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MRV *Scotia*

Survey 0918S

Report

28th June - 20th July 2018

Ports

Departure: Aberdeen, 28th June
Half-landing: Scalloway, 11th July
Arrival and unloading: Scrabster, 20th July

Personnel

S Lusseau	(Part 1, SIC part 1)
S O'Connell	(SIC part 2)
M Stewart	
H Holah	
R Kynoch	
D Copland	
F Mackay	(Part1)
Z McLean	(SFF, Part 1)
JF Birnie	(SFF, Part2)
M Campbell	(Part 2)
M Gault	(Part 2)

Estimated days by project: 23 days – RV1809 (20503)

Sampling Gear
Midwater trawls PT160 x 3
Demersal trawl (BT237)
Seabird 19plus CTD
GoPro cameras x 2 with underwater housings and lights
Scanmar trawl eye sensor

Objectives

- To conduct an acoustic survey to estimate the abundance and distribution of herring in the north western North Sea and north of Scotland between 58º30'-62ºN and from the shelf edge to 2ºE, excluding Faroese waters.

- To obtain biological samples by trawling with pelagic and demersal trawl for echosounder trace identification.

- To obtain samples of herring and sprat for biological analysis, including age, length, weight, sex, maturity and ichthyophonus infection throughout the survey area.

- Collect samples and data for stock identity determination for herring caught west of 4 ºW (photos and otoliths for morphometric stock ID analysis and tissue samples for genetic analysis).

- To test feasibility of using GoPro cameras mounted in the net and on a dropframe to further aid in species identification in the echogram scrutiny process.

- To obtain hydrographic data for comparison with the horizontal and vertical distribution of herring and sprat.

Narrative

Scotia departed Aberdeen at 1300 on 28th June and made passage for Scapa Flow, Orkney Islands, to commence calibration of acoustic systems. The calibration took place between 0500 and 1500 on 29th June confirming that the default settings on the EK60 were appropriate for use during this survey.
The survey commenced at 1845 to the East of Scotland on the most southerly eastwards transect as shown on the cruise track map (Figure 1).
The survey was put on hold at 0353 on the 9th July to drop a member of the crew off in Colla Firth in Yell Sound. The survey was commenced at 0925.
Scotia made her way into Scalloway 11th July to commence the 24 hour mid cruise break and to change scientific staff. S Lusseau, A McLean and F Mackay left and J Birnie, M Campbell and M Gault joined the vessel during this period.
Scotia left Scalloway 12th July at 1500 and surveying recommenced at 1745. The survey transect lines were completed on the west side of the Pentland Firth at 1310 on Thursday 19th July.
A second calibration of the acoustic system was carried out in Scapa Flow between 1800 on 19th July and 0100 on the 20th. The calibration confirmed that the settings applied during the first half of the cruise for all four frequencies were appropriate.
Scotia docked in Scrabster in the morning of 20th July where the scientific crew disembarked and unloading took place.

Fishing took place throughout the survey on an opportunistic basis with the aim of verifying species and size composition of echotraces encountered. The PT160 midwater trawl was used for the majority of hauls with the BT237 demersal trawl being used where the targeted assemblages were tight to the bottom. Hauls carried out with the PT160 were monitored using the Simrad FS70 scanning netsonde connected with the steel wire armored cable. Headline depth was recorded with the EK60 RAW data as well as being visualized in real time on the EK60 echogram greatly aiding the fishing operations. For the BT237 hauls a Scanmar trawl eye sensor were deployed and it was possible to monitor the capture of fish for demersal trawls.

A load shackle with remote readout was used throughout the cruise to weigh catches from the PT160, whereas catches from the demersal net were weighed in the hopper.

The GoPro camera system and lights were deployed in the top part of the net tunnel on both the PT160 and the BT237. A total of 8 deployments were made during the survey. Some fine adjustments could still be beneficial in terms of the field of view and the position in the net tunnel (further towards the net opening), however the videos recorded has already proven useful in terms of informing the decision process for species composition of acoustic traces.

The new demersal net proved to be very efficient at catching both herring and everything else necessitating the use of the hopper and sorting tables. It is a valuable addition to the survey and allows verification of echotraces close to the seabed that would cause problems for the pelagic net.

The vessel thermosalinograph (TSG) was run continuously to obtain sea surface temperature and salinity throughout the survey area.

