	69	2	280	14	0.5	280	1.5	1025	4m Beam
219	14/03/2017 10:34	49.957	-2.822	49.957	-2.822				70	70			280	15	0.5	280	1.5	1025	Mini-Hamon grab
220	14/03/2017 10:52	49.957	-2.821	49.956	-2.823				71	68			280	15	0.5	280	1.5	1025	2m Beam
221	14/03/2017 12:25	49.780	-2.922	49.780	-2.922				70		247	1.2	280	15	0.5	280	1.5	1026	Flow cytometer calibration
222	14/03/2017 12:31	49.777	-2.928	49.777	-2.928		881.6		70		247	1.2	280	15	0.5	280	1.5	1026	ESM2 and Niskin
223	14/03/2017 12:42	49.776	-2.931	49.776	-2.931		881.7		70		246	1.4	280	15	0.5	280	1.5	1026	Ring nets
224	14/03/2017 12:56	49.774	-2.920	49.771	-2.869	2	882.2	884.2	70	70	244	1.5	280	12	0.5	280	1.5	1027	4m Beam
225	14/03/2017 13:58	49.768	-2.870	49.768	-2.870				68	68			270	13	0.5	280	1.5	1026.5	Mini-Hamon grab
226	14/03/2017 14:15	49.768	-2.870	49.768	-2.868				68	68	237	2.8	270	13	0.5	280	1.5	1026.5	2m Beam
227	14/03/2017 15:48	49.751	-3.227	49.751	-3.227		900.3		70		205	0.8	270	11	0.5	280	1.5	1026	ESM2 and Niskin
228	14/03/2017 15:59	49.749	-3.228	49.749	-3.228		900.4		70		205	0.8	270	11	0.5	280	1.5	1026	Ring nets
229	14/03/2017 16:13	49.750	-3.215	49.769	-3.173	2	901	903	70	74	183	0.4	270	11	0.5	280	1.5	1026	4m Beam
230	14/03/2017 17:40	49.769	-3.175	49.769	-3.175	0	903.9	903.9	75	75	81	0.7	270	13	0.5	270	1.5	1026.5	Mini-Hamon grab
231	14/03/2017 17:51	49.769	-3.176	49.769	-3.177	0.1	904	904.1	75	75	81	0.7	270	13	0.5	270	1.5	1026.5	2m Beam
232	14/03/2017 20:30	49.968	-3.589	49.968	-3.589		925		75		52	1.6	270	10	0.5	270	1.5	1025.5	ESM2 and Niskin
233	14/03/2017 20:43	49.970	-3.577	49.970	-3.577	0	925.5	925.5	75	75	52	1.6	270	10	0.5	270	1.5	1025.5	Ring nets

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
234	14/03/2017 20:59	49.968	-3.587	49.956	-3.631	1.9	926.3	928.2	76	75	52	1.6	270	12	0.5	270	1	1026	4m Beam
234	14/03/2017 20:59	49.968	-3.587	49.956	-3.631	1.9	926.3	928.2	76	75	52	1.6	270	12	0.5	270	1	1026	Caesium and Tritium
235	14/03/2017 22:00	49.956	-3.630	49.956	-3.630	0	930.1	930.1	74	74	58	0.9	270	12	0.5	270	0.8	1026	Mini-Hamon grab
236	14/03/2017 22:17	49.956	-3.630	49.956	-3.630		930.1		74	73	58	0.9	270	12	0.5	270	0.8	1026	SPI camera
237	15/03/2017 22:42	49.956	-3.631	49.956	-3.633				73	73	67	0.4	270	1	0.5	270	0.7	1026	2m Beam
238	15/03/2017 00:01	49.824	-3.676	49.824	-3.676	0	938.5	938.5	74	74	258	0.9	270	10	0.5			1026	ESM2 and Niskin
239	15/03/2017 00:16	49.823	-3.679	49.823	-3.679		938.7		75		258	0.9	270	10	0.5	0	0	1026	Ring nets
240	15/03/2017 00:34	49.823	-3.666	49.826	-3.615	2	939.4	941.4	75	75	258	1	270	10	0.5	0	0	1026	4m Beam
241	15/03/2017 02:21	49.727	-3.701	49.727	-3.701	0	949	949	76	76	256	0.8	0	0	0.5	0	0	1026	ESM2 and Niskin
242	15/03/2017 02:33	49.725	-3.708	49.725	-3.708	0	949.3	949.3	76	76	246	1	0	0	0.5	0	0	1026	Ring nets
243	15/03/2017 02:49	49.725	-3.696	49.722	-3.645	2	950.1	952.1	76	76	255	0.7	0	0	0.5	0	0	1026	4m Beam
244	15/03/2017 03:41	49.722	-3.649	49.722	-3.649				76	76			0	0	0.5	0	0	1026.5	Mini-Hamon grab
245	15/03/2017 04:10	49.720	-3.649	49.722	-3.647				76	76			0	0	0.5	0	0	1026.5	2m Beam
246	15/03/2017 05:44	49.531	-3.484	49.531	-3.484	0	966.9	966.9	105	105					0.3			1026.5	Caesium and Tritium
247	15/03/2017 06:32	49.457	-3.391	49.457	-3.391	0	972.8	972.8	80	80			0	0	0.5	0	0	1025	ESM2 and Niskin
248	15/03/2017 06:41	49.456	-3.382	49.456	-3.382	0	973.2	973.2	82	82			0	0	0.5	0	0	1025	Ring nets
249	15/03/2017 06:58	49.454	-3.386	49.446	-3.436	2	973.9	975.9	81	82			0	0	0.5	0	0	1025	4m Beam
250	15/03/2017 09:30	49.372	-3.022	49.372	-3.022	0	993.6	993.6	74	74			0	0	0.5	240	2	1025	ESM2 and Niskin
251	15/03/2017 09:46	49.375	-3.020	49.375	-3.020		993.8		74				0	0	0.5	240	2	1025	Ring nets
252	15/03/2017 10:18	49.387	-3.018	49.354	-3.026	2	995.3	997.3	73	73	10	2.1	0	0	0.5	240	1.5	1025	4m Beam
252	15/03/2017 10:18	49.387	-3.018	49.354	-3.026	2	995.3	997.3	73	73	10	2.1	0	0	0.5	240	1.5	1025	Caesium and Tritium
253	15/03/2017 12:20	49.371	-2.784	49.371	-2.784				67		267	2.5			0.2	240	1.5	1025	Flow cytometer calibration
254	15/03/2017 12:34	49.372	-2.803	49.372	-2.803		1010		67		267	0.5			0.2	240	1.5	1025	ESM2 and Niskin
255	15/03/2017 12:46	49.373	-2.814	49.373	-2.814		1010.4		66		266	2.6			0.2	240	1.5	1026	Ring nets
256	15/03/2017 13:13	49.361	-2.801	49.345	-2.809	1	1012.3	1013.3	65	66	265	2.5			0.2	240	1.5	1025	4m Beam
257	15/03/2017 15:43	49.600	-2.717	49.600	-2.717		1031.7		70		218	3.3			0.2	240	1	1023	ESM2 and Niskin
258	15/03/2017 15:54	49.594	-2.727	49.594	-2.727		1032.2		70		213	3.3			0.2	240	1	1023	Ring nets
259	15/03/2017 16:06	49.596	-2.719	49.621	-2.686	2	1033	1035	70	70	214	3.1			0.2	240	1	1023	4m Beam
260	15/03/2017 18:36	49.891	-2.470	49.906	-2.438	1.6	1053.5	1055.1	71	69	134	0.1			0.2	240	1	1022	4m Beam
261	15/03/2017 19:17	49.914	-2.420	49.914	-2.420		1056		71		68	0.9			0.2	240	1	1021.5	ESM2 and Niskin
262	15/03/2017 19:28	49.916	-2.415	49.916	-2.415		1056.2		71		68	0.9			0.2	240	1	1021.5	Ring nets
263	15/03/2017 21:38	50.076	-2.040	50.076	-2.040				63						0.2	240	1	1022	ESM2 and Niskin
264	15/03/2017 21:51	50.080	-2.021	50.080	-2.021		1075.6		64						0.2	240	1	1022	Ring nets
265	15/03/2017 22:08	50.078	-2.025	50.068	-2.058	1.4	1076.6	1078	64	64	89	3.1			0.2	240	1	1022	4m Beam
266	15/03/2017 23:06	50.068	-2.055	50.068	-2.055				64	64					0.5			1015	Mini-Hamon grab
