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FRV *Scotia*

Cruise 1101S

REPORT

3-23 July 2001

Half landing: Lerwick, 13 July 2001

Personnel

E J Simmonds	(In charge)
P Fernandes	
A P Robb	
F Armstrong	
M Mathewson	
M Harding	(2 nd half)
A Lebourg	(1 st half) Visitor

Objectives

1. To participate in an ICES – coordinated acoustic and mid-water trawling survey in the north western North Sea and North of Scotland between 58° to 62°N 4°30' W to 2°E excluding Norwegian and Faroes waters.
2. To obtain samples of herring for biological analysis, including age, length, weight, sex, maturity and ichthyophonus infection.
3. To obtain thermosalinograph recordings of surface temperature and salinity throughout the survey area. CTD (and XBT) profiles of temperature and salinity at depth for analysis with herring distributions.
4. To obtain simultaneous coverage with FRV *Michael Sars* of ICES rectangles 46E9,47E9,49E9 and 50E9.

Out-turn Costs per Project: 21 days: MF01t

Narrative

Scotia sailed at 1300 GMT on 3 July 2001 and made passage to Scapa Flow anchoring at 2300 GMT to calibrate the acoustic instruments on all scientific sounders. At 0900 FRV *Scotia* left Scapa Flow and commenced survey at 1100 GMT at 58°39' N 2°45' W. Communication with FRV *Michael Sars* was established and the period for the joint survey selected as 5-7 July 2001. The survey was carried out on east west transects on a 15 nautical mile spacing progressing northwards between 2E, the Scottish mainland, and the Orkney and Shetland Islands from 0200 to 2200 GMT (Fig. 1). Additional short transects were added into the survey in areas of expected higher herring abundance and in the area of joint survey with FRV *Michael Sars*. FRV *Scotia* ceased the survey at 2200 GMT (60°34'N 1°45'E) and docked in Lerwick at 0730 GMT on 13 July for a mid cruise break. *Scotia* sailed again at 0800 GMT on 14 July and recommenced the survey at 60°39'N 0°45'W at 1045 GMT. FRV *Scotia* continued the survey

north to 61°32'N and then progressed southwards to the west of Shetland and Orkney and finished the survey at 0745 GMT on 22 July (58°42'N 3°27'W). FRV *Scotia* then proceeded to Scapa Flow to carry out a second calibration of the acoustic instruments. FRV *Scotia* departed Scapa Flow following successful calibration of acoustic instruments at 1700 GMT and sailed to Aberdeen docking at 0530 GMT on 23 July 2001.

Main Activities

Throughout the acoustic survey acoustic data was collected using a Simrad EK500 echosounder operating at 38, 120, 200 and 18 kHz, with raw data collected using EchoView software. The data were scrutinised in board and the allocation to species carried out within EchoView.

Fishing with a PT160 midwater trawl was carried out on observed fish traces on an opportunistic basis. The locations of the trawl hauls are shown in Figure 1 and catch data summarised in Table 1. Forty-nine trawls hauls were taken, of which 40 contained more than 100 herring. In addition to 15,292 herring that were measured (an average of 382 per haul) a total of 4,531 herring were sampled for gonad, stomach and total weight, sex, maturity, otolith and macroscopic evidence of ichthyophonus infection. The thermosalinograph was run throughout the cruise and a total of 17 CTD stations were carried out, (one per day at 2200 GMT each night) (Fig. 2). A total of 45 XBT stations were carried out during the survey to provide information on temperature profiles between CTD stations, these were located at trawl stations.

Results

All the survey objectives were met. The common survey area with FRV *Michael Sars* was completely covered. The cruise was completed successfully, with no time lost due to weather. The total mileage surveyed was approximately 2,585 nautical mile (Fig. 1) with a total of 1,034 acoustic log intervals recorded. Two successful calibrations were carried out, which gave consistent results with 1999 with a difference of less than 0.2 dB for the 38 kHz system. Calibrations on 200 and 120 kHz were carried out and agreed to a similar precision. Calibration of the 18 kHz hydrographic sounder was performed for the first time and an initial value determined.

Extensive continuous medium density concentrations of herring were found North of 58°30'N to 59°00'N between 1°W and 1°E. High concentrations of herring were found east of Shetland on both sides and to the north of Poby Bank. Very substantial shoals were seen west of Muckle Flugga and off Ramna Stacks. Extensive medium density layers of herring were found north west of Orkney. A full stock estimate and survey report will be prepared shortly. Ichthyophonus infection within North Sea herring remains at a very low level, but is higher than last year at 6 of the 4,531 herring examined.

