

P17/15

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

FRV *Scotia*

Cruise 0109S

PROGRAMME

6-21 January 2009

Loading: Aberdeen

Unloading: Aberdeen

In setting the cruise programme and specific objectives, etc the Scientist-in-Charge needs to be aware of the restrictions on working hours and the need to build in adequate rest days and rest breaks as set out in FRS' Working Time Policy (Lab Notice 34/03).

In addition, the Scientist-in-Charge must formally review the risk assessments for the cruise with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Cruise Report, to Iain Gibb and the Cruise Summary Report (old ROSCOP form) to Dougal Lichtman, within four weeks of a cruise ending. In the case of the Cruise Summary Report a nil return is required, if appropriate.

Personnel

M Russell (SIC)

A McIntosh

G Slesser

M Rose

M McKenzie

E Dalgarno

G Packer

D Watson

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 (SCEAS).
3. Undertake CTD profile, phytoplankton and water samples for chlorophyll a and nutrients in support of WFD coastal phytoplankton monitoring programme, AE11t.

4. Sediment and biota from Irvine Bay, biota from offshore Pladda for CSEMP and CTM, biota and sediment from Colonsay for CSEMP and CTM.
5. Collect additional sediment samples for SEPA from Aberdeen spoil ground and Shetland.
6. Undertake CSEMP sediment sampling in the Firth of Forth for SEPA

Estimated Days Per Project: 13 days AE11p; 3 day AE11t

Procedure

At the 4 CSEMP fixed sites water, sediment (for chemistry only) and fish will be sampled.

Stratified random samples of sediment will be taken from one stratum on the East coast, four strata in the Fladen Ground, two strata in the Moray Firth, two strata in the North Minch and one stratum in the Sea of Hebrides (Table 1; Figure 1). Stratified fixed sediment samples will be collected from the Solway Firth (Table 1) (Figure 1). Fish sampling will be carried out within these strata.

Fish sampling will also be carried out in the Clyde for the Clyde Trend Monitoring/CSEMP programmes, at the Pladda offshore site. Sediment will also be collected, at the Irvine Bay and Colonsay sites, at approximately start, mid and end trawl positions.

Water and sediments will be sampled for chemical analyses at all locations. Sediment will be sieved for macrobenthos analysis only at the stratified random sampling locations. Fish will be sampled for biological effects measurements and chemical analyses. Some biological effects measurements will be carried out during the cruise. Nutrient samples will be analysed throughout the cruise.

Sampling in support of the WFD coastal phytoplankton monitoring programme will be undertaken at sixteen sites (see Table 2 for sample details).

Additional sampling will be carried out at 5 sites in the Firth of Forth, in support of CSEMP sampling for SEPA (Table 1).

Surface water will be collected for hydrographic nutrient studies (SCEAS) from coastal regions around the east and west coast mainland and around Orkney and Shetland at fixed time intervals. Completion of this objective will be time and weather dependent.

General Arrangements

Liquid nitrogen and formaldehyde will be carried aboard for the preservation and storage of biological material.

Normal contacts will be maintained with the laboratory.