267	16/03/2017 01:53	49.773	-2.221	49.773	-2.221	0	1101.4	1101.4	60	60	257	3.1	0	0	0.5	240	1	1019	ESM2 and Niskin
268	16/03/2017 01:59	49.771	-2.230	49.771	-2.230	0	1101.8	1101.8	59	59	257	3.1	0	0	0.5	240	1	1019	Ring nets
269	16/03/2017 02:23	49.775	-2.238	49.782	-2.188	2	1103.5	1105.5	60	60	228	3.8	0	0	0.5	240	1	1019.5	4m Beam
270	16/03/2017 04:11	49.437	-2.332	49.437	-2.332	0	1114.6	1114.6	64	64	210	4.2	0	0	0.5	240	0.5	1018.5	ESM2 and Niskin

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
271	16/03/2017 04:16	49.768	-2.341	49.768	-2.341		1115		64		210	4.2	0	0	0.5	240	0.5	1018.5	Ring nets
272	16/03/2017 04:38	49.757	-2.336	49.778	-2.315	1.5	1117	1118.5	64	64	216	3.7	0	0	0.5	240	0.5	1018.5	4m Beam
273	16/03/2017 06:48	49.567	-2.121	49.567	-2.121	0	1136	1136	44	44	90	1.3	0	0	0.5	240	0.5	1017	ESM2 and Niskin
274	16/03/2017 06:52	49.568	-2.119	49.568	-2.119	0	1136.2	1136.2	45	45	90	1.3	0	0	0.5	240	0.5	1017	Ring nets
275	16/03/2017 07:03	49.567	-2.124	49.576	-2.174	1.9	1136.9	1138.8	44	44	73	1.4	0	0	0.5	240	0.5	1017	4m Beam
276	16/03/2017 12:25	49.224	-2.401	49.224	-2.401				52						0.2			1015	Flow cytometer calibration
277	16/03/2017 13:35	49.137	-2.653	49.137	-2.653		1189		55		289	1.4			0.2			1014	ESM2 and Niskin
278	16/03/2017 13:43	49.138	-2.658	49.138	-2.658		1189.2		55		289	1.4			0.2			1014	Ring nets
279	16/03/2017 13:55	49.138	-2.650	49.126	-2.603	2.1	1189.7	1191.8	55	55	289	1.4			0.2			1014	4m Beam
280	16/03/2017 15:49	49.143	-2.899	49.143	-2.899		1205.1		67		174	1.1			0.2			1013.5	ESM2 and Niskin
281	16/03/2017 15:59	49.141	-2.902	49.141	-2.902		1205.2		67		174	1.1			0.2			1013.5	Ring nets
282	16/03/2017 16:10	49.145	-2.901	49.163	-2.883	1.3	1205.7	1207	67	67	174	1.1			0.2			1013.5	4m Beam
283	16/03/2017 17:45	49.117	-3.087	49.117	-3.087		1216.9		73		103	3.1	320	12	0.5			1013	ESM2 and Niskin
284	16/03/2017 17:54	49.115	-3.079	49.115	-3.079		1217		73		103	3.1	320	12	0.5			1013	Ring nets
285	16/03/2017 18:04	49.115	-3.085	49.121	-3.135	2.1	1217.8	1219.9	73	75	103	3.1	320	12	0.5			1013	4m Beam
286	16/03/2017 19:43	48.984	-3.105	48.984	-3.105				69		84	2.1			0.2	250	1.5	1013	ESM2 and Niskin
287	16/03/2017 19:57	48.984	-3.090	48.984	-3.090		1229.6		69		84	2.1			0.2	250	1.5	1013	Ring nets
288	16/03/2017 20:08	48.981	-3.101	48.977	-3.141	1.7	1230.1	1231.8	69	71	84	2			0.2	250	1.5	1013	4m Beam
289	17/03/2017 06:39	49.251	-2.363	49.251	-2.363		1296.2		54		96	0.8	330	16	0.5	270	1	1014	ESM2 and Niskin
290	17/03/2017 06:44	49.248	-2.361	49.248	-2.361	0	1296.3	1296.3	53	53	94	0.9	330	16	0.5	270	1	1014	Ring nets
291	17/03/2017 07:03	49.249	-2.352	49.271	-2.389	2	1297.6	1299.6	51	55	80	1.1	330	16	0.5	270	1	1014	4m Beam
292	17/03/2017 11:46	48.976	-2.374	48.976	-2.374	0	1338.5	1338.5	47	47			300	17	1	280	1.5	1016	Flow cytometer calibration
293	17/03/2017 15:00	48.746	-2.439	48.746	-2.439		1368.1		33		284	0.3	300	15	0.5	290	1	1015.5	ESM2 and Niskin
294	17/03/2017 15:08	48.744	-2.441	48.744	-2.441		1368.2		33		284	0.9	300	15	0.5	290	1	1015.5	Ring nets
295	17/03/2017 15:16	48.742	-2.436	48.739	-2.403	1.3	1368.5	1369.8	33	33	284	0.9	300	15	0.5	290	1	1015.5	4m Beam
296	17/03/2017 17:36	48.684	-2.824	48.684	-2.824		1388.1		26		134	1.7	300	12	0.5	290	1	1015	ESM2 and Niskin
297	17/03/2017 17:44	48.681	-2.820	48.681	-2.820		1388.3		26		134	1.7	300	12	0.5	290	1	1015	Ring nets
298	17/03/2017 17:49	48.682	-2.824	48.699	-2.841	1.2	1388.6	1389.8	26	26	134	1.7	300	12	0.5	290	1	1015	4m Beam
299	17/03/2017 18:44	48.698	-2.765	48.711	-2.784	1.1	1394.2	1395.3	31	31	133	1.9	300	15	0.5	290	1	1014	4m Beam
300	17/03/2017 19:14	48.710	-2.790	48.710	-2.790		1395.9		31		133	1.9	300	15	0.5	290	1	1014	ESM2 and Niskin
301	17/03/2017 19:18	48.709	-2.787	48.709	-2.787		1396		32		133	1.9	300	15	0.5	290	1	1014	Ring nets
302	17/03/2017 21:25	48.870	-2.648	48.870	-2.648	0	1408	1408	48	48	195	0.4	300	15	0.5	280	1	1013	ESM2 and Niskin
303	17/03/2017 21:32	48.868	-2.644	48.868	-2.644	0	1408.2	1408.2	48	48	210	0.4	300	15	0.5	280	1	1013	Ring nets
304	17/03/2017 21:44	48.923	-2.644	48.901	-2.632	1.8	1408.8	1410.6	48	49	223	0.4	300	15	0.5	280	1	1013	4m Beam
305	18/03/2017 04:07	49.183	-3.701	49.183	-3.701	0	1457.6	1457.6	83	83	259	0.5	270	33	1.5	280	2.5	1011	ESM2 and Niskin
306	18/03/2017 04:30	49.182	-3.693	49.182	-3.744	2.1	1458.8	1460.9	83	85	313	0.1	260	28	1.5	270	2.5	1009.5	4m Beam
307	18/03/2017 06:35	49.192	-3.894	49.192	-3.894		1467		92		70	1.1	260	25	1	270	2.5	1010	ESM2 and Niskin
308	18/03/2017 06:54	49.189	-3.904	49.186	-3.954	1.9	1468.1	1470	93	93	73	1.5	260	25	1	270	2.5	1010	4m Beam
309	18/03/2017 10:37	49.467	-4.224	49.467	-4.224				94	94			250	30	2	270	3	1009	Caesium and Tritium

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
310	18/03/2017 11:45	49.596	-4.382	49.596	-4.382				89				250	30	2	270	3	1009	Flow cytometer calibration
311	18/03/2017 15:32	51.066	-4.793	51.065	-4.794				74	73			280	27	1.5	270	1.7	1009	Drop camera
312	18/03/2017 17:42	50.263	-4.517	50.263	-4.519				53	54			260	20	0.5	270	1.5	1009	Drop camera
313	18/03/2017 19:39	50.280	-4.799	50.279	-4.697				63	63			260	22	0.5	270	1.5	1008.5	Drop camera
314	18/03/2017 21:19	50.096	-5.022	50.095	-5.024				35	35			260	18	0.5			1009	Drop camera