Normal contact was maintained with the Marine Laboratory and other vessels taking part in the internationally co-ordinated survey.

Results

Scotia completed the entire planned survey track. Acoustic data was collected from 2206 Elementary Distance Sampling Units (EDSU) of 1 nmi each and the completed survey track was approximately 2850 nmi.

Herring catches were secured in most areas where significant herring schools were observed apart from an area just North of Butt of Lewis where a very large aggregation was encountered but due to a fault in the netsonde system at the time and therefore not being able to monitor the amount going into the net, it was not deemed safe to attempt fishing on such large marks.

The largest quantities of herring were seen to the east Shetland, with good amounts encountered to the North and West of Shetland also. This is a bit further north than previous years. Some herring were also seen in the more traditional area further south between 2º W and 0º.

During the survey 41 hauls were completed and herring was caught in adequate numbers in 22 of these (Figure 2). 3 hauls were collected in VIa (West of 4º W) and herring morphology and genetic sampling was carried out for stock discrimination analysis.
A total of 9707 herring were sampled to obtain length frequency data and 2126 of these were further sampled for biological parameters such as weight, age, sex, maturity and inspected for presence of *Icthyophonus* infection. 21 fish in 10 different hauls were found to be infected with *Icthyophonus* with the highest proportion in haul 163 where the prevalence was 7%.

43 vertical hydro dips were carried out over the survey area (Figure 3). Data collection parameters were conductivity, temperature and depth.

The survey successfully met all stated objectives.

