

R1/12

In Confidence Not to be quoted without prior reference to the Laboratory

FRV "Scotia"  
Cruise 11/85

11SR85 MB

Report

1-21 November 1985

Personnel

M R Heath	SSO (in charge)	
S J Hay	HSO	
P Copland	SO	
D Keay	SO	
D Beveridge	ASO	
Miss C Argo	ASO	
A Smith	(Student)	1-11 November

Objectives

- 1 To carry out a dual frequency echointegration and midwater trawling survey of the north and west coast of Scotland.
- 2 To collect hydrographic data and plankton samples from selected areas.
- 3 To collect biological data and samples from catches of herring and mackerel.
- 4 To collect water samples for radio caesium analysis.

Narrative

"Scotia" sailed from Aberdeen at 1600 on 1 November, a course being set for Scapa Flow where calibration of echosounder equipment was carried out. The vessel then began a passage to the South Minch but southerly gales forced a detour to the Sound of Raasay, where a survey and trawling was carried out.

During 4-8 November "Scotia" completed survey, trawling and hydrographic work in the South Minch and Stanton Bank areas, stopping briefly off Mallaig to collect a member of ship's personnel and spare parts for computing equipment.

Very severe northerly winds on 9 November prevented any work and the vessel remained some 30 miles west of the Isles of Uist, eventually arriving in the lee of St Kilda. Improved weather on 10 November allowed survey and trawling work to resume and the vessel arrived at Stornoway for the mid-cruise break during the early hours of 11 November. "Scotia" sailed from Stornoway on 12 November and after collecting ship's personnel and spare parts for survey equipment at Ullapool proceeded to the west of the Hebrides. Bad weather and equipment problems forced a return to Loch Erisort the following day, where re-calibration of echosounders was performed. On 14 November the vessel again returned to the west of the Hebrides and completed the survey of this area.

During 16-19 November, "Scotia" completed acoustic survey, trawling, hydrographic and plankton sampling in the North Minch, off the Butt of Lewis and off the north coast of Scotland although bad weather again caused survey work to be abandoned on 2 occasions and further survey equipment spares were collected from Ullapool.

After completing calibration of echosounder equipment in Scapa Flow on the afternoon of 20 November. "Scotia" set a course for Aberdeen, arriving at 0600.

### Results

Persistent bad weather and technical difficulties with echosounder equipment severely restricted the acoustic survey and trawling activities during the cruise. Despite this, the entire survey area for herring was adequately covered (Figure 1). However, it was not possible to carry out any survey of mackerel populations which the distribution of the commercial fleet indicated to be situated to the north and north-west of the Orkney Islands.

Computing equipment failed early in the cruise although this did not materially affect the conduct of the survey and the problems were rectified during the mid-cruise break. More serious was the failure of the towing cable for the echosounder transducers. Conducting elements in the original cable failed during the first half of the cruise and the spare cable was lost overboard during severe weather on 9 November. Some elements in the replacement cable collected at Ullapool were found to be faulty but it was still possible to operate one transducer using this cable. For the remainder of the cruise, only the 38KHz towed transducer was operational - the 120KHz sounder was operated on the hull transducer which could not be calibrated.

Survey data collected using the 38KHz transducer were of adequate quality except during periods of bad weather. The survey indicated that herring shoals were rather discretely distributed - concentrations of older fish (>25cm) being found only to the south west of the Hebrides and in the South Minch. Herring shoals in the North Minch and off the north coast were composed predominantly of young fish (<25cm).

Bad weather prevented fishing operations on a number of occasions but 12 hauls with the PT160 pelagic trawl were carried out during the cruise. On almost all occasions the target shoals were successfully sampled (Figure 2 Table 1). A representative sample of all species caught was measured and otoliths were removed from herring, mackerel and sprat. Pyloric caeca samples for parasitological examination and individual weight data were collected from herring.

On 3 occasions during the cruise, hydrographic and plankton sampling was carried out. A total of 14 hydrographic casts with a CTD and Knudsen bottles were performed and plankton sampling with both the Gulf III high speed sampler and with the Isaacs-Kidd mid-water trawl was carried out at 8 positions (Figure 3).