315	18/03/2017 21:57	50.085	-5.016	50.084	-5.018				57	57			260	15	0.5			1009	Drop camera
316	19/03/2017 07:16	50.126	-5.057	50.126	-5.057				26	26	162	0.4	250	17	0.5			1007	Caesium and Tritium
317	21/03/2017 09:08	49.595	-4.124	49.595	-4.124	0	1649.2	1649.2	86	86	77	0.4	300	12	1	290	1.7	1005	ESM2 and Niskin
318	21/03/2017 09:23	49.593	-4.117	49.593	-4.117	0	1649.5	1649.5	85	85	77	0.2	300	12	1	290	1.8	1005	Ring nets
319	21/03/2017 10:16	49.591	-4.131	49.594	-4.182	2	1652.6	1654.6	85	86	79	0.5	300	15	1.5	290	2	1005	4m Beam
320	21/03/2017 11:42	49.594	-4.181	49.594	-4.181				87	87			270	18	1.5	270	2	1005	Mini-Hamon grab
321	21/03/2017 12:03	49.593	-4.182	49.593	-4.184				86	86	76	0.4	270	18	1.5	270	2	1005	2m Beam
322	21/03/2017 13:55	49.459	-4.187	49.459	-4.187	0	1667.3	1667.3	92	92	245	0.1	240	22	1.7	280	2	1004	ESM2 and Niskin
323	21/03/2017 14:20	49.463	-4.177	49.463	-4.177	0	1667.8	1667.8	93	93	246	0.3	240	22	1.7	280	2	1004	Ring nets
324	21/03/2017 14:40	49.456	-4.239	49.450	-4.239	1.9	1668.7	1670.6	91	91	246	0.5	240	26	1.7	270	2.5	1003	4m Beam
325	21/03/2017 16:05	49.450	-4.238	49.450	-4.238				91	91			220	28	2	250	2.5	1003	Mini-Hamon grab
326	21/03/2017 16:37	49.450	-4.239	49.448	-4.241				92	91	245	0.8	210	28	2	250	2.5	1003	2m Beam
327	21/03/2017 19:34	49.474	-4.614	49.474	-4.614		1689.9		95		8	0.1	210	36	2	250	3	999	ESM2 and Niskin
328	21/03/2017 20:02	49.477	-4.613	49.482	-4.663	2.1	1691.4	1693.5	94	96	38	0.2	210	38	2	250	3	997	4m Beam
329	22/03/2017 07:06	48.867	-3.363	48.867	-3.363	0	1776.5	1776.5	39	39	39	0.3	250	12	1	250	1.5	994	ESM2 and Niskin
330	22/03/2017 07:15	48.867	-3.361	48.867	-3.361	0	1766.5	1766.5	38	38	35	0.3	250	12	1	250	1.5	994	Ring nets
331	22/03/2017 07:35	48.868	-3.356	48.878	-3.307	2	1767.7	1769.7	43	47	27	1.6	250	12	1	250	1	994	4m Beam
332	22/03/2017 11:18	48.812	-3.981	48.812	-3.981		1797.9		80		67	0.2	260	6	1	250	1.5	995	ESM2 and Niskin
333	22/03/2017 11:33	48.812	-3.974	48.812	-3.974		1798.2		80		69	0.3	260	6	1	250	1.5	995	Ring nets
334	22/03/2017 12:05	48.812	-3.981	48.815	-3.949	1.3	1800.5	1801.8	80	80	66	0.3	230	6	0.7	250	1.5	995	4m Beam
334	22/03/2017 12:05	48.812	-3.981	48.815	-3.949	1.3	1800.5	1801.8	80	80	66	0.3	230	6	0.7	250	1.5	995	Flow cytometer calibration
335	22/03/2017 16:02	48.951	-4.499	48.951	-4.499		1828.6		102		262	0.4			0.7	260	2	997	ESM2 and Niskin
336	22/03/2017 16:16	48.951	-4.498	48.951	-4.498		1828.7		102		264	0.3			0.7	260	2	996	Ring nets
337	22/03/2017 17:45	48.954	-4.488	48.946	-4.439	2	1833.4	1835.4	100	100	266	0.4			0.7	260	2	997	4m Beam
338	22/03/2017 20:44	49.243	-4.288	49.243	-4.288		1855.9		91		262	0.1	75	10	0.5	260	1.5	999	ESM2 and Niskin
339	22/03/2017 20:55	49.241	-4.289	49.241	-4.289		1855.9		91		262	0.1	75	10	0.5	260	1.5	999	Ring nets
340	22/03/2017 21:14	49.249	-4.277	49.270	-4.238	2.1	1856.6	1858.7	91	90	327	0	75	10	0.5	260	1.5	999	4m Beam
341	22/03/2017 22:44	49.269	-4.238	49.269	-4.238				91	91			75	10	1	260	1.5	999	Mini-Hamon grab
342	22/03/2017 23:30	49.270	-4.236	49.269	-4.238				90	91	73	0.7	75	10	1	260	1.5	999	2m Beam
343	23/03/2017 01:53	49.219	-4.752	49.219	-4.752	0	1882.1	1882.1	102	102	84	0.3	40	24	1	260	1.5	1000	ESM2 and Niskin
344	23/03/2017 02:10	49.215	-4.750	49.215	-4.750	0	1882.3	1882.3	101	101	94	0.3	40	24	1	260	1.5	1000	Ring nets
345	23/03/2017 02:32	49.221	-4.741	49.228	-4.691	2	1883.5	1885.5	101	102	118	0.2	40	24	1	260	1.5	1000	4m Beam
346	23/03/2017 04:17	49.228	-4.692	49.228	-4.692				100	100			40	16	1.5	260	1.5	1000	Mini-Hamon grab
347	23/03/2017 04:38	49.228	-4.692	49.229	-4.691				100	101	236	0.4	40	16	1.5	260	1.5	1000	2m Beam
348	23/03/2017 06:46	48.959	-4.935	48.959	-4.935	0	1908.8	1908.8	105	105	247	0.7	40	16	1.5	260	2	1001	ESM2 and Niskin

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
349	23/03/2017 07:01	48.955	-4.941	48.955	-4.941	0	1909.1	1909.1	104	104	249	0.7	40	18	1.5	280	2	1001	Ring nets
350	23/03/2017 07:23	48.953	-4.934	48.943	-4.885	2	1910.3	1912.3	105	105	252	0.6	40	18	1.5	280	2	1001	4m Beam
351	23/03/2017 11:56	49.121	-5.713	49.121	-5.713		1949.5		112		46	0.6	40	22	1.5		2	1002	ESM2 and Niskin
351	23/03/2017 11:56	49.121	-5.713	49.121	-5.713		1949.5		112		46	0.6	40	22	1.5		2	1002	Flow cytometer calibration
352	23/03/2017 12:15	49.116	-5.713	49.116	-5.713		1949.8		114		57	0.6	40	22	1.5		2	1002	Ring nets
353	23/03/2017 12:37	49.123	-5.702	49.138	-5.657	2	1950.9	1952.9	113	115	61	0.5	40	22	1.5		2	1002	4m Beam
354	23/03/2017 14:28	49.138	-5.658	49.138	-5.658				116	116			30	25	1.7		2	1003	Mini-Hamon grab
355	23/03/2017 14:52	49.139	-5.657	49.141	-5.657				112	112	97	0.5	30	25	1.7		2	1003	2m Beam
356	23/03/2017 16:26	49.279	-5.773	49.279	-5.773		1968		112		159	0.4	30	28	2		2	1003.5	ESM2 and Niskin
357	23/03/2017 16:49	49.280	-5.762	49.290	-5.713	2	1969.1	1971.1	111	111	159	0.4	30	28	2		2	1003.5	4m Beam
358	24/03/2017 04:38	49.121	-5.904	49.151	-5.879	2.1	2015.9	2018	117	116	133	0.4	50	18	2	50	2	1008	4m Beam
359	24/03/2017 05:37	49.161	-5.872	49.161	-5.872	0	2019	2019	116	116	177	0.4	50	18	2	50	2	1010	ESM2 and Niskin
360	24/03/2017 05:51	49.161	-5.881	49.161	-5.881	0	2019.4	2019.4	116	116	191	0.4	50	18	2	50	2	1010	Ring nets
361	24/03/2017 07:01	49.150	-5.879	49.151	-5.877				114	114	212	0.6	80	20	1.5	50	2	1013	2m Beam
