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FRV "Scotia"

7SR87

Cruise 7/87

15 July-4 August 1987

## Report

### Personnel

E J Simmonds	PSO (in charge)
S T Forbes	SSO
R B Mitchell	SSO
J Dunn	HSO
P W Rankine	SO
I D Leaver	ASO
I Gibb	ASO
TV Taylor	ASO
N S Collie	PTO (15-23 July)
A Rothwell (Miss)	NCC

### Objectives

1. To participate in an ICES - coordinated acoustic and mid-water trawling survey of herring in the north western North Sea and north of Scotland.
2. To carry out target strength measurements on identified herring traces.
3. To obtain samples of herring for biological analysis.
4. To test plankton gear.
5. To obtain hydrographic samples for radio caesium monitoring.

### Narrative

"Scotia" sailed from Aberdeen at 1400 on 15 July and proceeded to Inganess Bay to carry out a calibration of acoustic survey and dual beam target strength measurement equipment. This was completed by 0900 on 16 July and the echo integrator survey grid was commenced north of 59°N working east and west with an average grid spacing of 7.5 N miles. The survey area was diverted west of Shetland on 18 July due to bad weather. The area to the west and north of Shetland to 61°N was surveyed before docking at Lerwick at 0900 on 23 July.

Following the half landing "Scotia" sailed at 0900 on 24 July for a second calibration in Gulberwick bay. The survey was resumed just south of Fetlar at 1700 hrs and the east and west survey grid was continued south to the point where bad weather had interrupted earlier work. This area was completed on 26 July and "Scotia" moved west of Fair Isle and surveyed the area west of Orkney. On 28 July passage was made through the Pentland Firth and the final part of the survey area south of 59°N was surveyed with an east and west track to the southern limit of the area 57° 15'N. "Scotia" docked at Aberdeen at 0830 on 4 August.

## Results

### 1. Acoustic and mid-water trawling survey.

The cruise track and the positions of mid-water trawl hauls are shown on the attached chart. Echo traces attributable to herring on the basis of the mid-water trawls were widespread with the major concentrations of larger fish found east and west of Shetland particularly south of Ramna Stacks and east of Balta. Very low concentrations were found west of Orkney to 4°W. East of Orkney and the Scottish mainland small fish were found within 40 miles of the shore usually in depths less than 90 m with the larger fish distributed further off shore in deeper water. The composition of trawl hauls this year followed earlier trends with the quantities of Norway pout caught less than in previous years and no evidence this year of the 'O' group whiting and haddock found in previous years.

A total of 31 trawl hauls were carried out using a Pelagic Sampling Trawl PT 160 fitted with 20 mm codend and herring were caught in 24 of them. Other species caught were whiting, and Norway pout with small quantities of haddock and mackerel. One haul in shallow water north of Orkney was from sandeels. Adult sprats were caught mixed with small herring east of the Pentland Firth.

The echo sounder output was recorded in for 1/2 metre depth samples for each transmission for the second half of the survey.

2. Target strength data was collected on 12 occasions; the data has been recorded and has been taken back to Aberdeen for analysis.

3. Catches of herring were sampled for length, weight, age, sex and maturity from every haul with catches greater than one basket of herring. A total of 1200 fish were weighed and 4,200 otoliths were taken for ageing. In addition, selected hauls were sampled for meristic data; 1300 fish were examined for age, sex, maturity and vertebrate count. The ovaries from females at maturity stage 3 or 4 were preserved for fecundity studies.

