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FRV "Scotia"
Cruise 11/86

REPORT

31 October - 20 November 1986

Personnel

M R Heath	SSO (in charge)
J Dunn	HSO
P Copland	SO
J R Hutcheon	SO
C Argo (Miss)	ASO
D L Baird	ASO
I D Leaver	ASO
R Ward	(Visitor, NCC)

Objectives

- 1 To carry out a dual frequency echointegration and mid-water trawling survey of the north and west coasts of Scotland.
- 2 To collect biological data and samples from catches of herring and mackerel.
- 3 To carry out hydrographic and plankton sampling in the north-western North Sea.
- 4 To collect water samples for radio-caesium analysis.
- 5 To record sea bird abundances and distributions (NCC).

Narrative

"Scotia" sailed from Aberdeen at 1500 on 1 November, departure having been delayed by 24 hours because of repairs to an echosounder transducer. Eight plankton hauls were carried out during the passage to Scapa Flow where calibration of the towed transducers was performed. During the following 5 days the vessel carried out echo-surveying mainly in the area west and south-west of the Outer Hebrides, but a heavy swell and strong winds prevented any trawling. Severe weather forced the ship to spend the remaining 2 days of the first half of the cruise surveying and trawling in the North Minch. "Scotia" docked in Stornoway for the mid-cruise break at 1100 on 10 November.

On leaving Stornoway, "Scotia" again headed south to work around Barra Head and west of the Hebrides, but severe weather forced the vessel to shelter for 36 hours in the lee of St Kilda. During 14 and 15 November, extensive echo-surveying and trawling was carried out between Barra and the Flannan Isles, until strong winds again forced a retreat to more sheltered waters off the north coast of Scotland. Between 16 and 18 November echo-surveying was carried out between Orkney and the Butt of Lewis, and transducer calibrations were carried out in Loch Eriboll and Inganess Bay. During the final day of the cruise hydrographic and plankton sampling was carried out between Fair Isle and Peterhead. "Scotia" docked in Aberdeen at 0900 on 20 November.

Results

1 Echo-integration and trawling survey

The survey was plagued by bad weather and the echo-surveying equipment was operating at the limit of its capability for much of the time. The echo-integration and computer equipment did not perform reliably, particularly during the first part of the cruise, but most of the problems were resolved during the second part. The 120 KHz towed transducer never functioned satisfactorily, and this system was operated on the hull transducer for most of the cruise.

Due to adverse weather, coverage of Division VIa(N) was not as extensive as would be desirable. However, the geographical distribution of pelagic echo-traces was similar to the previous year (Scotia 11/85) and the major areas of concentration were adequately covered, these being in the south-west part of the North Minch, and close to the shelf edge to the south of St Kilda. Catches of fish taken in these areas indicated that the echo-traces were composed largely of herring although a significant proportion of mackerel were taken near St Kilda. Elsewhere in Division VIa(N) few pelagic echo-traces of any consequence were observed. The length distribution of herring catches indicated that, as in 1985, fish in the range 27-29 cm formed the major part of the population in the offshore areas, whilst fish in the range 19-24 cm predominated in the Minch. Samples of herring stomachs, pyloric caeca and otoliths were collected from herring catches and approximately 150 fish were weighed.

2 Hydrographic and plankton sampling

The Argos drifting buoy released in a patch of herring larvae during Scotia cruise 9/86 had broken loose from its sea anchor during mid-October and was too far east at the start of cruise 11/86 for recovery to be attempted. Sampling was therefore carried out at the beginning and end of the cruise, in the area between Peterhead and Orkney where the buoy was expected to have been in November, had the sea anchor remained intact. In addition, surface temperature and salinity data were recorded at 10 minute intervals throughout the cruise using a thermosalinograph.

Plankton sampling at the start of the cruise was with the conventional Gulf III, and the results indicated that herring larvae were most abundant in a narrow band approximately following the 80-100 m depth contours from off Peterhead to the east side of Orkney. The length range of these larvae was 7-33 mm, with the majority in the range 11-18 mm.

At the end of the cruise sampling with the Gulf III was carried out at positions along a course between Fair Isle and Peterhead via the Fladen Grounds. Hydrographic data were collected with reversing water bottles between Fladen and Peterhead, but the Multi-depth Plankton Sampler developed a serious electrical fault and could not be used. Herring larvae were widespread, being found even in the Fladen area but, as at the start of the cruise, were most abundant in the 80-100 m depth region.

