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FRV "Scotia"

Cruise 7/85

12 July - 1 August 1985

Report

Personnel

R S Bailey	PSO (in charge)
E J Simmonds	SSO
D W McKay	HSO
B E Edelsten	SO
Miss J Staples	ASO
A Gofar	Visitor
T Arimoto	Visitor (12-22 July)

Objectives

1. To participate in an ICES - coordinated acoustic and midwater trawling survey of herring in the north western North Sea and north of Scotland.

2. To obtain samples of herring for biological analysis.

3. To make continuous recordings of salinity and temperature and take regular samples for chlorophyll determination.

4. To collect water samples for radio-caesium monitoring.

Narrative

"Scotia" sailed from Aberdeen at 1300 on 12 July and proceeded to Inganess Bay, Orkney, for calibration of the acoustic system. This was completed at 0530 on 13 July and a passage was made through the Pentland Firth to begin the echointegrator grid along the north coast of Scotland. The period up to 16 July was spent in the area west and northwest of Orkney and from then to 18 July to the west and southwest of Shetland. 19 July was devoted to an intensive survey of the area northeast of Shetland where major concentration of herring were found and after a broad survey of the area east of Shetland, a more intensive survey of the area around Foula was carried out on 21 July before docking at Lerwick at 0900 the following morning.

During the half-landing, Professor Arimoto left the ship to return to Aberdeen and the opportunity was taken to review the progress of the survey and to compare criteria for determining herring maturation stages with Norwegian scientists from the RV "G O Sars" and RV "Eldjarn".

"Scotia" sailed from Lerwick at 1000 on 23 July and carried out a second calibration in Gulber Wick, Shetland, before resuming the echointegrator survey. The period up to 30 July was spent in the area from Fair Isle to Aberdeen. In the time remaining a broad survey was carried out to the south and southeast of Aberdeen. "Scotia" docked in Aberdeen at 0830 on 1 August.

During the survey, daily contact was made whenever possible with the RV "G O Sars".

Results

1. Acoustic and midwater trawling survey

The cruise track and position of midwater trawl hauls are shown on the attached chart. Echotraces attributable to herring on the basis of trawl hauls were widespread with major concentrations west and northeast of Shetland and about 40 miles east of Orkney. Smaller concentrations were recorded west and northwest of Orkney, south of Shetland, northeast of the Buchan coast and in an area about 70 miles off the northeast English coast at around 56°N. Echotraces identified as those of sprat with small quantitites of 0- and 1-group herring were recorded in the outer Moray Firth and off the Aberdeenshire coast. Traces thought to be caused by 0-group Norway pout were recorded in the Shetland area but they were not widespread. Near surface echotraces in the Shetland area were not identified.

A total of 31 trawl hauls were carried out using a "Scotia Pelagic Sampling Trawl" PT 160 fitted with a 20mm codend and herring were caught in 24 of them. Other species caught in any quantity were adult sprats and, in one haul in 160m depth west of Shetland about 400kg of greater silver smelts of modal length 42cm. In some hauls 0-group Norway pout and sandeels were meshed in the tunnel of the net. In the Shetland area small mackerel were caught in small numbers. Echosounder output samples were recorded for ½m depth intervals for individual transmissions from the 38kHz sounder on the second half of the survey.

2. Herring Sampling

The herring caught in the Shetland area were predominantly large herring from 25-35cm in length in maturity stages 4 and 5. West of Orkney most were smaller herring from 22-30cm with an additional modal group of 1-ringers (17-20cm). Northeast of Orkney 2 catches of 1-ringers were made, while 40 miles east of Orkney and off the Buchan coast the herring ranged from 18-31cm with a mode at 25.5cm. In the approaches to the Moray Firth and off the Aberdeenshire coast 0- and 1-group herring were caught mixed with sprats. In all areas a proportion of herring in the length range 20-25cm (mostly 2-ringers) were immature. A total of 2015 herring were sampled for maturation stage and age and a further 730 for counts of vertebrae (VS) and keeled scales (K_2). Approximately 600 herring were weighed at sea using a Mettler balance interfaced to a microcomputer. In addition approximately 400 sprats were examined for age, maturation, K_2 and VS.