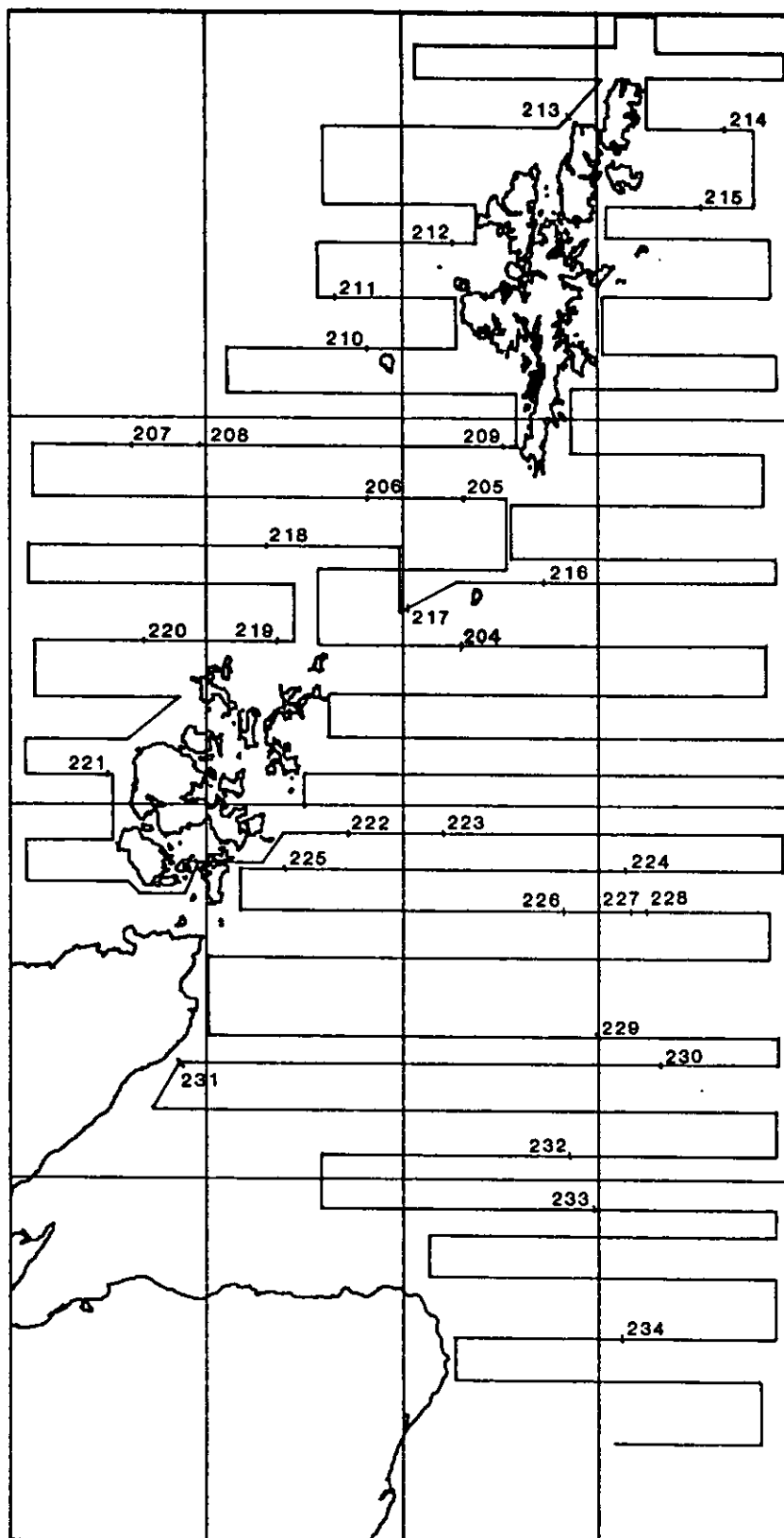
Stomachs were taken and preserved for feeding studies.

### 4. Plankton gear trials

The first half of the cruise concentrated on trials and collection of engineering data on the Aberdeen version of the METHOT net. These proved reasonably successful despite severe buckling of the main net frame during handling trials and the subsequent increase in weight due to repairs and modifications. Two mesh sizes of MINIK net were tested. In the second part of the cruise tests were carried out on modified SCRIPPS depressors using a standard GULF 3 fitted with SCANMAR depth unit. These results provide information for a new depressor. The MDS sampler mk3 deck unit was tried and worked well. New software was tested and modified to give a better, clearer display and an improved keyboard control. A larger nose cone was tested. Video of the deployment and recovery operations of the MDS system were obtained during the cruise.

E J Simmonds  
1 September 1987

Seen in draft: N McIver



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