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MRV *Scotia*

Survey 0916S

REPORT

25 June – 15 July 2016

Ports

Departure: Scrabster, 25 June 2016

Half-landing: Kirkwall, 4 July 2016

Arrival and unloading: Aberdeen, 15 July 2016

Personnel

S. Lusseau (SIC)
M. Stewart
S. O'Connell
H. Holah
R. G. Mules (Part 1)
E. Barreto (Part 2)
M. Campbell
M. Parfitt (Part 1, student, Aberdeen University)

Days by project: 20 days – RV1612 (20387)

Sampling Gear

Sampling Gear

Midwater trawls PT160 x 3
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 58°30'-62°N and from the shelf edge to 2°E, excluding Faroese waters. In addition acoustic transects will be carried out in Moray Firth to estimate abundance of herring and sprat.
- To obtain biological samples for echosounder trace identification using a pelagic trawl.
- To obtain samples of herring (and sprat) for biological analysis, including age, length, weight, sex, maturity, ichthyophonous infection and stock identity for herring caught west

of 4 °W (photos 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 Scrabster at 19:00hrs on 25 June and made passage for Scapa Flow, Orkney Islands, to commence calibration of acoustic systems. A successful calibration took place between 22:00hrs on 25 June and 07:00hrs on 26 June. After transferring E. Armstrong by small boat to the chartered vessel also participating in the survey, Scotia left Scapa Flow at 13:00hrs.

The survey commenced at 17:00hrs on the first westward transect as shown on the survey track map (Figure 1). Fishing took place on an opportunistic basis. All hauls were monitored with a Simrad FS70 scanning netsonde deployed the headline. The steel wire armored cable was used for the scanning netsonde throughout the survey and proved very reliable.

A load shackle with remote readout was used throughout the survey to weigh catches.

The bottom panel of the PT160 was ripped off during one of the early tows necessitating a change of net. No direct cause was found, but suspect fouling on abandoned anchored fishing gear. A replacement net and spare netting for repairs were sent up to Kirkwall and collected at the half landing.

No herring were caught in 6.a strata and very little herring were seen in that stratum in contrast to previous years. One sample of 120 herring was collected for morphometrics and genetics of VIa herring just east of 4°W.

Scotia finished surveying in the western area on 1 July and continued onto transects in the eastern strata.

Scotia made her way into Kirkwall at 08:45 on 4 July to commence the 24 hour mid survey break and to change scientific staff. M. Parfitt and R. G. Mules left and E Barreto joined the vessel during this period.

Scotia left Kirkwall at 09:00hrs on 5 July to carry out a second calibration of the acoustic system in Deersound, Orkney. The calibration was abandoned after calibrating the 38kHz transducer due to technical difficulties with the calibration rig. The results from the 38kHz calibration confirmed the results from the first calibration.

Surveying recommenced at 16:00hrs on 6 July. In the eastern strata large aggregations of herring were encountered on most transects between 1°W and 0° as expected. Trawl operations were generally successful and aggregations were suitably sampled. As many schools were encountered high in the water column fishing close to the surface was trialed again. Hauls were

successful and shown to be feasible up to headline depth of 17m, using present configuration of net but replacing the weights with 4 large chain links each side.

A leak in the low pressure hydraulics pipe stopped fishing operations from 8 July at 18:00hrs to 10th July at 09:00hrs and again from 12 July at 22:00hrs to the end of the survey. This time was spent covering acoustic track and an additional calibration was carried out in Scapa Flow on 9 July.

For the second part of the survey, a Scanmar trawl eye sensor was deployed during each trawl in addition to the netsonde head. This was trialed as a potential back up in case of netsonde failure. However, given the reliability of the scanning netsonde this is probably not necessary in the future. It did on occasion get entangled in meshes and headline.

There were no trawl stations completed in Moray Firth strata due to the hydraulics breakdown.

The GoPro camera system and lights were deployed in the top part of the net tunnel on 9 occasions. The images were clear and fish could be seen swimming with the net on several occasions, and recent adjustments to the mounting system gave a very reliable view of the whole width of the tunnel. The system was moved to a position further out in the net to get better view of fish escaping through the outer part of the net. This still resulted in a stable deployment and good field of view, but recommended to point camera towards the back of the net. No vertical deployments were made of the camera using the dropframe during this survey.

The survey transect lines were completed on the in the Moray Firth on 14th July and Scotia returned to Aberdeen for unloading.

Results

Scotia completed the planned survey track and the opportunity was taken to add further track to augment that planned in rectangles 48E5 and 48E6. Acoustic data was collected from the survey track of approximately 2310 nmi.

As in previous years, the largest fish traces were mainly seen in the eastern area between 1°30'W and 1°E (Figure 1). Very little herring was encountered in the western area and no herring was successfully caught in this area.