362	24/03/2017 07:38	49.150	-5.879	49.150	-5.879				117	117			80	20	1.5	50	2	1013	Mini-Hamon grab
363	24/03/2017 09:20	49.290	-5.715	49.290	-5.715				109	109	261	0.5	80	22	1.5	50	2	1014	Mini-Hamon grab
364	24/03/2017 09:41	49.290	-5.716	49.290	-5.714				109	109	260	0.5	80	22	1.5	50	2	1014	2m Beam
365	24/03/2017 10:00	49.290	-5.716	49.290	-5.716	0	2033.1	2033.1	110	110	289	0.4	80	22	1.5	50	2	1014	Ring nets
366	24/03/2017 11:09	49.152	-5.920	49.152	-5.920				116				90	20	1.5	70	2	1014	Flow cytometer calibration
367	24/03/2017 12:59	48.922	-6.200	48.922	-6.200		2062.6		127		89	0.5	90	22	1.5	80	1.7	1016	ESM2 and Niskin
368	24/03/2017 13:13	48.921	-6.203	48.921	-6.203		2062.8		128		90	0.5	90	22	1.5	80	1.7	1016	Ring nets
369	24/03/2017 13:39	48.921	-6.231	48.915	-6.280	2	2063.9	2065.9	127	127	94	0.5	90	22	1.5	80	1.7	1016	4m Beam
370	24/03/2017 14:54	48.915	-6.277	48.915	-6.277				126	126			50	22	1.5	80	1.7	1016	Mini-Hamon grab
371	24/03/2017 15:18	48.915	-6.279	48.915	-6.277				126	125	136	0.3	50	22	1.5	80	1.7	1016	2m Beam
372	24/03/2017 16:40	49.003	-6.353	49.003	-6.353		2076		128		226	0.4	90	16	1.5	80	1.5	1016	ESM2 and Niskin
373	24/03/2017 16:51	49.000	-6.356	49.000	-6.356		2076.2		127		226	0.4	90	16	1.5	80	1.5	1016	Ring nets
374	24/03/2017 17:10	49.012	-6.349	49.043	-6.328	2	2077.2	2079.2	127	127	236	0.4	80	18	1.5	80	1.5	1018	4m Beam
375	24/03/2017 18:21	49.042	-6.329	49.042	-6.329				124	124			80	20	1.5	80	1.5	1018	Mini-Hamon grab
376	24/03/2017 18:40	49.042	-6.329	49.042	-6.329				124	124			80	22	1.5	80	1.5	1019	SPI camera
377	24/03/2017 19:21	49.042	-6.330	49.042	-6.328				122	123	265	0.3	80	20	1.5	80	1.5	1018	2m Beam
378	24/03/2017 20:57	49.163	-6.363	49.163	-6.363		2089.2		121		273	0.3	80	25	1.5	80	2	1019	ESM2 and Niskin
379	24/03/2017 21:10	49.159	-6.371	49.159	-6.371		2089.5		121		280	0.3	80	25	1.5	80	2	1019	Ring nets
380	24/03/2017 21:26	49.157	-6.356	49.165	-6.306	2	2090.4	2092.4	120	120	289	0.3	80	25	1.5	80	2	1019	4m Beam
381	24/03/2017 22:35	49.165	-6.310	49.165	-6.310				120	120			80	25	1.5	80	2	1019	Mini-Hamon grab
382	24/03/2017 23:16	49.165	-6.309	49.166	-6.307				120	120			80	25	1.5	80	2	1019	2m Beam
383	25/03/2017 02:55	49.706	-6.582	49.706	-6.582	0	2130.1	2130.1	103	103	62	0.6	50	22	1.5	80	1.5	1018	ESM2 and Niskin
384	25/03/2017 03:10	49.703	-6.585	49.703	-6.585	0	2130.3	2130.3	104	104	70	0.5	50	22	1.5	80	1.5	1018	Ring nets
385	25/03/2017 03:27	49.700	-6.605	49.688	-6.653	2	2131.2	2133.2	105	108	80	0.5	50	22	1.5	80	1.5	1018	4m Beam
386	25/03/2017 04:43	49.688	-6.650	49.688	-6.650				107	107			50	20	1.5	80	1.5	1018	Mini-Hamon grab
387	25/03/2017 05:00	49.688	-6.650	49.689	-6.649				106	105	151	0.4	50	20	1.5	80	1.5	1018	2m Beam

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
388	25/03/2017 07:28	49.946	-6.581	49.946	-6.581	0	2153.1	2153.1	96	96	205	0.8	50	26	1.5	80	1.5	1018	ESM2 and Niskin
389	25/03/2017 08:07	49.941	-6.584	49.941	-6.584	0	2153.9	2153.9	95	95	212	0.8	50	24	1.5	80	1.5	1019	Ring nets
390	25/03/2017 08:29	49.940	-6.585	49.968	-6.557	2	2155.1	2157.1	97	96	218	0.8	50	24	1.5	80	1.5	1019	4m Beam
390	25/03/2017 08:29	49.940	-6.585	49.968	-6.557	2	2155.1	2157.1	97	96	218	0.8	50	24	1.5	80	1.5	1019	Caesium and Tritium
391	25/03/2017 10:04	50.077	-6.584	50.077	-6.584	0	2164	2164	97	97			50	22	1.5	80	1.5	1019	ESM2 and Niskin
392	25/03/2017 10:20	50.073	-6.592	50.073	-6.592	0	2164.4	2164.4	97	97	269	0.4	50	22	1.5	80	1.5	1019	Ring nets
393	25/03/2017 10:42	50.076	-6.582	50.092	-6.537	2.1	2165.3	2167.4	98	97	280	0.4	50	25	2	60	2	1018	4m Beam
394	25/03/2017 12:10	50.122	-6.484	50.122	-6.484				95				50	25	1.5	60	1.5	1018	Flow cytometer calibration
395	25/03/2017 12:54	50.174	-6.442	50.174	-6.442		2174		94		32	0.8	50	25	1.5	60	1.5	1018	ESM2 and Niskin
396	25/03/2017 13:08	50.173	-6.444	50.173	-6.444		2174.1		96		32	0.8	50	25	1.5	60	1.5	1018	Ring nets
397	25/03/2017 13:25	50.170	-6.461	50.145	-6.497	2	2174.8	2176.8	96	97	45	1	50	25	1.5	50	1.5	1017.5	4m Beam
398	25/03/2017 15:34	50.025	-6.250	50.025	-6.250		2189.9		80		107	0.8	50	15	1.5	50	1.5	1015	ESM2 and Niskin
399	25/03/2017 15:44	50.023	-6.251	50.023	-6.251		2190		80		107	0.8	50	15	1.5	50	1.5	1015	Ring nets
400	25/03/2017 16:30	50.022	-6.255	50.009	-6.303	2	2193.9	2195.9	80	83	145	1.3	50	15	1.5	50	1.5	1015	4m Beam
401	25/03/2017 17:54	50.010	-6.301	50.010	-6.301				84				50	22	1.5	50	1.5	1013	Mini-Hamon grab
402	25/03/2017 18:15	50.010	-6.301	50.010	-6.301				81	81			50	23	1.5	50	1.5	1013	SPI camera
403	25/03/2017 18:50	50.009	-6.302	50.011	-6.300				81	81	205	0.9	50	26	1.7	50	1.5	1012	2m Beam
404	25/03/2017 20:31	50.145	-6.496	50.145	-6.496				93				50	25	1.5	50	1.5	1012	Mini-Hamon grab
405	25/03/2017 21:08	50.145	-6.496	50.146	-6.495				94	92	240	1	50	22	1.5	50	1.5	1012	2m Beam
406	25/03/2017 21:59	50.091	-6.539	50.091	-6.539				95				50	22	1.5	50	1.5	1012	Mini-Hamon grab
407	25/03/2017 22:22	50.091	-6.540	50.091	-6.538				94	95	250	0.7	50	22	1.5	50	1.5	1012	2m Beam
408	25/03/2017 23:35	49.967	-6.558	49.967	-6.558		2224		94		349	0.6	50	27	1.5	50	1.5	1012	Mini-Hamon grab
409	26/03/2017 00:09	49.967	-6.559	49.968	-6.557				95	97	6	0.7	60	25	1.5	50	1.5	1012	2m Beam
410	26/03/2017 02:35	50.200	-6.928	50.200	-6.928	0	2246.5	2246.5	111	111	43	0.6	65	22	1.5	50	1.5	1011	ESM2 and Niskin