Submitted:
S. Lusseau and S O'Connell
07 Jan 2019

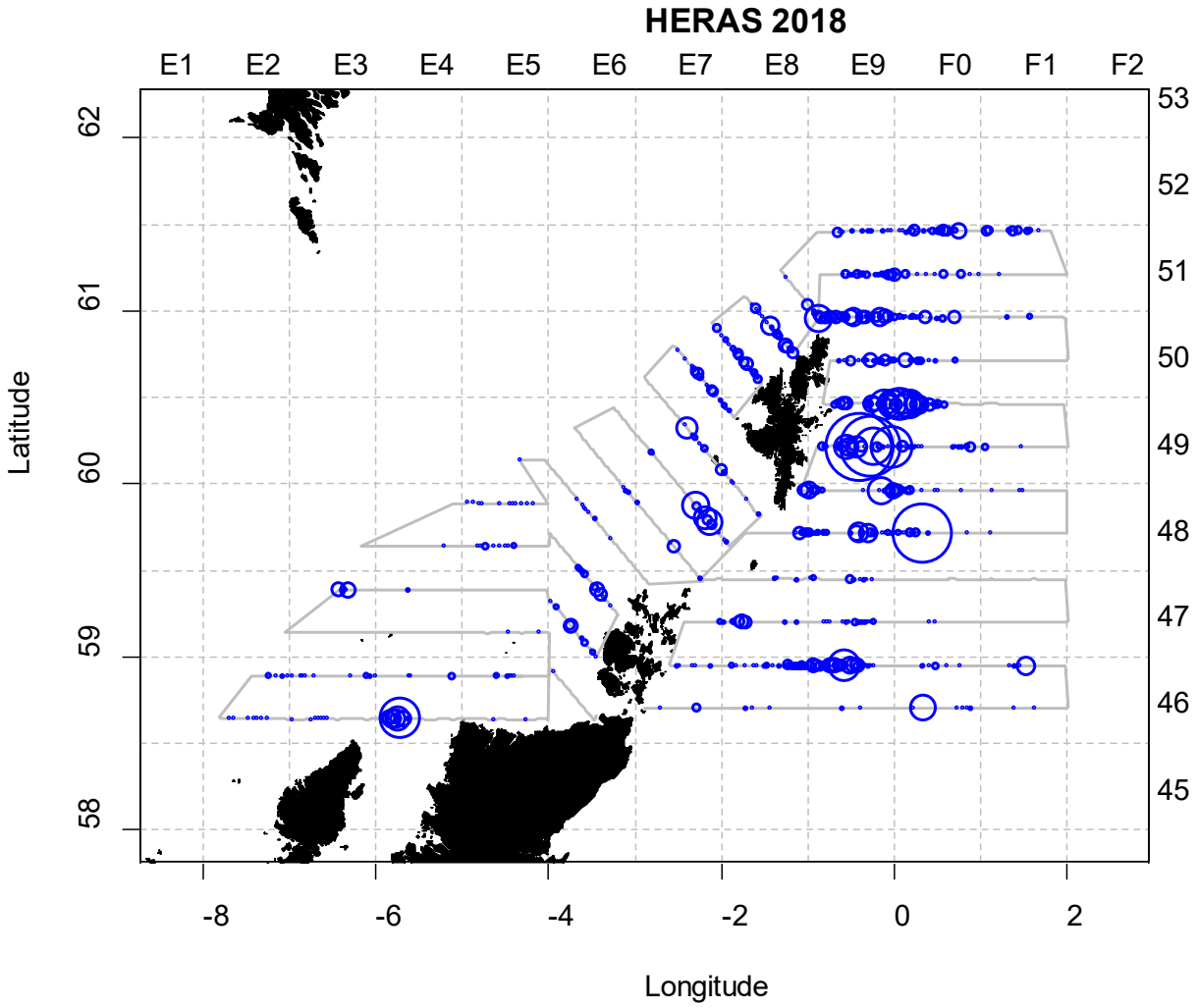

Figure 1. Cruise 0918S. Completed survey track and acoustic registrations of herring.

