

R1/12

Not to be cited without prior reference to the FRS Marine Laboratory, Aberdeen

FRV *Scotia*

Cruise 0108S

## **REPORT**

7-22 January 2008

**Loading:** Aberdeen

**Unloading:** Aberdeen

### **Personnel**

\*Alistair McIntosh  
George Slesser  
Marie Russell  
Malcolm Rose  
Margaret McKenzie  
Ines Hussy  
Eric Dalgarno  
Gill Packer  
David Watson

**Fishing gear:** BT 101 with tickler chains; Day grab

### **Objectives**

1. To undertake water, sediment and biological sampling for the Clean Seas Environmental Monitoring Programme (CSEMP).
2. To collect water samples for nutrient studies as part of the Scottish Coastal Eutrophication Assessment Survey.
3. Undertake CTD profiles, phytoplankton and water samples for chlorophyll a and nutrients in support of coastal phytoplankton monitoring programme, AE11t.
4. Sediments will be collected for phytoplankton cyst studies.
5. Collection of sea water for RGU.

**Out-turn Days Per Project:** 14 days AE11p; 2 day AE11t

### **Narrative**

Scotia sailed from Aberdeen at 1600 on 7 January. Passage was made north to the Moray Firth where sediments were sampled from 15 stratified random and the 2 fixed CSEMP sites. Fishing was undertaken at 2 locations. Plaice were sampled from the offshore site and dab from the

intermediate site. The WFD sites were sampled on route. Water for the Scottish Coastal Eutrophication Assessment Survey (SCEAS) was sampled at 15 minute intervals.

With deteriorating weather, Scotia sheltered in Sinclair Bay from 0600 to 1200 on 9 January. Passage was then resumed north and into the Pentland Firth. Sampling at the Dounreay WFD site was not possible due to weather. Very slow passage was made until, with some abatement in the weather, Scotia returned to sample the Dounreay site and then continued west, sampling the Loch Eribol WFD site, before heading into the North Minch where the random stratified sediment sampling commenced at 0730 on 10 January. Ten random stratified sediment sampling sites were successfully completed in the north and south Minch, together with CSEMP 85, the WFD sites in the North Minch and the Inner Sound and a trawl off Gairloch before moving to the Sea of Hebrides where random stratified sediment sampling and the WFD site were successfully completed on 11 January. Scotia made passage north where a trawl was taken off Broad Bay. Passage was then made to Shetland via the north coast and the west side of Orkney. The random stratified sediment sampling was completed on the west of Shetland and passage continued north. In worsening weather, Scotia sheltered off the west coast of Unst before continuing around the north coast of Shetland. The weather conditions precluded fishing off the east of Unst and passage was made south to the east Shetland random stratified sediment sampling site. On completion, the SEPA sediment sites off Lerwick were sampled. As the weather deteriorated further, the sampling was abandoned and Scotia berthed in Lerwick at 1800 on 14 January for a half landing. Due to the inclement weather conditions, Scotia did not sail again until 1230 on 16 January. The remainder of the Lerwick sediment sites were completed before passage was continued south, down the east side of Orkney, across the Moray Firth and down the east coast mainland. The random stratified sediment sampling was completed at the CSEMP site off Montrose and passage continued south, sampling 4 WFD sites before arriving at the Berwick upon Tweed site at midnight on 17 January. Passage was then made north to the CSEMP 165 site where sediment was sampled and a trawl taken. A further trawl was taken to the west of this site before passage was made north. With severe weather being forecast, passage to the Fladen Ground was postponed and Scotia returned north to pick up coastal water samples and sediments for phytoplankton cyst studies along the Moray coast. This was completed by 1200 on 19 January and passage then made to the Fladen Ground. Three trawls were taken on the Little Halibut Bank before the random stratified sediment sampling at Fladen commenced at 0200 on 20 January. Over the next 24 hours, 12 sediment sites were sampled for benthos and chemistry and a trawl was taken for biological material for chemical analyses. On completion of sampling in this area, passage was then made for Aberdeen where berthing was completed by 1330 on 21 January.