Water samples for radio-caesium analysis were collected off Cape Wrath, in the Pentland Firth and off Aberdeen. Restriction of the survey area prevented collection of a sample off Fair Isle.

M R Heath

Seen in draft

4 December 1985

H Findlay

20 11 85

Table 1

Haul No S85/-	Latitude	Longitude	Area	Number of Fish			
				Herring	Mackerel	Sprat	Scad
326	57,33N	5,53W	Raasay Snd	71	-	58	94
327	57,40N	6,00W	Raasay Snd	2265	-	193	12
328	56,46N	7,35W	Berneray	74600	-	-	-
329	56,11N	7,49W	Stanton Bank	-	1	-	-
330	56,44N	8,45W	30'W Barra	63	-	-	2
331	56,47N	8,50W	30'W Barra	5457	173	-	-
332	57,35N	8,25W	St Kilda	15368	360	-	-
333	58,16N	6,04W	Tiupen Hd	3	-	75	982
334	58,38N	4,47W	Faraid Hd	1522	-	51	-
335	57,56N	5,32W	Priest Is	1	-	-	-
336	58,23N	6,06W	Tolsta Hd	97	-	55	-
337	58,55N	3,41W	Rora Hd	1	-	2	-

SCOTIA 11/85 - CRUISE TRACK 1-21 NOVEMBER 1985

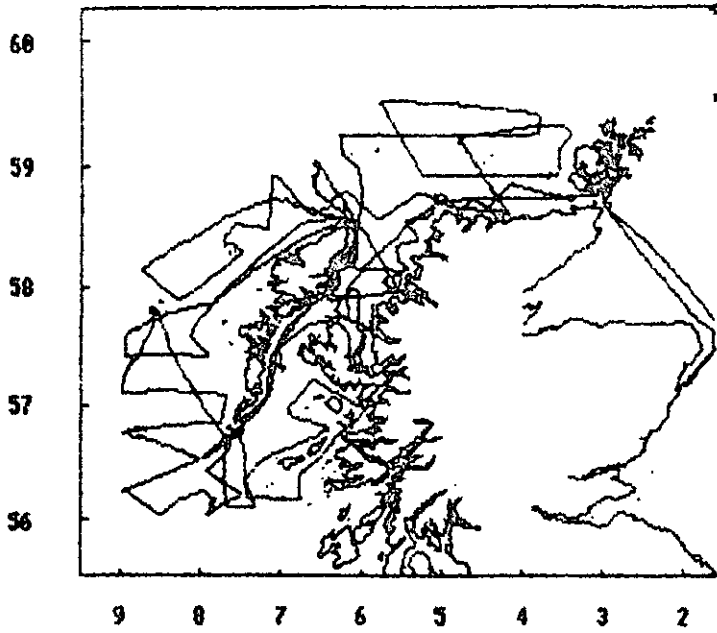