411	26/03/2017 02:53	50.201	-6.931	50.201	-6.931	0	2246.7	2246.7	111	111	43	0.6	65	22	1.5	50	1.5	1011	Ring nets
412	26/03/2017 03:16	50.196	-6.951	50.188	-7.001	2	2247.5	2249.5	111	113	44	0.6	70	25	1.5	50	1.5	1010	4m Beam
413	26/03/2017 04:23	50.187	-7.001	50.187	-7.001				112	112			80	26	1.5	50	2	1009	Mini-Hamon grab
414	26/03/2017 04:59	50.187	-7.000	50.187	-6.999				112	110	68	0.2	80	26	1.5	50	2	1009	2m Beam
415	26/03/2017 08:01	50.566	-6.935	50.566	-6.935	0	2275.6	2275.6	106	106	206	0.5	80	26	2	50	2	1010	ESM2 and Niskin
416	26/03/2017 08:14	50.562	-6.946	50.562	-6.946	0	2276.1	2276.1	106	106	209	0.5	80	26	2	50	2	1010	Ring nets
417	26/03/2017 08:35	50.563	-6.939	50.573	-6.889	1.9	2277.1	2279	107	104	214	0.6	80	26	2	50	2	1010	4m Beam
418	26/03/2017 09:51	50.572	-6.891	50.572	-6.891				102				80	28	1.7	50	1.7	1011	Mini-Hamon grab
419	26/03/2017 10:09	50.573	-6.892	50.573	-6.888				102	102	218	0.6	80	28	1.7	50	1.7	1011	2m Beam
420	26/03/2017 11:15	50.500	-6.752	50.500	-6.752				103				80	25	1.7	50	1.7	1011	Flow cytometer calibration
421	26/03/2017 12:12	50.417	-6.607	50.417	-6.607		2296.7		101		328	0.2	100	18	1.5	90	1.5	1010	ESM2 and Niskin
422	26/03/2017 12:25	50.417	-6.612	50.417	-6.612		2296.9		102		331	0.2	100	18	1.5	90	1.5	1010	Ring nets
423	26/03/2017 12:44	50.416	-6.599	50.411	-6.547	2	2297.6	2299.6	102	101	342	0.2	100	16	1.5	90	1.2	1010	4m Beam
424	26/03/2017 13:55	50.412	-6.549	50.412	-6.549				102				90	13	1.2	90	1.2	1010	Mini-Hamon grab
425	26/03/2017 14:10	50.412	-6.549	50.412	-6.549				101	101			90	13	1.2	90	1.2	1010	SPI camera
426	26/03/2017 14:57	50.412	-6.549	50.411	-6.547				103	104	40	0.5	90	12	1.2	90	1.2	1010	2m Beam

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
427	26/03/2017 18:43	50.656	-5.798	50.656	-5.798		2334.7		86		220	0.2	100	18	0.7	90	1	1010	ESM2 and Niskin
428	26/03/2017 18:53	50.656	-5.804	50.656	-5.804		2334.9		85		222	0.4	100	18	0.7	90	1	1010	Ring nets
429	26/03/2017 19:11	50.663	-5.796	50.684	-5.755	2	2335.8	2337.8	85	84	223	0.4	100	18	0.7	90	1.2	1010	4m Beam
430	26/03/2017 20:08	50.683	-5.757	50.683	-5.757				83				100	18	0.7	90	1	1010	Mini-Hamon grab
431	26/03/2017 20:30	50.683	-5.757	50.683	-5.755				83	83			100	18	0.7	90	1	1010	2m Beam
432	26/03/2017 22:58	51.027	-5.993	51.027	-5.993	0	2361.8	2361.8	93	93	188	0.6	150	18	1	90	1	1010	ESM2 and Niskin
433	26/03/2017 23:13	51.026	-6.002	51.026	-6.002	0	2362.3	2362.3	93	93	180	0.5	150	18	1	90	1	1010	Ring nets
434	26/03/2017 23:32	51.035	-5.996	51.062	-5.965	2	2363	2365	93	94	169	0.5	150	18	1	90	1	1010	4m Beam
435	27/03/2017 00:39	51.061	-5.968	51.061	-5.968				93	93			110	15	1			1011	Mini-Hamon grab
436	27/03/2017 00:56	51.061	-5.967	51.061	-5.967				93	93			110	15	1			1011	SPI camera
437	27/03/2017 01:30	51.061	-5.968	51.062	-5.966				94	94	117	0.5	110	15	1			1011	2m Beam
438	27/03/2017 02:34	51.096	-5.781	51.096	-5.781	0	2374.6	2374.6	90	90	86	0.5	110	15	1			1011	ESM2 and Niskin
439	27/03/2017 02:54	51.096	-5.783	51.093	-5.786				91	91			110	12	1			1011	Flow cytometer calibration
440	27/03/2017 03:34	51.095	-5.771	51.095	-5.784				91	91			110	12	1			1011	Drop camera
441	27/03/2017 06:12	51.418	-5.931	51.418	-5.931	0	2397.9	2397.9	99	99	340	0.5	90	12	1			1011	ESM2 and Niskin
442	27/03/2017 06:22	51.422	-5.936	51.422	-5.936	0	2398.2	2398.2	99	99	333	0.5	90	12	1			1011	Ring nets
443	27/03/2017 07:13	51.427	-5.952	51.409	-5.908	2	2400.3	2402.3	101	95	311	0.6	90	14	1			1011	4m Beam
444	27/03/2017 08:12	51.410	-5.909	51.410	-5.909				94	94			90	18	1			1011	Mini-Hamon grab
445	27/03/2017 08:29	51.410	-5.909	51.410	-5.908				93	93			90	18	1			1011	SPI camera
446	27/03/2017 09:02	51.410	-5.910	51.410	-5.907				94	93	270	0.6	90	18	1			1011	2m Beam
447	27/03/2017 10:19	51.487	-6.120	51.487	-6.120	0	2413.4	2413.4	114	114	223	0.3	90	20	1	90	1	1011	ESM2 and Niskin
448	27/03/2017 10:35	51.483	-6.132	51.483	-6.132	0	2413.9	2413.9	113	113	218	0.5	90	20	1	90	1	1011	Ring nets
449	27/03/2017 10:55	51.483	-6.119	51.478	-6.066	2.1	2414.8	2416.9	113	112	214	0.7	90	25	1.2	90	1.2	1011	4m Beam
450	27/03/2017 12:42	51.478	-6.069	51.478	-6.069				113				90	25	1.2	90	1.2	1011	Mini-Hamon grab
451	27/03/2017 13:00	51.478	-6.069	51.478	-6.069				113	113			90	25	1.2	90	1.2	1011	SPI camera
452	27/03/2017 13:37	51.478	-6.071	51.479	-6.069				114	113	196	0.8	90	17	1.2	90	1.2	1011	2m Beam
453	27/03/2017 16:02	51.334	-6.493	51.338	-6.546	2	2441.3	2443.3	104	92	71	0.3	90	20	1.2	90	1.2	1009	4m Beam
454	27/03/2017 17:07	51.346	-6.571	51.346	-6.571		2444.7		93		40	0.6	90	20	1.2	90	1.2	1009	ESM2 and Niskin
455	27/03/2017 17:18	51.348	-6.573	51.348	-6.573		2444.9		93		38	0.7	90	20	1.2	90	1.2	1009	Ring nets
456	27/03/2017 17:45	51.338	-6.544	51.338	-6.544				92				90	16	1	90	1	1008	Mini-Hamon grab
457	27/03/2017 18:01	51.338	-6.544	51.338	-6.544				92	92			90	16	1	90	1	1008	SPI camera
458	27/03/2017 18:35	51.338	-6.544	51.337	-6.543				92	92			90	16	1	90	1	1008	2m Beam
459	27/03/2017 20:23	51.488	-6.357	51.488	-6.357		2458.8		105		12	0.9	90	20	1	90	1	1008	ESM2 and Niskin
460	27/03/2017 20:36	51.489	-6.364	51.489	-6.364		2459.1		105		12	0.9	90	20	1	90	1	1008	Ring nets
461	27/03/2017 21:07	51.495	-6.345	51.469	-6.378	1.9	2461.9	2463.8	103	105	353	0.4	90	20	1	90	1	1008	4m Beam