Submitted	Approved
M Russell	I Gibb
12/12/2008	14/12/2008

Table 1 CSEMP sampling

CSEMP Site	Water samples (nutrients TOxN, phosphate, silicate, nitrite and ammonia analyses)	Sediment Chemistry (PAH, CB, BFR, trace metals, PSA, TOC)	Macrobenthos (1mm sieved fraction)	Fish Chemistry Chemistry (PAH, CB, BFR, trace metals) and biological effects (EROD and PAH bile metabolites)
Continuous water sampling in support of SCEAS				
East Coast stratified random	CTDF: 1 x 5 m from surface, 5 m from bottom	5 samples	5 samples	-
NMMP 165 (Montrose Bank) 56°30.00'N 001°30.00'W	CTDF: 1 x 5 m from surface, 5 m from bottom	1 sample	-	5 pools of 5 plaice 56°30.00'N 001°30.00'W
Fladen ground stratified random	CTDF: 1 x 5 m from surface, 5 m from bottom from each of 4 strata	3 samples from each of 4 strata	3 samples from each of 4	5 pools of 5 fish
Moray Firth stratified random	CTDF: 1 x 5 m from surface, 5 m from bottom from each of 2 strata	5 samples from stratum 1, 10 from stratum 2	5 samples from stratum 1, 10 from stratum 2	-
NMMP 95 (Intermediate Moray Firth) 57°40.00'N 003°49.00'W	CTDF: 1 x 5 m from surface, 5 m from bottom	1 sample	-	5 pools of 5 plaice Fishing site 57°53.00'N 003°39.48'W
NMMP 105 (Outer Moray Firth) 58°03.00'N 003°00.00'W	CTDF: 1 x 5 m from surface, 5 m from bottom	1 sample	-	5 pools of 5 fish 58°03.00'N 003°00.00'W
North Minch stratified random	CTDF: 1 x 5 m from surface, 5 m from bottom from each of 2 strata	5 samples from each of 2 strata	5 samples from each of 2 strata	5 pools of 5 plaice
NMMP 85 (North Minch) 58°00.00'N 005°40.00'W	CTDF: 1 x 5 m from surface, 5 m from bottom	1 sample	-	5 pools of 5 plaice Fishing site 58°23.00'N 005°58.00'W
Colonsay		3 samples		5 pools of 5 plaice
Sea of Hebrides	CTDF: 1 x 5 m from surface, 5	10 samples	10 samples	

stratified random	m from bottom			
Outer Firth of Clyde	(already sampled)	(already sampled)	(already sampled)	5 pools of 5 plaice Pladda
Irvine Bay		3 samples	-	5 pools of 5 plaice
Solway Firth stratified fixed	CTDF: 1 x 5 m from surface, 5 m from bottom	5 samples	5 samples	5 pools of 5 plaice
Shetland east coast stratified random	CTDF: 1 x 5 m from surface, 5 m from bottom	5 samples	5 samples	-
Shetland west coast stratified random	CTDF: 1 x 5 m from surface, 5 m from bottom	5 samples	5 samples	-
Shetland northeast coast				5 pools of 5 plaice
Shetland Offshore (on behalf of SEPA)				
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 F		1 sample	1 sample	
Firth of Forth on behalf of SEPA				
		Sediment Chemistry (PAH, CB, BFR, trace metals, PSA, TOC)	Macrobenthos (1mm sieved fraction)	
Firth of Forth at Fairway Buoy		1 sample	1 sample	
Firth of Forth Spatial Survey Station 49		1 sample	1 sample	
Firth of Forth Spatial Survey Station 42		1 sample	1 sample	
Firth of Forth Spatial Survey Station 38		1 sample	1 sample	
Firth of Forth Spatial Survey Station 33		1 sample	1 sample	

Table 2 Coastal water bodies sampling

Sampling Site	Plankton		Supporting determinands			
	Lund Tube	Vertical Haul	CTDF	Nutrients	Lund Tube Chl a	Chl a validation
Montrose	Sample	Sample	Data	Data	Data	Data
Ythan	Sample	Sample	Data	Data	Data	Data
Peterhead	Sample	Sample	Data	Data	Data	Data
Burghead	Sample	Sample	Data	Data	Data	Data
Cromarty Firth	Sample	Sample	Data	Data	Data	Data
Wick	Sample	Sample	Data	Data	Data	Data
Dounreay	Sample	Sample	Data	Data	Data	Data
Eribol	Sample	Sample	Data	Data	Data	Data
Inner Sound	Sample	Sample	Data	Data	Data	Data
N Minch	Sample	Sample	Data	Data	Data	Data
Sea of Hebrides	Sample	Sample	Data	Data	Data	Data
St Andrews	Sample	Sample	Data	Data	Data	Data
Isle of May	Sample	Sample	Data	Data	Data	Data
Berwick on Tweed	Sample	Sample	Data	Data	Data	Data
East of Eden	Sample	Sample	Data	Data	Data	Data
Torridon	Sample	Sample	Data	Data	Data	Data

Figure 1 Sampling Locations