FIGURE 1

SCOTIA 11/85 - PELAGIC TRAWL POSITIONS

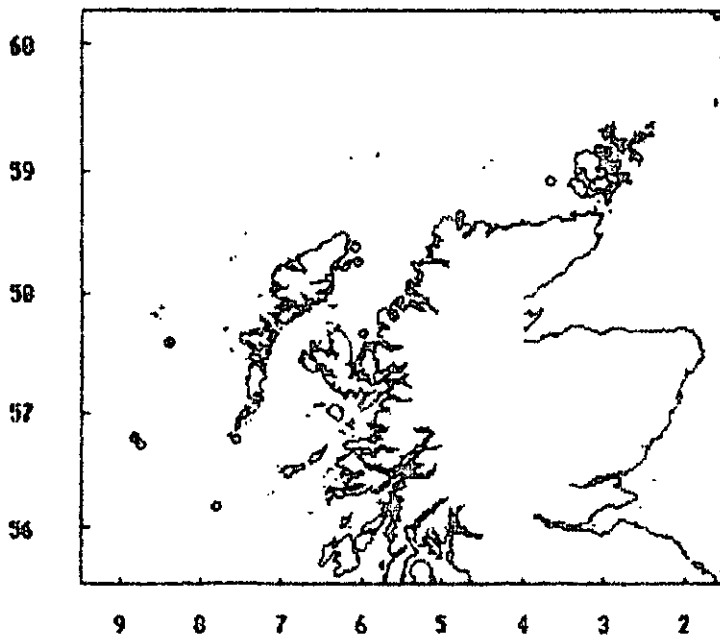


FIGURE 2

SCOTIA 11/85 - HYDROGRAPHIC SAMPLING POSITIONS

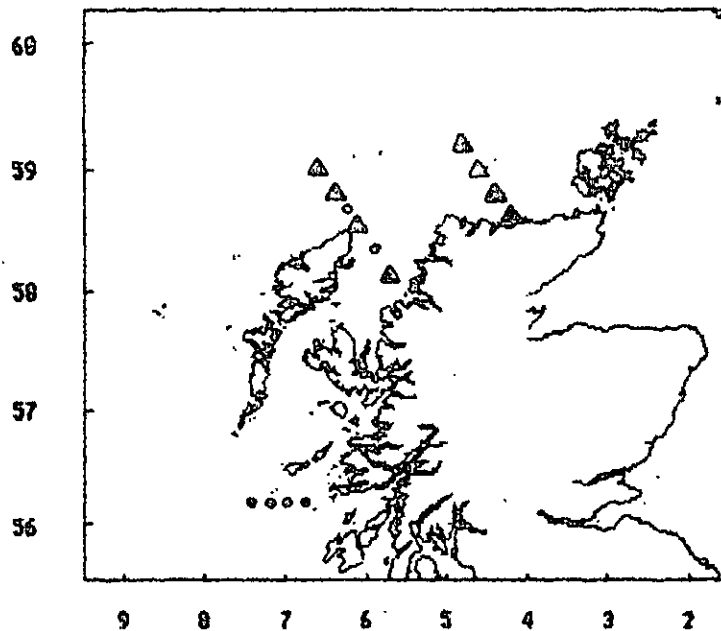


FIGURE 3

▲ PLANKTON SAMPLING POSITION

SCOTIA 11/85 - CRUISE TRACK 1-21 NOVEMBER 1985

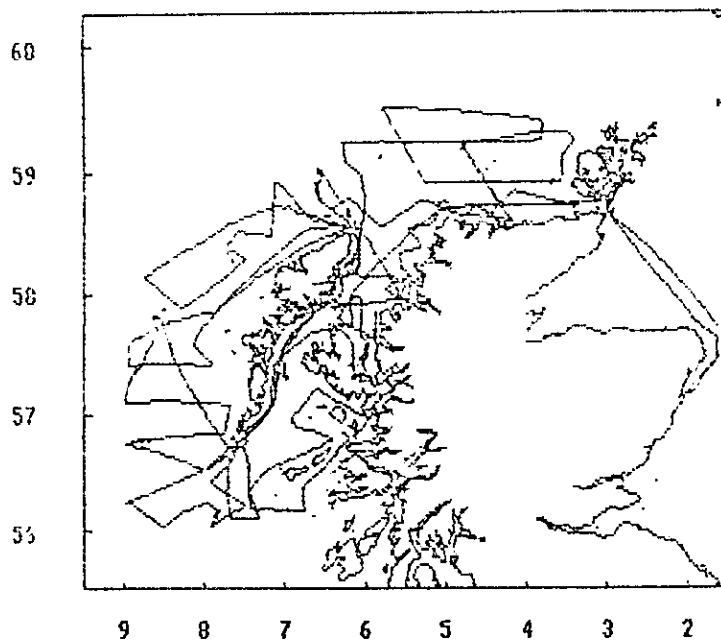


FIGURE 1

SCOTIA 11/85 - PELAGIC TRAWL POSITIONS

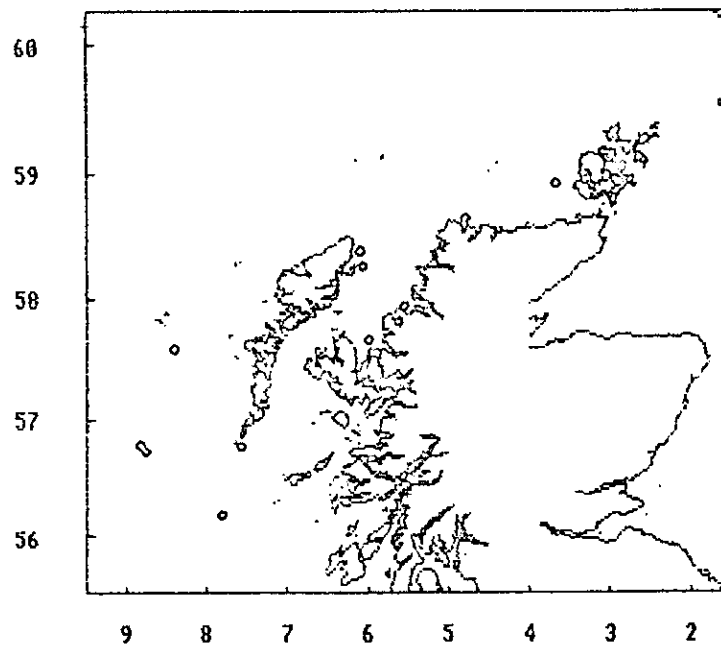


FIGURE 2