462	27/03/2017 22:10	51.470	-6.377	51.470	-6.377				105	105			100	20	1	90	1	1008	Mini-Hamon grab
463	27/03/2017 22:23	51.470	-6.377	51.470	-6.377				105	104			100	20	1	90	1	1008	SPI camera
464	27/03/2017 22:56	51.470	-6.379	51.470	-6.377				103	105	220	0.5	100	18	1	90	1	1007	2m Beam
465	28/03/2017 00:14	51.540	-6.206	51.540	-6.206	0	2473.8	2473.8	116	116	210	1	110	18	1	90	1	1009	ESM2 and Niskin
466	28/03/2017 00:36	51.540	-6.204	51.540	-6.204	0	2474.8	2474.8	117	117	208	1	110	18	1	90	1	1009	Ring nets
467	28/03/2017 00:54	51.546	-6.198	51.570	-6.162	2	2475.5	2477.5	117	117	207	1	110	18	1	90	1	1009	4m Beam

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
468	28/03/2017 01:58	51.570	-6.163	51.570	-6.163				117	117			110	20	1	90	1	1008	Mini-Hamon grab
469	28/03/2017 02:14	51.570	-6.164	51.570	-6.163				117	118			110	20	1	90	1	1008	SPI camera
470	28/03/2017 02:46	51.570	-6.165	51.570	-6.163				119	119	185	0.5	110	20	1	90	1	1006	2m Beam
471	28/03/2017 04:28	51.687	-6.129	51.687	-6.129	0	2487.4	2487.4	121	121	68	0.3	110	16	1	90	1	1006	ESM2 and Niskin
472	28/03/2017 04:43	51.689	-6.132	51.689	-6.132	0	2487.5	2487.5	121	121	54	0.5	110	16	1	90	1	1006	Ring nets
473	28/03/2017 05:10	51.690	-6.142	51.674	-6.188	2	2489.3	2491.3	120	114	42	0.5	110	12	1	90	1	1006	4m Beam
474	28/03/2017 06:15	51.675	-6.187	51.675	-6.187				113	113			110	16	1	90	1	1006	Mini-Hamon grab
475	28/03/2017 07:09	51.675	-6.187	51.675	-6.187				114	113			110	16	1	90	1	1006	SPI camera
476	28/03/2017 07:40	51.675	-6.187	51.674	-6.187				113	115	20	1	110	16	1	90	1	1006	2m Beam
477	28/03/2017 10:04	52.006	-6.479	52.006	-6.479	0	2516.6	2516.6	55	55	91	0.6	180	15	1	110	1	1006	ESM2 and Niskin
478	28/03/2017 10:18	52.008	-6.481	52.008	-6.481	0	2516.7	2516.7	55	55	98	0.4	180	16	1	150	1	1006	Flow cytometer calibration
478	28/03/2017 10:18	52.008	-6.481	52.008	-6.481	0	2516.7	2516.7	55	55	98	0.4	180	16	1	150	1	1006	Ring nets
479	28/03/2017 10:35	52.009	-6.477	51.997	-6.427	2	2517.6	2519.6	55	67	125	0.2	180	16	1	160	1	1006	4m Beam
480	28/03/2017 11:34	51.998	-6.429	51.998	-6.429				68				180	20	1.5	180	1	1006	Mini-Hamon grab
481	28/03/2017 11:48	51.998	-6.429	51.998	-6.428				67	67			180	20	1.5	180	1	1006	SPI camera
482	28/03/2017 12:18	51.998	-6.430	51.997	-6.428				68	68	246	1.7	192	20	1.5	180	1	1006	2m Beam
483	28/03/2017 16:42	51.609	-7.210	51.609	-7.210		2559.8		83		61	0.6	190	26	1.5	190	1.2	1005	ESM2 and Niskin
484	28/03/2017 16:54	51.612	-7.203	51.612	-7.203		2560.1		82		61	0.5	190	26	1.5	190	1.2	1005	Ring nets
485	28/03/2017 17:08	51.609	-7.213	51.592	-7.259	2	2560.9	2562.9	82	83	62	0.6	190	24	1.5	190	1.5	1005	4m Beam
486	28/03/2017 18:13	51.592	-7.257	51.592	-7.257				82				190	22	1.5	190	1.5	1004	Mini-Hamon grab
487	28/03/2017 18:42	51.593	-7.257	51.591	-7.257				83	83	82	0.4	190	24	1.5	190	1.5	1004	2m Beam
488	28/03/2017 23:27	50.914	-7.115	50.914	-7.115	0	2606.7	2606.7	99	99	246	0.5	190	22	1.5	190	1.5	1005	ESM2 and Niskin
489	28/03/2017 23:43	50.918	-7.122	50.918	-7.122	0	2607.1	2607.1	99	99	249	0.5	190	22	1.5	190	1.5	1005	Ring nets
490	29/03/2017 00:10	50.911	-7.113	50.929	-7.068	2	2608.7	2610.7	100	100	258	0.5	190	18	1.5	190	1.5	1006.5	4m Beam
491	29/03/2017 01:18	50.929	-7.070	50.929	-7.070				98	98			190	18	1.5	190	1.5	1006.5	Mini-Hamon grab
492	29/03/2017 01:32	50.929	-7.070	50.929	-7.070				101	99			190	18	1.5	190	1.5	1006.5	SPI camera
493	29/03/2017 02:02	50.930	-7.069	50.928	-7.070				101	100	27	0.2	200	18	2	190	1.5	1006	2m Beam
494	29/03/2017 05:44	50.872	-7.854	50.872	-7.854	0	2644.3	2644.3	114	114	61	0.5	200	22	2	190	1.5	1004	ESM2 and Niskin
495	29/03/2017 05:59	50.876	-7.842	50.876	-7.842	0	2644.8	2644.8	114	114	62	0.5	200	26	2	190	1.5	1004	Ring nets
496	29/03/2017 06:15	50.871	-7.853	50.855	-7.899	2	2645.6	2647.6	114	113	63	0.5	200	26	2	190	1.5	1004	4m Beam
497	29/03/2017 07:29	50.856	-7.898	50.856	-7.898				112	112			200	28	2	190	1.5	1004	Mini-Hamon grab
498	29/03/2017 07:47	50.856	-7.898	50.856	-7.898				112	109			190	26	2	190	1.5	1004	SPI camera
499	29/03/2017 08:23	50.856	-7.898	50.855	-7.898				110	110	214	0.2	190	26	2	190	1.5	1004	2m Beam
500	29/03/2017 11:23	51.320	-7.908	51.320	-7.908				94				180	22	1.5	190	1.5	1005	Flow cytometer calibration
501	29/03/2017 12:08	51.387	-7.967	51.387	-7.967		2684.4		90		252	0.6	190	22	1.5	190	2.5	1004.5	ESM2 and Niskin
502	29/03/2017 12:21	51.388	-7.967	51.388	-7.967		2684.5		90		252	0.6	190	22	1.5	190	2.5	1004.5	Ring nets
503	29/03/2017 12:49	51.397	-7.953	51.411	-7.905	2.1	2685.9	2688	90	90	272	0.4	190	22	1.5	190	2.5	1004.5	4m Beam
504	29/03/2017 14:51	51.411	-7.907	51.411	-7.907				90				190	18	1.5	190	2.5	1004	Mini-Hamon grab
505	29/03/2017 15:26	51.411	-7.906	51.410	-7.907				90	89	47	0.5	190	18	1.5	190	2.5	1004	2m Beam
506	29/03/2017 19:21	51.040	-8.312	51.040	-8.312		2722.4		113		96	0.2	190	25	1.5	190	2.5	1003	ESM2 and Niskin

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
507	29/03/2017 19:36	51.042	-8.304	51.042	-8.304		2722.7		113		121	0.1	190	25	1.5	190	2.5	1003	Ring nets
508	29/03/2017 19:58	51.041	-8.319	51.045	-8.371	2	2723.8	2725.8	112	111	166	0.1	190	25	1.5	190	2.5	1003	4m Beam
509	29/03/2017 21:14	51.046	-8.369	51.046	-8.369				109	109			190	25	1.5	190	2.5	1003	Mini-Hamon grab