3 Sea-bird observations

The visitor from the NCC carried out sea bird counts at 10 minute intervals whilst

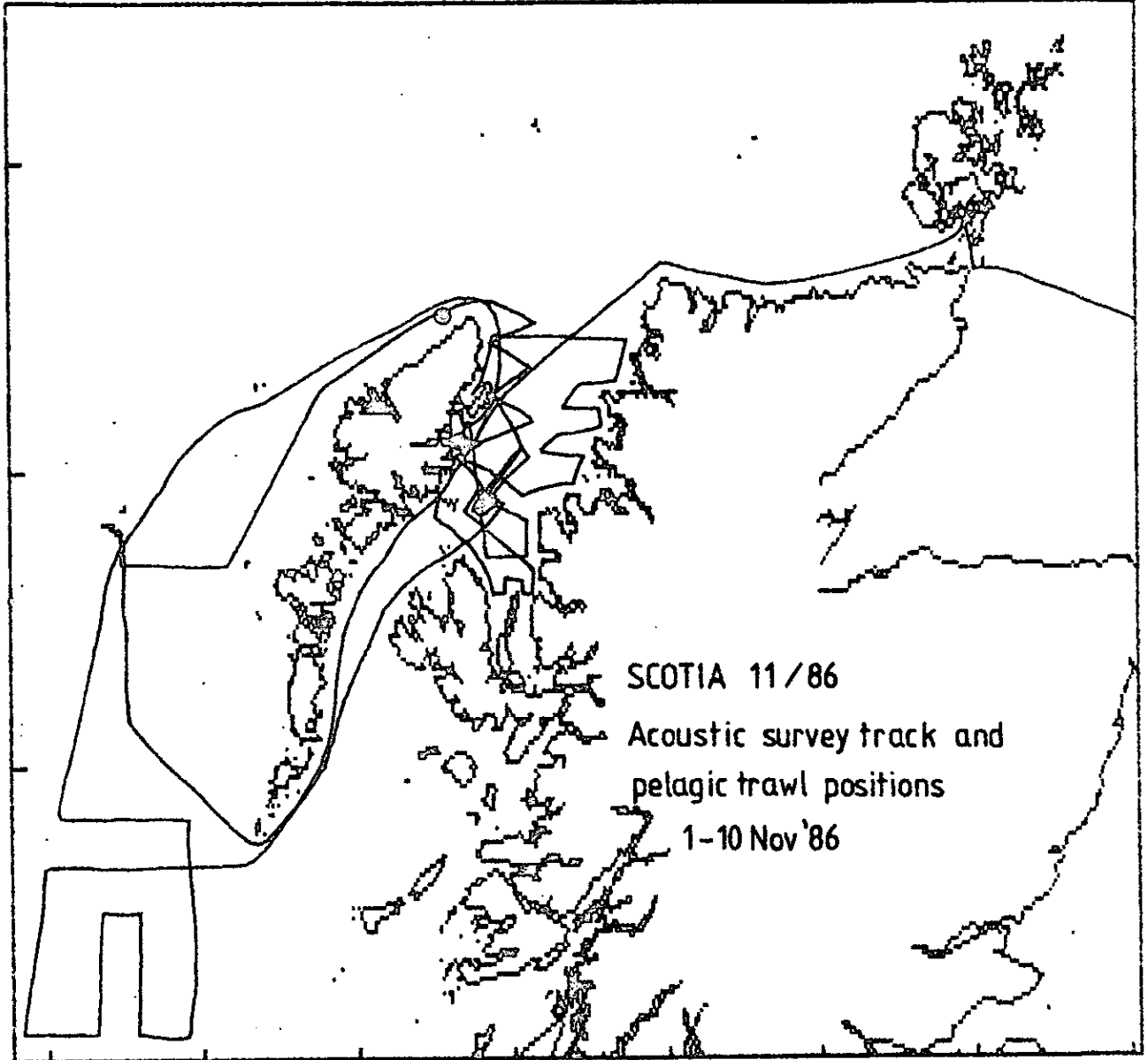
the boat was underway. Bad weather and poor visibility seriously limited the time during which observations were possible.