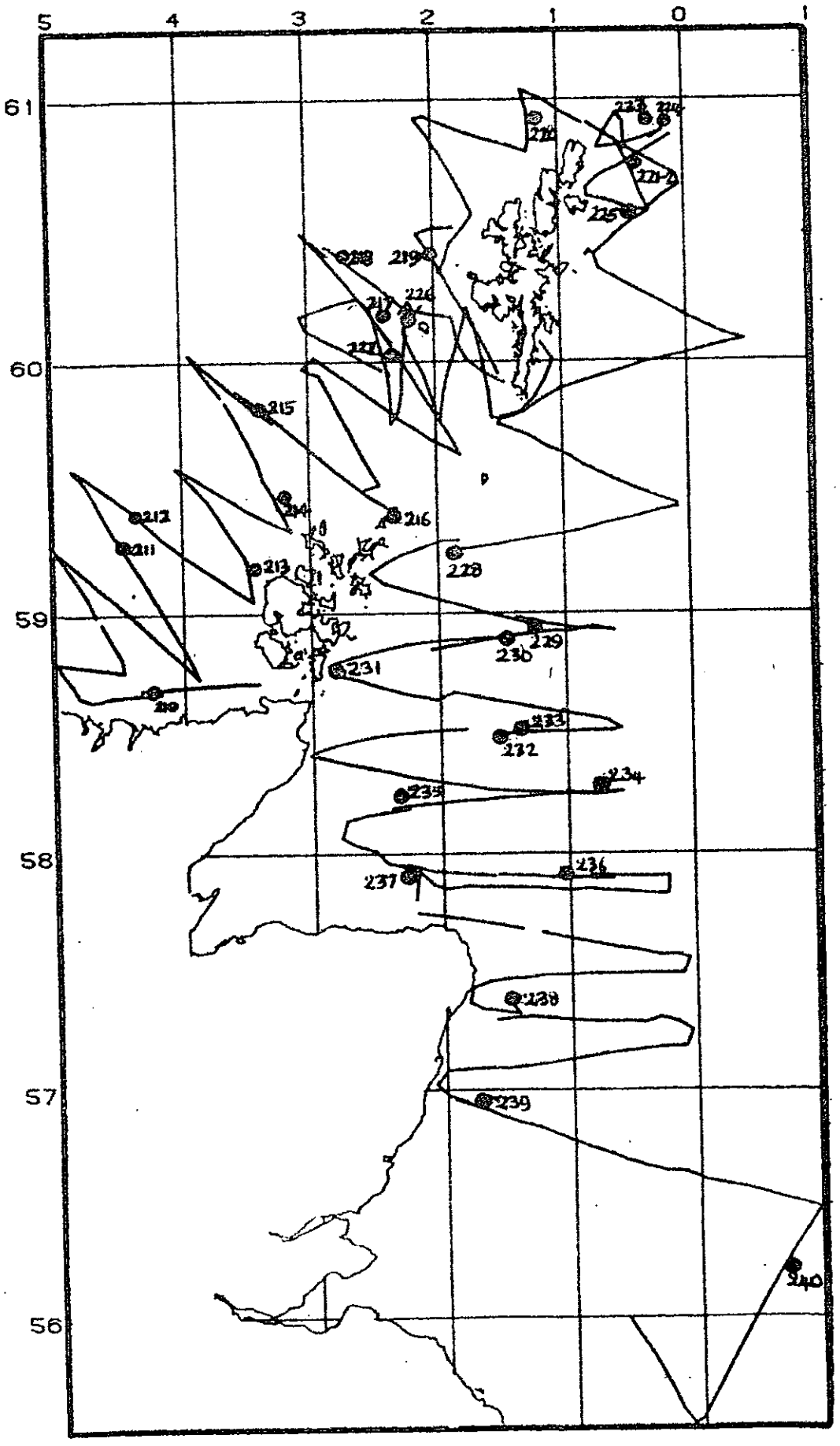
3. Salinity/temperature/chlorophyll recordings

Owing to breakdown of the equipment this work was not carried out.

4. Three samples of water were collected for radio-caesium analysis.

R S Bailey
22 August 1985

Seen in draft by: W Findlay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