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FRV *Scotia*

Cruise 1501S

REPORT

5-19 October 2001

Start port: Aberdeen

End port: Aberdeen

Personnel

G Slesser	In charge
S Hughes	
M Burns	
P Simpson	
C Shaw	
J Beaton	
R Swift	University of Aberdeen
G Hastie	University of Aberdeen
M Inall	University of Highlands and Islands
J Hall-Spenser	Glasgow University
K Brown	University of Aberdeen
J Shannon	University of Aberdeen

Gear

Sea-Bird CTD's, ADCP Moorings, Day Grab

Objectives

1. To perform a hydrographic survey along the JONSIS standard section in the northern North Sea.
2. To perform hydrographic surveys along the standard Faroe Shetland Channel sections.
3. To service two of the Nordic WOCE ADCP moorings.
4. To recover three moorings deployed by the RRS *Discovery*.
5. To perform ad-hoc sonar buoy recordings of cetaceans.
6. Repeat wide area CTD survey of Faroe Shetland Channel.
7. Throughout the trip, to carry out experiments on the nutrient analyser system.
8. To carry out benthic sampling at selected Fair Isle Munken stations.

9. To deploy three moorings for Aberdeen University Zoology Department.

Out-Turn Days per Project: 10 days, Ae11n; 5 days, C675

Narrative

Scotia sailed from Aberdeen at 1130 hours (all times are GMT) on Friday 5 October and proceeded to the last known position (59°52.74'N 001°28.62'W) of a drifting ADCP buoy that had become free from mooring NWSD (60°27.23'N 004°22.49'W). A test 911+ CTD deployment was performed during the passage. The ADCP buoy was located at 1035 hours on Saturday 6 October and recovered at 1120 hours. *Scotia* proceeded to the start of the JONSIS line.

The JONSIS standard section commenced at 2050 hours on Saturday 6 October and was completed at 0759 hours on Sunday 7 October (Stns 378-389). *Scotia* then proceeded to the start of the Fair Isle Munken section to commence CTD stations. Work started at 1431 hours on Sunday 7 October. A fault in the 911+ CTD communications occurred at the first station and CTD work was terminated. Given the nature of the fault it was decided to abandon CTD work until after visiting Torshavn. Work proceeded with benthic sampling until the early hours of 7 October. During the morning and early afternoon of 7 October three sonar buoy moorings (60°26.83'N 004°22.73'W, 60°22.52'N 004°27.69'W, 60°22.58'N 004°17.61'W) were deployed for the Aberdeen University Zoology Department. Prior to leaving for Torshavn further benthic sampling was undertaken.

Scotia docked at 0730 hours on Tuesday 9 October. The ADCP was transported from the ship to the Faroese Fisheries Laboratory for down loading of the data, replacing of the batteries and refurbishment of damaged parts of the mooring. *Scotia* left Torshavn at 0745 hours on Wednesday 10 October after delivery of the ADCP and a replacement ADCP for mooring NWSE and made passage to the start of the Nolso - Flugga section. Using the repaired 911+ CTD, work along this line commenced at 1020 hours of that day and was completed by 1748 hours on Thursday 11 October (Stns 390-405).

Scotia proceeded to the start of the Munken line and began stations at 1239 hours on Friday 12 October. This line was worked up to near the location of the NORDIC WOCE mooring NWSD. Mooring NWSD (60°27.07'N 004°22.49'W) was deployed at 0852 hours on Saturday 13 October. This was followed by the deployment of NORDIC WOCE mooring NWSE (60°16.54'N 004°19.97'W) at 1124 hours. Passage was then made to the next CTD station on the Munken line. The Munken line was completed at 2218 hours on Saturday 13 October (Stns 406-419). This was followed by benthic sampling near the end of the Munken line prior to making an overnight passage to the southernmost mooring position of the three moorings deployed by RRS *Discovery*. This mooring was recovered at 1328 hours on Sunday 14 October. This was followed by five CTD stations, completed by 2012 hours. The remaining RRS *Discovery* moorings were recovered at 0915 hours and 1612 hours on Monday 15 October.

For the remainder of the trip *Scotia* carried out 10 water bottle/CTD casts in aid of the nutrient analyser comparison trials and then performed 25 CTD stations across the shelf (Stns 420-454). This was followed by further benthic sampling at selected Fair Isle Munken stations across the shelf edge. *Scotia* finally proceeded to the Moray Firth where some time was given on the afternoon of Thursday 18 October for further recordings of cetaceans. *Scotia* then proceeded to Aberdeen, where she berthed at 0530 hours on Friday 19 October.

Results

The trip was characterised by reasonable sea conditions throughout.

1. The JONSIS standard section in the northern North Sea was surveyed.
2. The two standard Faroe Shetland Channel sections were surveyed.
3. The drifting Nordic WOCE ADCP mooring NWSD was recovered successfully west of Shetland, the data downloaded, the instrument reset and redeployed. These data will be processed in the laboratory by in-house software. In addition a replacement ADCP for Nordic WOCE ADCP mooring NWSE was deployed.
4. The three moorings deployed by RRS *Discovery* during September were successfully recovered. Leakage in three Aanderaa RCM7 current meters deployed on the moorings resulted in a total loss of data. Data from the ADCP's and miniloggers deployed on these moorings were downloaded. The S4 current meters deployed on these moorings will be downloaded on return to Dunstaffnage.
5. Passive acoustic surveys for cetaceans were carried out in the Faroe Shetland Channel and Moray Firth. The surveys were conducted using a towed hydro phone array between standard hydrographic stations along Fair Isle Munken and Nolso Flugga lines, where travel times exceeded one hour, and between transect lines. Towed array surveys were also carried out during transits between mooring deployment and recovery sites. Sperm whales and dolphin species were acoustically detected during these surveys. Sighting of an un-identified dolphin species and pilot whale were made.
6. CTD stations were carried out across the east shelf of the Faroe Shetland Channel in support of the MAIA contract and the data collected will be interpreted in the laboratory.
7. Two sets of five stations of water samples were taken at 5 m and 800 m at the same position for the analysis of nutrients using the Bran + Luebbe AA3 nutrient analyser. Statistical analysis of these nutrient results to investigate the sampling technique will be undertaken later by a laboratory statistician.
8. The benthic sampling of calcareous macro fauna carried out at selected locations along the Fair Isle - Munken line will be used for the reconstruction of ocean climate change. These samples will be worked up in the coming weeks.
9. Three "pop-ups" (bottom mounted whale recording units) were deployed for Aberdeen University Zoological Department in the Foinaven Schiehallion development area as part of long-term project to detect and then track the fine scale movements of large whales (fin and blue whale) within the Faroe Shetland Channel. These units will be in place until January/February 2002.

Throughout the cruise surface temperature, salinity and fluorescence recordings were made using a Sea-Bird SBE21 Thermosalinograph and Sea Tech Fluorometer. Detailed results of the hydrographic data collected during the cruise will be made available as the data is worked up and interpreted in the laboratory.

G Slesser
10 December 2001

Seen in draft: Capt R Walton