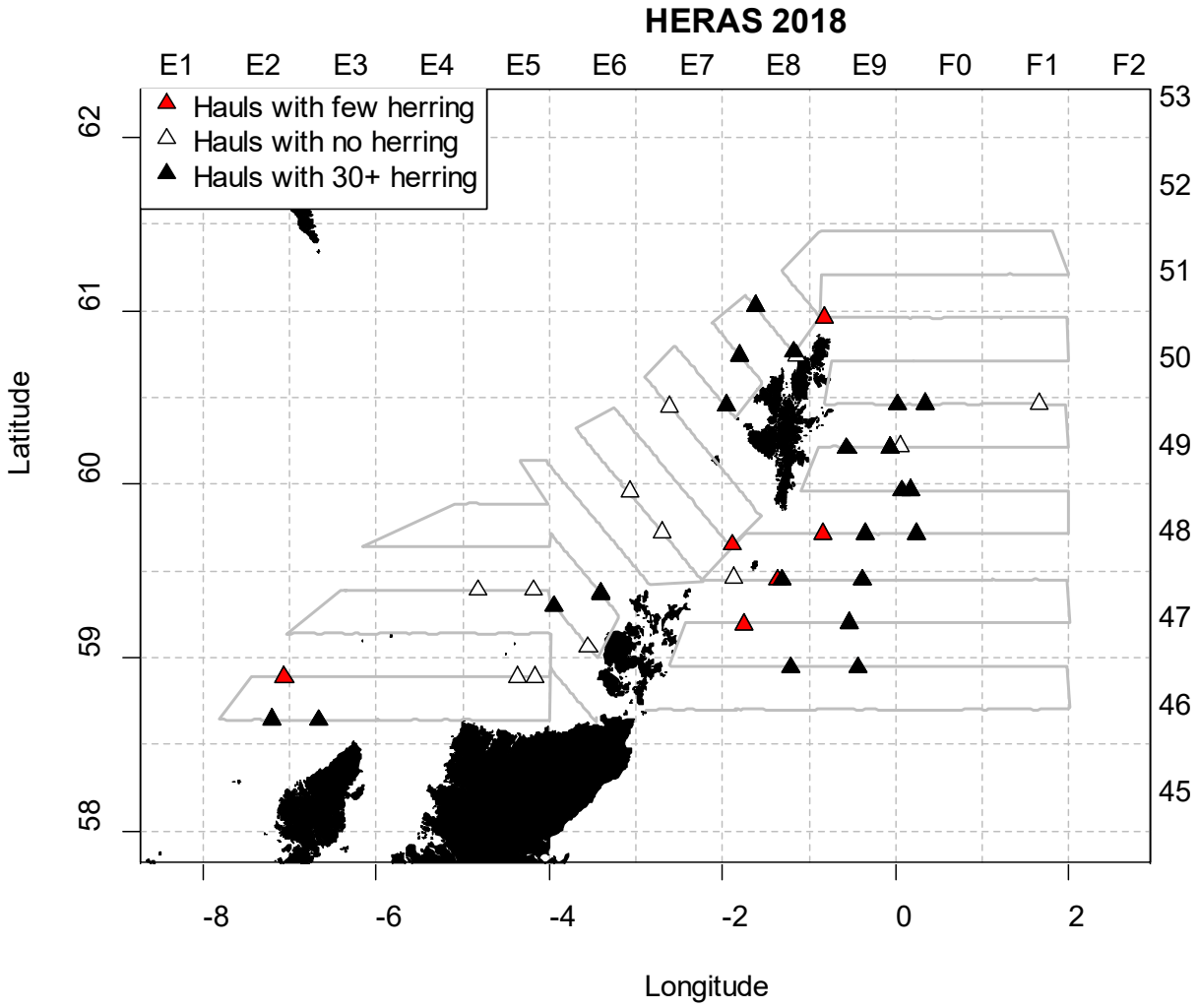

Figure 2. Cruise 0918S. Haul positions.

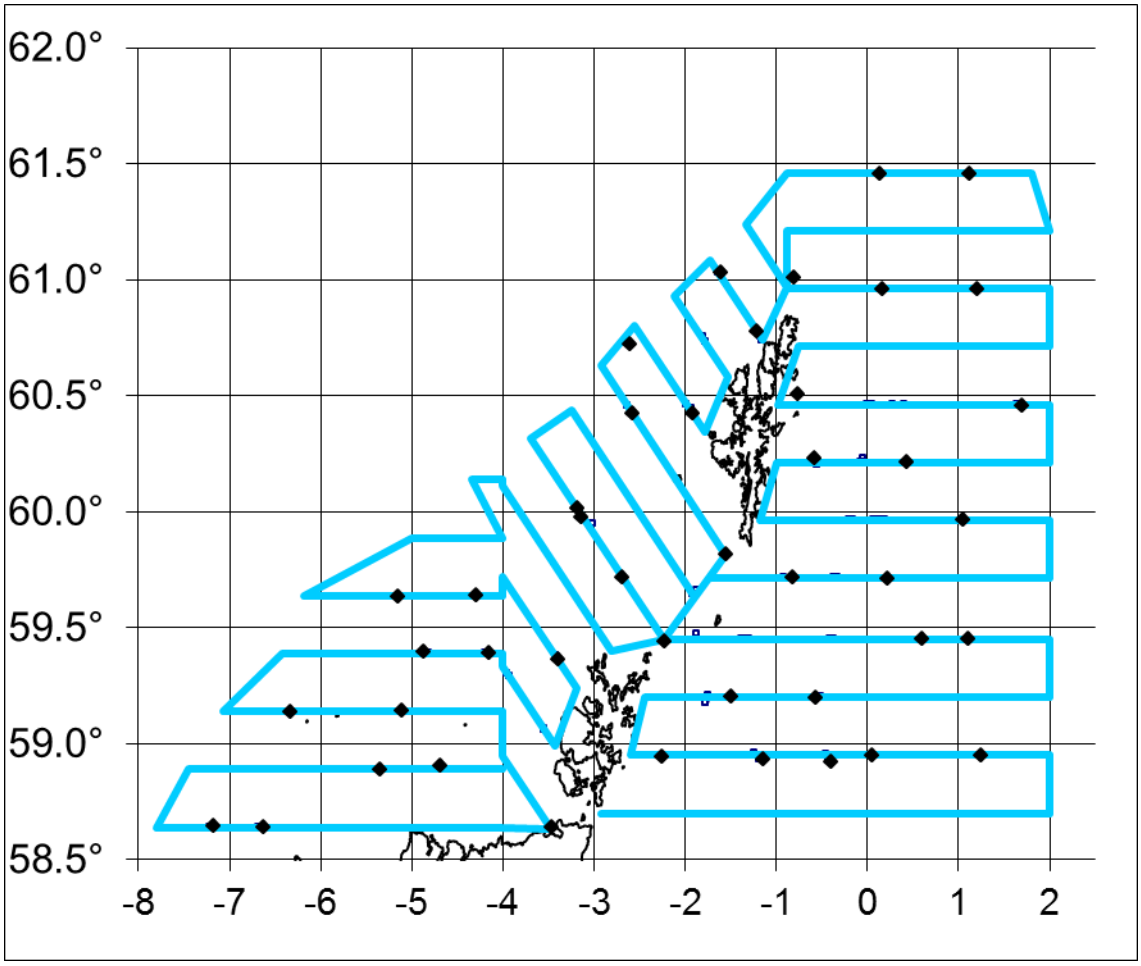

Figure 3. Cruise 0918S. Position of CTD stations.