510	30/03/2017 00:58	51.248	-9.243	51.248	-9.243	0	2763.3	2763.3	108	108	264	0.6	190	16	2	180	2.5	1002	ESM2 and Niskin
511	30/03/2017 01:12	51.251	-9.243	51.251	-9.243	0	2763.4	2763.4	110	110	276	0.6	190	16	2	180	2.5	1002	Ring nets
512	30/03/2017 01:41	51.259	-9.241	51.288	-9.216	2	2765	2767	116	117	291	0.5	190	20	2	180	2.5	1002	4m Beam
513	30/03/2017 04:35	51.061	-9.000	51.061	-9.000	0	2785	2785	118	118	62	0.8	190	20	2	180	2.5	1001	ESM2 and Niskin
514	30/03/2017 04:52	51.060	-8.990	51.060	-8.990	0	2785.4	2785.4	117	117	64	0.9	190	20	2	180	2.5	1001	Ring nets
515	30/03/2017 05:11	51.054	-9.004	51.038	-9.051	2	2786.3	2788.3	118	121	66	0.9	180	18	2	200	2.5	1000	4m Beam
516	30/03/2017 08:13	50.797	-8.714	50.797	-8.714	0	2808.6	2808.6	118	118	147	0.4	180	22	2	200	2.5	1000	ESM2 and Niskin
517	30/03/2017 08:27	50.798	-8.709	50.798	-8.709	0	2808.8	2808.8	119	119	158	0.4	180	22	2	200	2.5	1000	Ring nets
518	30/03/2017 08:56	50.793	-8.710	50.761	-8.722	2	2810.2	2812.2	119	110	190	0.5	180	22	2	200	2.5	1000	4m Beam
519	30/03/2017 11:24	50.474	-8.781	50.474	-8.781				119				190	20	1.7	190	2.5	1000	Flow cytometer calibration
520	30/03/2017 14:38	50.021	-8.872	50.021	-8.872		2857.7		121		354	0.9	180	22	2	190	2.7	998.5	ESM2 and Niskin
521	30/03/2017 14:53	50.029	-8.874	50.029	-8.874		2858.1		121		354	0.9	180	22	2	190	2.7	998.5	Ring nets
522	30/03/2017 15:12	50.019	-8.867	49.986	-8.861	2	2859.1	2861.1	121	136	359	0.9	180	22	2	190	2.7	998.5	4m Beam
523	30/03/2017 18:16	49.729	-8.838	49.729	-8.838		2877.4		96		62	0.8	180	26	2	200	3	997	ESM2 and Niskin
524	30/03/2017 18:28	49.734	-8.833	49.734	-8.833		2877.7		96		62	0.8	180	26	2	200	3	997	Ring nets
525	30/03/2017 18:43	49.729	-8.843	49.713	-8.888	2.1	2878.5	2880.6	96	106	62	0.8	180	24	2	220	3	997	4m Beam
526	30/03/2017 22:50	49.894	-8.170	49.894	-8.170	0	2912	2912	132	132	205	0.9	230	20	2	220	3	996	ESM2 and Niskin
527	30/03/2017 23:06	49.895	-8.172	49.895	-8.172	0	2912.1	2912.1	132	132	213	0.5	230	20	2	220	3	996	Ring nets
528	30/03/2017 23:29	49.900	-8.143	49.924	-8.108	2	2913.4	2915.4	120	110	219	1	220	20	2	220	3	996	4m Beam
529	30/03/2017 00:59	49.924	-8.110	49.924	-8.110				109	109			220	20	2	220	3	996	Mini-Hamon grab
530	31/03/2017 02:52	49.721	-8.099	49.721	-8.099	0	2930.7	2930.7	122	122	329	0.8	220	24	2	220	3	996	ESM2 and Niskin
531	31/03/2017 03:07	49.726	-8.094	49.726	-8.094	0	2931	2931	122	122	343	0.7	220	24	2	220	3	996	Ring nets
532	31/03/2017 03:30	49.716	-8.099	49.686	-8.122	2.1	2931.9	2934	122	131	1	0.9	230	22	2	220	2.8	996	4m Beam
533	31/03/2017 04:41	49.687	-8.122	49.687	-8.122				131	131			230	20	2	220	3	995	Mini-Hamon grab
534	31/03/2017 05:03	49.688	-8.122	49.687	-8.123				130	133	41	1	230	22	2	220	3	996	2m Beam
535	31/03/2017 07:27	49.761	-7.584	49.761	-7.584	0	2598	2598	125	125	84	0.9	230	22	2	220	3	996	ESM2 and Niskin
536	31/03/2017 07:42	49.766	-7.579	49.766	-7.579	0	2958.4	2958.4	126	126	90	0.9	230	22	2	220	3	996	Ring nets
537	31/03/2017 08:04	49.762	-7.589	49.764	-7.640	2	2959.6	2961.6	126	136	106	0.7	230	22	2	220	3	996	4m Beam
538	31/03/2017 09:11	49.765	-7.639	49.765	-7.639				132				220	24	1.7	210	2.7	997	Mini-Hamon grab
539	31/03/2017 11:30	49.427	-7.606	49.427	-7.606				131				220	22	1.7	210	2.7	997.5	Flow cytometer calibration
540	31/03/2017 13:58	49.089	-7.600	49.089	-7.600		3004.1		135		280	0.4	220	18	1.8		2.5	997	ESM2 and Niskin
541	31/03/2017 14:17	49.094	-7.599	49.094	-7.599		3004.3		135		334	0.4	220	18	1.7		2.5	997	Ring nets
542	31/03/2017 14:37	49.089	-7.596	49.056	-7.590	2	3004.9	3006.9	135	143	343	0.4	220	18	1.7		2.5	997	4m Beam
543	31/03/2017 17:01	49.058	-7.591	49.058	-7.591				134				220	16	1.5		2.5	996	Mini-Hamon grab
544	31/03/2017 17:24	49.058	-7.591	49.057	-7.592				144	144	62	0.7	220	14	1.5		2.5	997	2m Beam
545	31/03/2017 19:38	48.882	-7.769	48.882	-7.769		3025.5		144		147	0.2	220	18	1.2		2.5	996	ESM2 and Niskin
546	31/03/2017 19:57	48.885	-7.756	48.885	-7.756		3026.1		150		147	0.2	220	18	1.2		2.5	996	Ring nets

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
547	31/03/2017 20:24	48.882	-7.761	48.886	-7.711	2	3028.2	3030.2	150	153	176	0.2	220	18	1.2		2.5	996	4m Beam
548	31/03/2017 21:41	48.886	-7.714	48.886	-7.714				152				220	22	1.2	260	2.5	996	Mini-Hamon grab
549	01/04/2017 00:57	48.877	-6.968	48.877	-6.968	0	3062.3	3062.3	139	139	261	1.1	240	20	1.5	250	2.5	998	ESM2 and Niskin
550	01/04/2017 01:14	48.878	-6.970	48.878	-6.970	0	3062.4	3062.4	139	139	264	1	240	20	1.5	250	2.5	998	Ring nets
551	01/04/2017 01:46	48.878	-6.966	48.878	-6.916	2	3063.9	3065.9	140	130	276	0.9	240	2	1.5	250	2.5	998	4m Beam
552	01/04/2017 02:54	48.879	-6.918	48.879	-6.918				130	130	354	0.6	290	15	1.5	250	2	998	Mini-Hamon grab
553	01/04/2017 03:19	48.879	-6.917	48.878	-6.919				130	132	354	0.6	290	15	1.5	250	2	998	2m Beam
554	01/04/2017 04:18	48.844	-6.958	48.844	-6.958	0	3071.1	3071.1	137	137	53	1	300	16	1.5	250	2	999	ESM2 and Niskin
555	01/04/2017 04:38	48.848	-6.948	48.848	-6.948	0	3071.5	3071.5	139	139	65	1.2	300	16	1.5	250	2	999	Ring nets
556	01/04/2017 04:58	48.844	-6.960	48.825	-7.001	2	3072.4	3074.4	137	130	71	1.2	300	18	1.5	250	2	1000	4m Beam
557	01/04/2017 10:48	48.232	-7.578	48.232	-7.578	0	3117.5	3117.5	176	176	225	1.3	300	22	2	250	2.5	1007	ESM2 and Niskin