During the morning of 22 January, all scientific gear and biological samples were transferred to the Marine Laboratory.

## **Results**

All objectives were completed and the outcome summarised in Table 1. The cruise track is shown in Figure 1.

A total of 985 samples were analysed for the nutrients TOxN, phosphate, silicate, nitrite and ammonia.

Over 100 bile samples, for PAH metabolites, and the protein fraction from 125 homogenised liver samples were analysed during the cruise.

CTD data was transmitted to BOCD at regular intervals for onward transmission to the Met Office for weather forecasting purposes.

Despite experiencing some very poor weather during this cruise, the objectives were successfully completed thanks to the excellent co-operation of the officers, crew and the scientific staff.

A McIntosh SIC  
18 February 2008

Seen in draft  
N Paddle OIC

**Table 1**

<b>CSEMP (NMMP) Site</b>	<b>Water samples</b> (nutrients TOxN, phosphate, silicate, nitrite and ammonia analyses)	<b>Sediment physico-chemical parameters</b> (PAH, CB, PBDE, trace metals, PSA, CHN)	<b>Macrobenthos</b>	<b>Fish Chemistry</b> Chemistry (PAH, CB, PBDE, trace metals) and biological effects (EROD and PAH bile metabolites)
<b>Continuous - 15 minute interval - water sampling in support of SCEAS</b>				
East Coast	CTDF; Nutrients	5 samples	5 samples (1 mm sieved fraction)	-
CSEMP165	CTDF; Nutrients	1 sample	-	5 pools of 5 dab (ND no plaice)
Fladen ground	4 x CTDF; Nutrients	3 samples from each of 4 strata	3 samples from each of 4 strata	4 pools of 5 fish
Moray Firth	3 x CTDF; Nutrients	15 samples from 2 strata	15 samples from 2 strata	-
CSEMP95	-	1 sample	-	5 pools of 5 dab (Intermediate site)
CSEMP105	-	1 sample	-	5 pools of 5 plaice (offshore site)
North Minch	CTDF; Nutrients	5 samples	5 samples	5 pools of 5 plaice
South Minch	CTDF; Nutrients	5 samples	5 samples	2 pools of 5 plaice; 5 dab
CSEMP85		1 sample	-	-
Sea of Hebrides	CTDF; Nutrients	10 samples	10 samples	-
Shetland west coast	CTDF; Nutrients	5 samples	5 samples	-
Shetland east coast	CTDF; Nutrients	5 samples	5 samples	Fishing not possible due to weather
<b>Shetland Offshore sites (on behalf of SEPA)</b>				
<b>SEPA site</b>		<b>Sediment physico-chemical parameters</b> (PSA, CHN)	<b>Macrobenthos</b>	
Hawk's Ness		1 sample	1 sample	
Lerwick UWWTD Site F		1 sample	1 sample	
Lerwick Benthic sample site 2		1 sample	1 sample	
Lerwick Benthic sample site 17		1 sample	1 sample	
Lerwick UWWTD Site B		1 sample	1 sample	
<b>Sampling at the WFD sites</b>				
Berwick upon Tweed		CTDF – surface to 10m  Nutrient samples from 1, 5 and 10m  Lund tube for phytoplankton and chlorophyll  63µ net for plankton		
Isle of May				
East of Eden Estuary				
St Andrews Bay				
Montrose				
Newburgh				
Peterhead				
Burghead				
Cromarty Firth				
Wick				
Dounreay				
Loch Eribol				
Inner Sound (surveillance site)				
Minches North (surveillance site)				
Torridon				
Sea of Hebrides				
<b>Sediment samples for phytoplankton cyst studies</b>				
Sediment sampled at 14 sites along the Moray Firth coast				
<b>Collection of sea water for RGU</b>				
60 l sea water collected from Sea of Hebrides at 56 49.94N 06 59.56W				

Figure 1

0108S (7 - 22 January 2008) cruise track and sampling locations

