

R1/12

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FRV Scotia

Cruise 1704S

REPORT

7-21 December 2004

Personnel

J Dunn (In charge)

S Hay

J Hunter

N Collie

M Rose

K Cook

D Lichtman

S Robinson

C Skinner (Aberdeen University)

A Pedersen (RRV Dana)

B Jensen (RRV Dana)

Sampling gear: Hydro graphic CTD; Plankton nets ARIES, Dual Methot net

Fishing gear: GOV Trawl, BT 137, Ground Gear C

Area: Northwestern North Sea-Faeroe Shetland Channel, North Sea (Fladen ground).

Objectives

1. To conduct routine hydrographic sampling at stations along the standard JONSIS, Fair Isle-Munken and Nolso-Flugga survey lines.
2. To conduct plankton and hydrographic sampling with ARIES in the Faeroe Shetland Channel.
3. To conduct plankton and hydrographic sampling with ARIES and a Methot net on the Fladen ground.
4. To conduct fishing operations at selected areas on the Fladen ground.

Out-turn Days per Project: 15 days AE11r

Narrative

Scotia sailed from Aberdeen on Tuesday 7 December in sunny weather to deep water about two hours distant from Aberdeen and commenced test deployment of the CTD system. The plankton winch and ARIES system were tested successfully at this location.

Scotia made passage to the eastern most end of the JONSIS line, and commenced sampling at 1145 on Tuesday 7 December. Sampling on the line was continued in marginal weather and completed at 1230 on Wednesday 8 December without incident.

Scotia commenced the Fair Isle – Munken stations in poor weather at 1915 on Wednesday 8 December in very heavy weather and had completed the first ARIES station SEFOS 2 by 2357. Steady progress was made in freshening winds and a large swell with FIM 6 completed by 1200 on the Thursday. However, by this time the wind speed had now increased to 45 to 50 knots, coupled with an increasing swell, it was decided to dodge the vessel in the area, and allow the fast moving depression to move through, before continuing the survey.

The weather suddenly faired away at 0100 on 10 December and a Dual Methot net was deployed at FIN 06 to complete that station.

Work continued uninterrupted along the line, which was completed by 2230 and subsequently the vessel made passage to Thorshaven to land a member of the scientific team for a serious family matter.

Following the port call at 0800 on Saturday Scotia made passage to the Northern end of the Nolso–Flugga line, commenced sampling at 0940 and had started Nol 6 by 2330.

Scotia completed the Nolso-Flugga line by 0730 on Monday 13 December and the vessel made passage to the matrix of stations on the Fladen ground in worsening weather conditions.

Over the next twelve hours sea and wind conditions deteriorated very badly and it was decided to make for the Moray Firth and shelter. The vessel reached shelter by 0940 on Tuesday 14 December, where a series of sampler checks and modifications were carried out.

An alternative grid of stations to the west and south of the main grid was devised and Scotia commenced this at 1340, deploying ARIES and Dual Methot net systems at each station.

Work continued on the revised grid of stations during the early hours of Wednesday 15 December and two trawls were shot at stations, previously identified as having higher concentrations of *Calanus finmarchicus*.

Scotia continued along the line of stations and into the Fladen grid of stations, but by 2300 on Wednesday 15 December (due to very strong winds and a rising sea state) the vessel was forced to break off and seek shelter in the Moray Firth.

Scotia spent all of the Thursday sheltering from severe weather conditions, but better weather allowed the vessel to make passage to station one in the Fladen box on Friday 17 December.

On reaching station one, the weather had yet again deteriorated and it was impossible to carry out any sampling. Scotia dodged until 0216 on Saturday morning when the wind suddenly dropped and a Dual Methot net was deployed to complete the programmed sampling at this position.

The vessel then completed stations eight, seven and six, in an awkward heavy swell and steadily increasing bitterly cold wind. Trawls were shot at stations seven and six and the resultant catches, which consisted of mainly whiting, haddock, pout, and a few assorted fish and crustacean species were worked up. Stomach contents were examined from selected fish from both trawls, but no evidence of Calanoid copepods could be seen. Samples of pout from all trawl hauls have been frozen for more detailed examination back in Aberdeen.

Scotia made passage to station thirteen in the Fladen box - but in a big swell, strong winds, and a deteriorating forecast, the decision was taken to dodge the vessel until daylight.

The weather had moderated sufficiently by 0630 on Sunday 19 December to allow Dual Methot net and ARIES to be deployed at station thirteen, and a trawl was completed at this station before the vessel proceeded to station fourteen. A trawl was completed at this station, as well as an ARIES and Dual Methot net, before the vessel made passage south to station eleven, where Dual Methot and ARIES were deployed in very poor weather conditions. The weather closed in again and Scotia made passage to station 10 at three knots in very stiff winds and heavy swell.

During the early hours of Monday 20 December and into the afternoon Scotia carried out plankton sampling at stations fifteen, thirty, thirty one, sixteen, and nine using ARIES and Dual Methot nets in light winds and moderate sea conditions. The vessel completed this by 1445 and made passage for Aberdeen, docking just after midnight.

I would like to thank Captain Barratt, the officers and crew of the Scotia for their invaluable help and advice during the cruise.

## Results

The survey was conducted in marginal weather conditions most of the time, with some very severe wind and sea conditions especially in the North Sea part of the programme.

1. The JONSIS standard section in the northern North Sea was surveyed completely, and both the Fair Isle- Munken and Nolso- Flugga standard sampling lines were surveyed in full.
2. Plankton and water samples were collected using ARIES and a Dual Methot net in the Faeroe Shetland Channel.
3. Plankton and water samples were collected over a grid of stations in the outer Moray Firth and to the west of the Fladen ground using the ARIES and Dual Methot net systems.
4. A GOV trawl was deployed at 6 stations where fish and fish stomachs were collected for analysis.

Throughout the cruise surface temperature, salinity and fluorescence recordings were made using a Sea-bird SBE21 Thermosalinograph and a Sea Point Fluorometer.

A total of 42 stations were completed using the Seabird 911 + CTD.

Detailed results of the hydrographic data collected during the cruise will be made available as the data is worked up and interpreted by the laboratory.

A total of 135 plankton samples were taken during the survey.

The ARIES plankton sampling system functioned 100% during the survey.

From each ARIES haul 20, C5 Calanus were picked out (if available) and were preserved in liquid nitrogen for DNA analysis.

The Bran and Luebbe auto analyser worked very efficiently, during the cruise, and easily kept pace with the number of samples being produced. A total of 856 samples were processed for total oxidised nitrogen, silicate and phosphate. Results will be available when data is fully worked up by the laboratory.

The EA500 and EK500 echo sounders were run continuously during the cruise and their output logged.

John Dunn

Seen in draft: Captain P Barrat, OIC Scotia

Copies of Figures available from file R1/12