558	01/04/2017 11:14	48.217	-7.574	48.217	-7.574		3118.4		173		225	1.3	300	22	1.7	250	2.5	1007	Flow cytometer calibration
558	01/04/2017 11:14	48.217	-7.574	48.217	-7.574		3118.4		173		225	1.3	300	22	1.7	250	2.5	1007	Ring nets
559	01/04/2017 11:57	48.229	-7.611	48.221	-7.563	2	3122.2	3124.2	170	175	225	1.3	300	22	1.7	270	3.5	1007	4m Beam
560	01/04/2017 15:37	48.469	-6.992	48.469	-6.992		3152.1		167		342	0.9	320	26	1.7	270	3.5	1009	ESM2 and Niskin
561	01/04/2017 16:03	48.460	-7.015	48.446	-7.060	2	3153.2	3155.2	178	160	342	1.1	320	26	1.7	270	3.5	1009	4m Beam
562	01/04/2017 17:14	48.443	-7.088	48.443	-7.088		3156.6		166		26	1.4	320	26	1.7	270	3.5	1009	Ring nets
563	01/04/2017 20:15	48.209	-6.383	48.209	-6.383		3188.3		148		83	0.9	310	24	1.5	270	3	1011	ESM2 and Niskin
564	01/04/2017 20:33	48.206	-6.368	48.206	-6.368		3189		145		102	0.7	310	24	1.5	270	3	1011	Ring nets
565	01/04/2017 20:56	48.204	-6.379	48.209	-6.428	1.9	3190.1	3192	143	148	115	0.7	310	24	1.5	270	3	1011	4m Beam
566	02/04/2017 03:50	48.914	-5.836	48.884	-5.858	2	3249	3251	118	119	290	0.7	310	20	1.5	270	3	1012	4m Beam
567	02/04/2017 04:43	48.875	-5.881	48.875	-5.881	0	3252.3	3252.3	121	121	6	0.8	207	20	1.5	270	3	1012	ESM2 and Niskin
568	02/04/2017 05:11	48.877	-5.876	48.877	-5.876	0	3252.5	3252.5	117	117	22	1	310	16	1.2	270	3	1013	Ring nets
569	02/04/2017 07:10	48.746	-5.722	48.746	-5.722	0	3267.4	3267.4	120	120	50	1.7	340	12	1	270	2.5	1015	ESM2 and Niskin
570	02/04/2017 07:30	48.749	-5.717	48.749	-5.717	0	3268	3268	121	121	52	1.7	340	12	1	270	2.5	1015	Ring nets
571	02/04/2017 08:10	48.789	-5.683	48.759	-5.703	2	3272.5	3274.5	120	119	64	1.6	340	12	1	270	2.5	1015	4m Beam
572	02/04/2017 10:30	48.726	-5.374	48.726	-5.374	0	3290.8	3290.8	112	112	146	0.4	350	10	0.5	270	2	1015	ESM2 and Niskin
573	02/04/2017 10:45	48.722	-5.370	48.722	-5.370	0	3291.1	3291.1	112	112	170	0.5	350	10	0.5	270	2	1015	Ring nets
574	02/04/2017 11:01	48.728	-5.361	48.756	-5.334	2	3291.8	3293.8	111	109	186	0.6	0	8	0.5	270	2	1015	4m Beam
575	02/04/2017 11:54	48.759	-5.329	48.759	-5.329				109				0	8	0.5	270	2	1015	Flow cytometer calibration
576	02/04/2017 13:34	48.563	-5.605	48.563	-5.605		3311.7		115		223	1.6	0	8	0.7	270	2	1016	ESM2 and Niskin
577	02/04/2017 13:46	48.558	-5.608	48.558	-5.608		3312.1		116		226	1.6	0	8	0.7	270	2	1016	Ring nets
578	02/04/2017 14:08	48.559	-5.605	48.578	-5.563	2	3313	3315	115	115	233	1.5	340	6	0.7	270	2	1016.5	4m Beam
579	02/04/2017 18:19	48.252	-5.038	48.238	-5.051	0.9	3348.9	3349.8	70	80	11	0.8			0.5	270	2	1017	4m Beam
580	02/04/2017 19:00	48.238	-5.065	48.238	-5.065		3350.7		88		20	0.7			0.5	270	2	1017	ESM2 and Niskin
581	02/04/2017 19:08	48.239	-5.063	48.239	-5.063		3350.8		80		27	0.7			0.5	270	2	1017	Ring nets
582	02/04/2017 20:51	48.130	-4.822	48.130	-4.822		3362.9		66		209	1.5			0.5	240	1.5	1017	ESM2 and Niskin
583	02/04/2017 20:59	48.127	-4.821	48.127	-4.821		3363		66		207	1.6			0.5	240	1.5	1017	Ring nets
584	02/04/2017 21:26	48.132	-4.820	48.134	-4.820				64	65					0.5	240	1.5	1017	Drop camera
585	03/04/2017 00:50	48.122	-4.663	48.122	-4.663	0	3382.6	3382.6	42	42	264	0.4			0.5	240	1.5	1017	ESM2 and Niskin

Station	Date/Time	Lat Shot	Long Shot	Lat Haul	Long Haul	Distance	Log Shot	Log Haul	Depth Shot	Depth Haul	Tide dir	Tide speed	Wind dir	Wind speed	Sea Height	Swell Dir	Swell Hgt	Barom	Gear
586	03/04/2017 00:59	48.123	-4.665	48.123	-4.665	0	3382.7	3382.7	43	43	265	0.4	90	6	0.5	240	1.5	1017	Ring nets
587	03/04/2017 03:46	48.136	-4.638	48.134	-4.641				30	36			90	6	0.5	240	1.5	1017	Drop camera
588	03/04/2017 06:14	48.127	-4.728	48.120	-4.679	2	3402.2	3404.2	51	46	351	0.2			0.5	260	1	1017	4m Beam
589	03/04/2017 07:48	48.127	-4.800	48.131	-4.824	1	3410.8	3411.8	65	65	234	0.4			0.5	260	1.2	1017	4m Beam
590	03/04/2017 12:03	48.502	-5.417	48.502	-5.417				115				270	12	1	270	1	1017	Flow cytometer calibration
591	03/04/2017 14:24	48.717	-4.965	48.717	-4.965		3467.5		109		242	1.5	270	15	1	270	1	1017	ESM2 and Niskin
592	03/04/2017 14:35	48.717	-4.969	48.717	-4.969		3467.7		109		243	1.5	270	15	1	270	1	1017	Ring nets
593	03/04/2017 15:13	48.713	-4.987	48.718	-4.963	1.1	3470.5	3471.6	109	109	251	1.3	210	18	1	270	1	1017	4m Beam
594	03/04/2017 17:12	48.834	-5.093	48.834	-5.093		3482.5		109		294	0.4	210	18	1	270	1.5	1016	ESM2 and Niskin
595	03/04/2017 17:24	48.837	-5.090	48.837	-5.090		3482.7		109		328	0.3	210	18	1	270	1.5	1016	Ring nets
596	03/04/2017 18:21	48.851	-5.089	48.824	-5.119	2	3487.9	3489.9	109	107	26	0.8	210	20	1	270	1.5	1017	4m Beam
597	03/04/2017 23:25	49.468	-4.620	49.468	-4.620		3537.7		97		97	0.7	240	12	1	270	2	1016	Ring nets
598	03/04/2017 23:44	49.471	-4.618	49.471	-4.618		3538.2		97		113	0.4	240	12	1	270	2	1016	Mini-Hamon grab
599	04/04/2017 00:20	49.471	-4.618	49.471	-4.620	0.1	3538.5	3538.6	97	97	150	0.2	250	20	1.5	260	2	1015.5	2m Beam
600	04/04/2017 06:14	49.280	-3.350	49.280	-3.349				54	58			315	16	1.2	260	1.7	1017	Drop camera
601	04/04/2017 11:57	49.984	-2.285	49.984	-2.285				71				320	18	1	260	1.7	1018	Flow cytometer calibration
602	04/04/2017 12:55	50.068	-2.055	50.068	-2.055				65		83	1.8	320	10	1	260	1.5	1018	Mini-Hamon grab
603	04/04/2017 13:25	50.068	-2.054	50.068	-2.056				65	68	83	1.8	326	12	1	260	1.5	1018	2m Beam
604	05/04/2017 09:58	51.953	2.113	51.953	2.113														Flow cytometer calibration