SCOTIA 11/85 - HYDROGRAPHIC SAMPLING POSITIONS

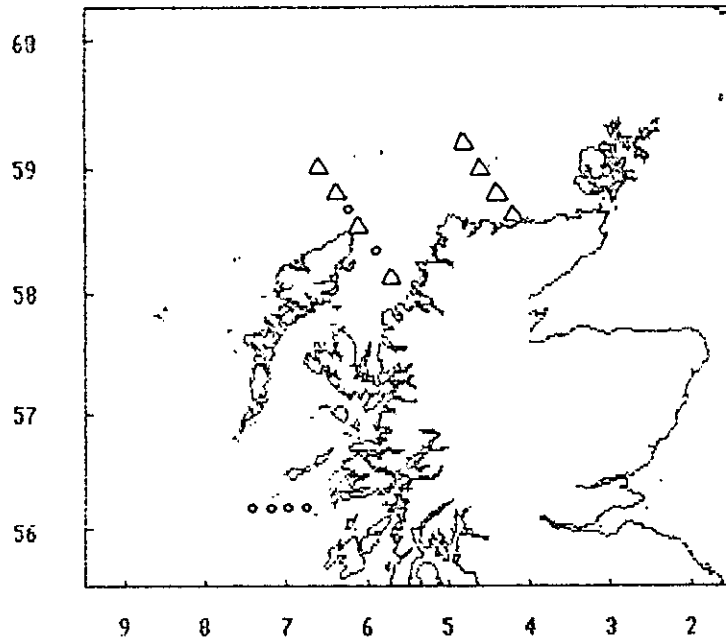


FIGURE 3

Δ PLANKTON SAMPLING POSITION

SCOTIA 11/85 - CRUISE TRACK 1-21 NOVEMBER 1985

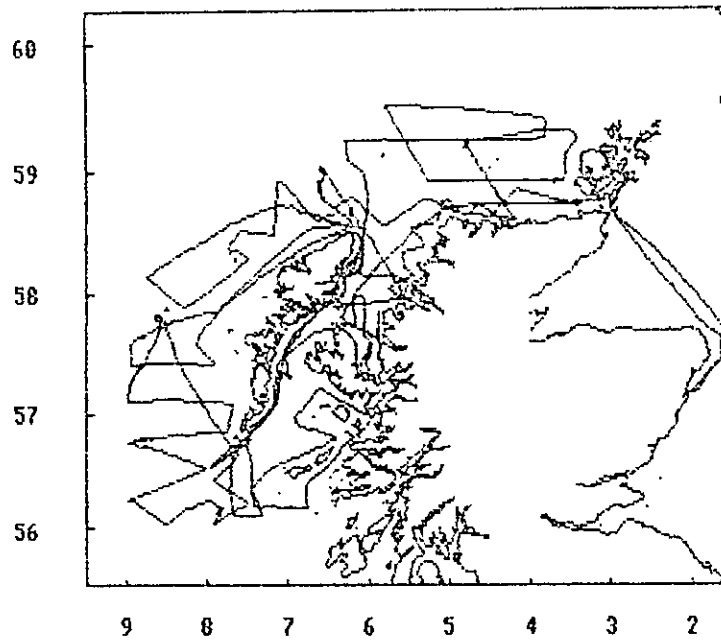


FIGURE 1

SCOTIA 11/85 - PELAGIC TRAWL POSITIONS

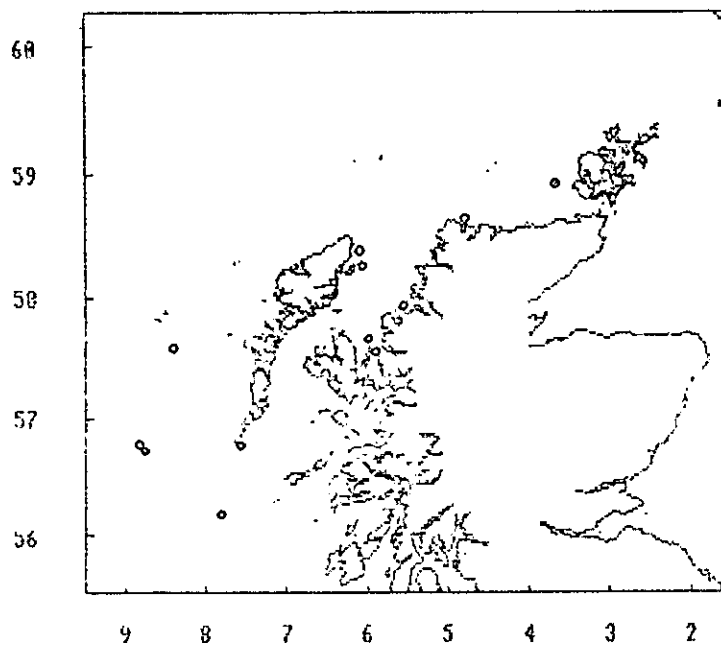


FIGURE 2



SCOTIA 11/85 - HYDROGRAPHIC SAMPLING POSITIONS

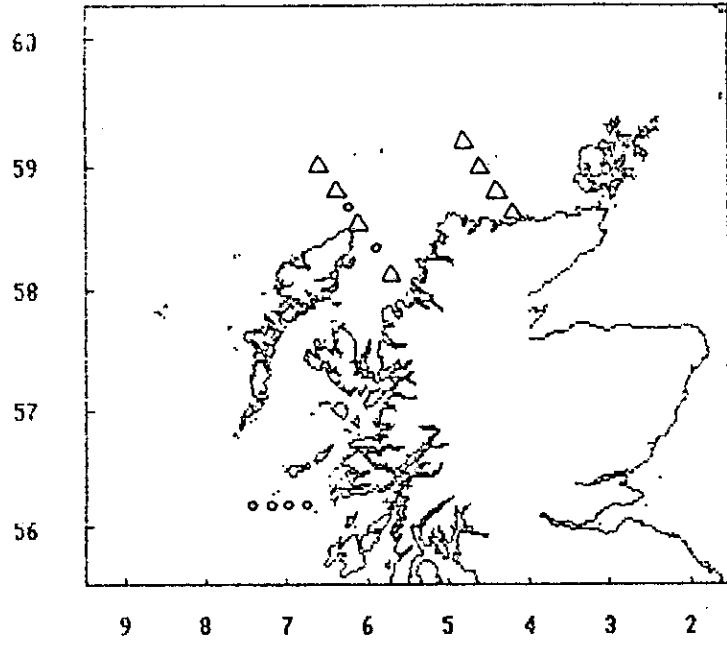


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