E J Simmonds
20 August 2001

Seen in draft: R Walton, Master, FRV *Scotia*

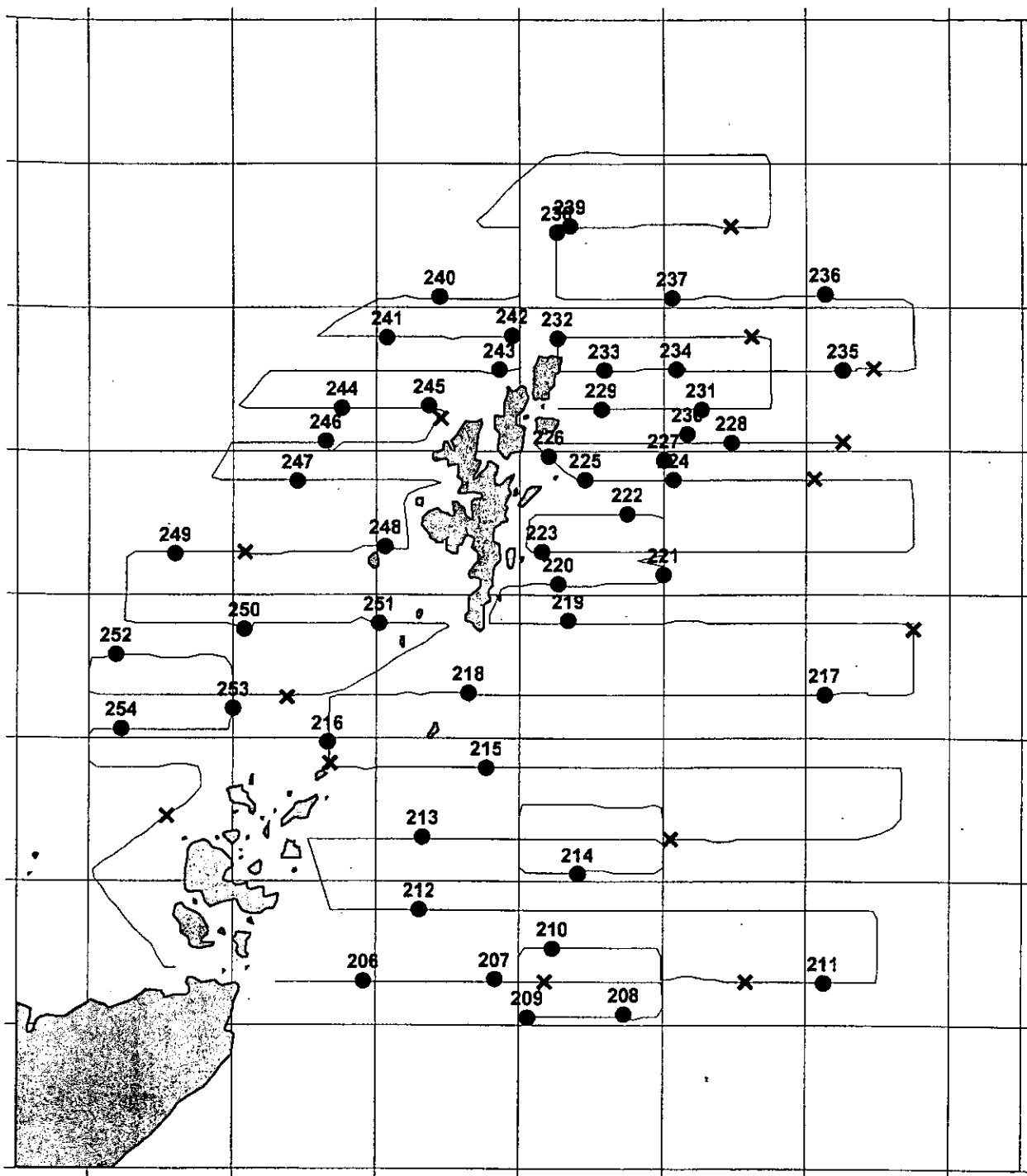


Figure 1. Cruise track FRV SCOTIA for 3-23 July 2001 trawl stations (•), CTD stations (X)

Table 1 summary of trawls hauls FRV Scotia 1-24 July 1999

[illegible]

249	60 32N 002 19W	243	2
250	60 23N 002 32W	2970	
251	60 10N 001 54W	2600	
252	60 08N 003 27W	568	2
253	59 53N 002 58W		
254	59 54N 002 01W	10060	20

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1 lumpsucker

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O Group N. Pout