During the survey 29 valid hauls were completed and herring was caught in adequate numbers in 14 of these (Figure 1). A total of 3862 herring were sampled to obtain length frequency data and 1222 of these were further sampled for biological parameters such as weight, age, sex, maturity and inspected for presence of *Ichthyophonus* infection.

In addition to the scheduled activities, photographic material collected for herring maturity staging workshop. Plankton samples as well as additional CTD samples also collected for Aberdeen University MSc project

35 vertical hydro dips were carried out ensuring one station in each ICES rectangle apart from 51E9 which was missed due to inclement weather. Data collection parameters were conductivity, temperature and depth.

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

The vessel trialed using lighter weights on the net during the survey – 4 links of heavy chain each side was enough to allow the net to open and fish well as high up as shallow as 17m depth. This allows fishing on the vast majority of marks encountered in the survey.

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

Submitted:
S. Lusseau
03 April 2017

Approved:
I. Gibb
03 April 2017

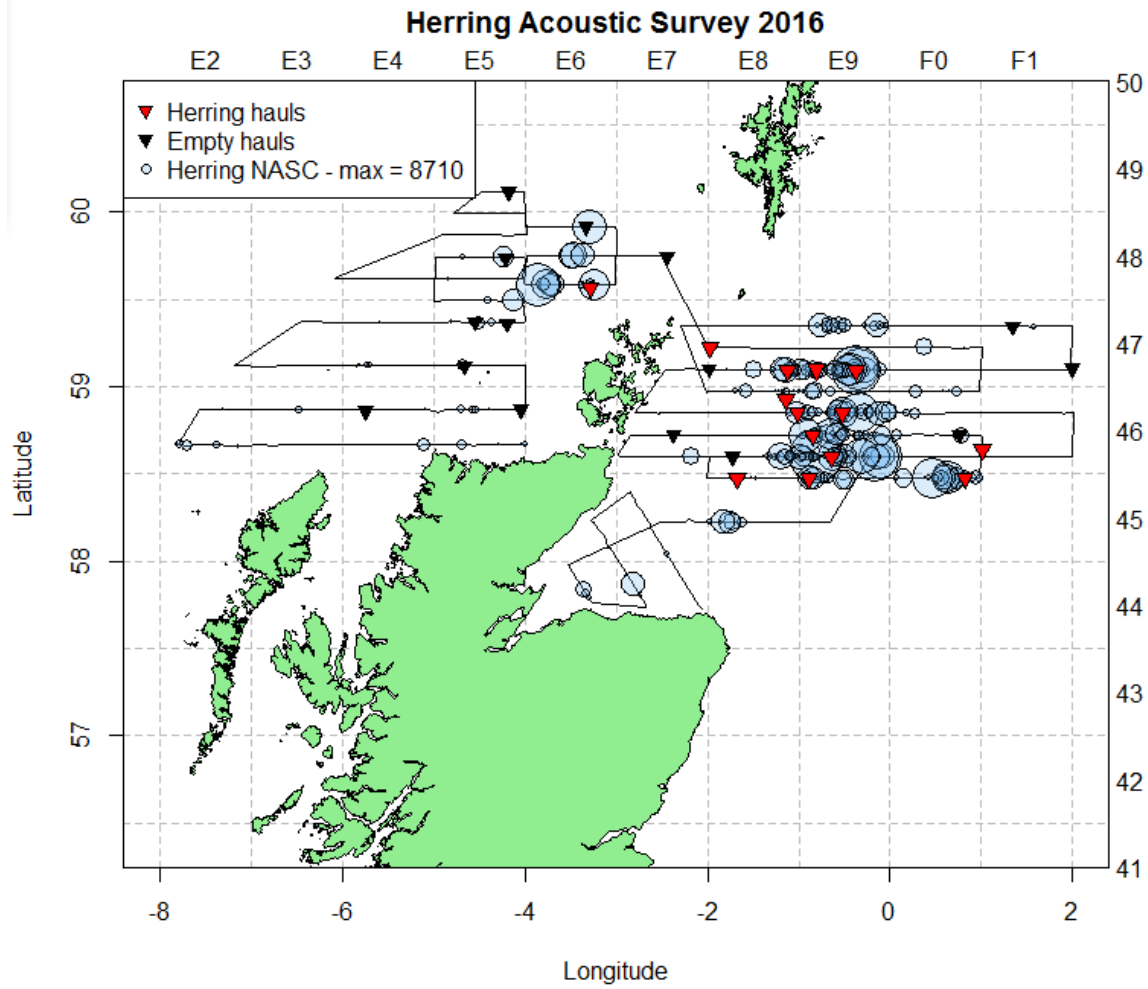


Figure 1. Survey 0916S. Completed survey track, haul locations and acoustic densities..