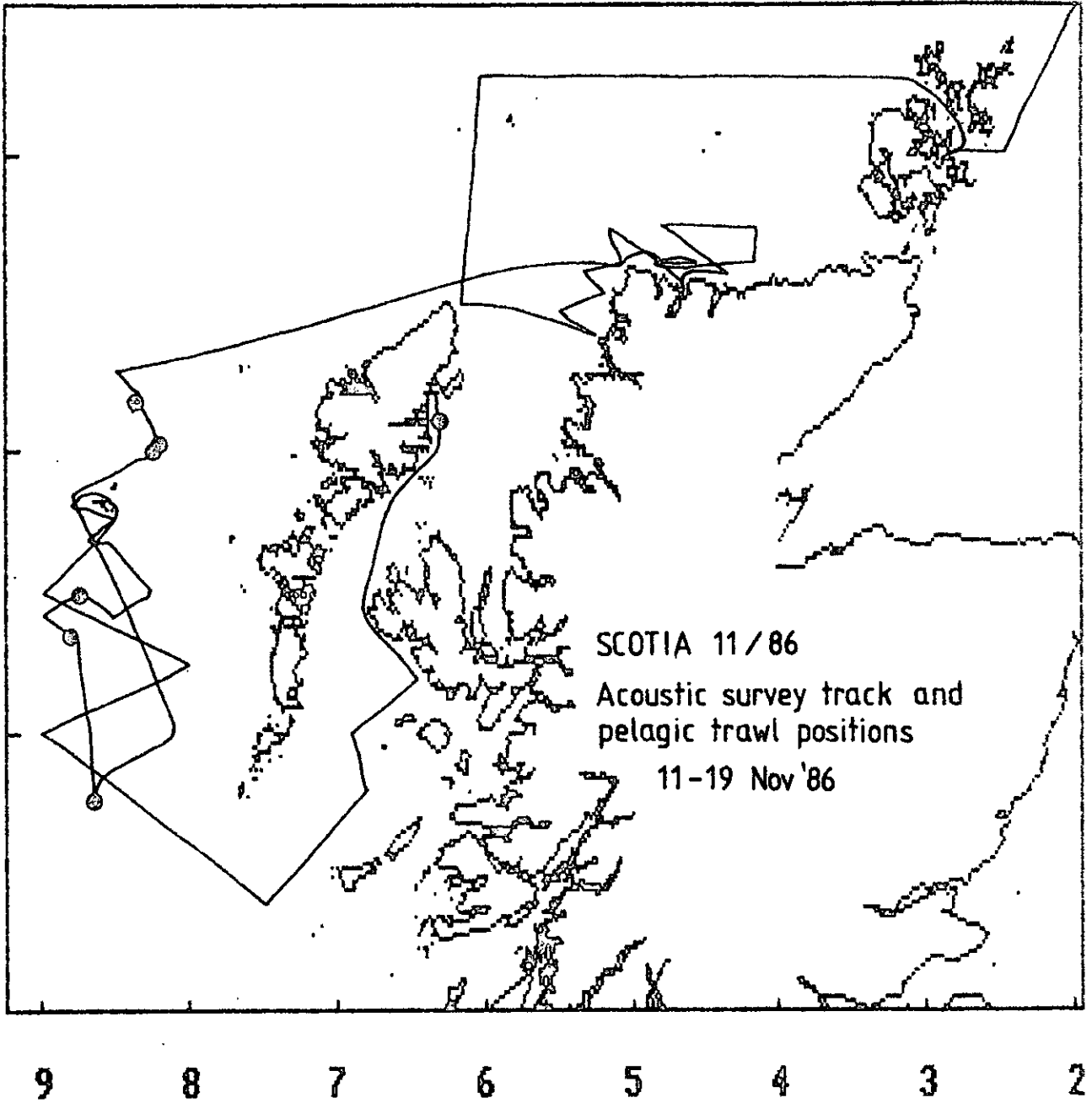
4 Radio-caesium sampling

Water samples for radio caesium analysis were collected in the Pentland Firth, off Cape Wrath, Fair Isle and Aberdeen.

M R Heath
12 December 1986

Seen in draft: N E McInnes





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PLANKTON/HYDRO. STATIONS SCOTIA 11/86

