

Not to be cited without prior reference to Marine Scotland Marine Laboratory, Aberdeen

MRV *Scotia*

Survey 0117S

## **PROGRAMME**

4-19 January 2017

**Loading:** Aberdeen, 19 December 2016

**Sailing:** Leith, 04 January 2017

**Unloading:** Aberdeen, 19 January 2017

In setting the survey 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 Marine Scotland's Working Time Policy (Lab Notice 34/03). In addition, the Scientist-in-Charge must formally review the risk assessments for the survey with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Survey Report, to I Gibb and the Survey Summary Report (old ROSCOP form) to M Geldart, within four weeks of a survey ending. In the case of the Survey Summary Report a nil return is required, if appropriate

## **Personnel**

M Russell (SIC)

E Dalgarno

K Donald

L Feehan

K McIntosh

G Packer

C Robinson

N Shepherd

A Taylor

**Fishing gear:** BT 137 with Ground gear E;

**Sediment Sampling:** Day grab and sieves;

**Litter sampling:** Catamaran neuston trawl; Plankton net;

**Water sampling:** Aquatracka fluorometer, Seabird 19 and sled

## **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. Monitor and record all litter brought aboard in all trawls. Sample water column and sediment for micro-plastic litter. Collect fish guts and any other biota of interest for microplastic research.
4. Deploy Aquatracka and Seabird 19 to collect fluorescence data.

**Estimated Days Per Project:** 14 days ST03n; 2 days ST014.

## **Procedure**

Surface water will be collected for hydrographic nutrient studies (SCEAS) throughout the survey at fixed time intervals. Nutrient samples will be analysed onboard as far as possible. Any remaining at the end of the survey will be returned to the laboratory for analyses.

Fish sampling will be carried out at the Montrose Bank and Outer Moray Firth CSEMP sites. Fishing will also be carried out in the Firth of Clyde (Holy Loch, Hunterston and Garroch Head, Pladda) and Solway Firth (Table 1).

Sediment sampling will be carried out at the East coast, Inner and Outer Moray Firth, the Minch North, the Minch South and the Sea of Hebrides. Sediment sampling will also be carried out at the four CSEMP fixed sites (NMMP85 – North Minch, NMMP95 – Inner Moray Firth, NMMP105 – Outer Moray Firth, NMMP165 – Montrose Bank). Sediment sampling will be carried out at the east of Shetland site abandoned last year due to poor weather. Sediment sampling will also take place in the Firth of Clyde (off Holy Loch, Garroch Head and Hunterston) and the Solway (Table 1).

Sediments will be sampled for chemical analyses at all locations. Fish will be sampled for biological effects measurements and chemical analyses. Some biological effects measurements will be carried out during the survey.

Monitoring of all litter brought on board during trawling operations will continue throughout the survey. The catamaran will be deployed to sample for micro-plastics whenever possible and samples processed onboard. Additional sediment samples will also be taken for micro-plastics. Fish guts and any other biota of interest will be preserved and returned to the lab for analysis.

The Aquatracka will be deployed in the Forth and in at least one other area to obtain reference measurements.

Sediment will be collected to provide chemistry laboratory reference material. Where possible, if sufficient suitable fish are obtained which are not required for other studies then livers will also be sampled for reference material.

If conditions allow sampling (fish and sediment) MAY be carried out in any of the following areas; Faroe-Shetland Channel, Rockall or Bailey.

## **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:  
M Russell  
29 November 2016

Approved:  
I Gibb  
15 December 2016

**Table 1 Sampling**

<b>Station</b>	<b>Water samples</b> (nutrients TOxN, phosphate, silicate, nitrite, and ammonia analyses)	<b>Sediment Chemistry</b> (PAH, CB, PBDE, trace metals, PSA, TOC)	<b>Fish Chemistry</b> Chemistry (CB, PBDE, trace metals)	<b>Fish Diseases and Biological Effects</b> (EROD, bile metabolites, micronucleus)
Continuous water sampling in support of SCEAS	Continuous hourly sampling			
East Coast		5 sites		
NMMP 165 (Montrose Bank)		1 site	5 pools of 5 dab	25 dab for effects 50 dab for disease
Moray Firth		15 sites		
NMMP 95 (Int. Moray Firth)		1 site		
NMMP 105		1 site	5 pools of 5 dab	25 dab for effects 50 dab for disease
East of Shetland		5 sites		
North Minch		5 sites		
South Minch		5 sites		
NMMP 85		1 site		
Sea of Hebrides		10 sites		
Holy Loch		5 sites	5 pools of 5 dab	25 dab for effects 50 dab for disease
Hunterston		5 sites	4 pools of 5 plaice	Not required
Garroch Head		5 sites	5 pools of 5 plaice	25 plaice for effects
Outer Clyde		Not required	5 pools of 5 plaice	25 plaice for effects
Solway		5 sites	5 pools of 5 dab	25 dab for effects 50 dab for disease
Bailey		5	5 pools of 5 fish, new site, weather permitting	25 fish for effects 50 fish for disease
Rockall Plateau		5	5 pools of 5 fish, new site, weather permitting	25 fish for effects 50 fish for disease
Faroe-Shetland Channel		5	5 pools of 5 fish new site, weather permitting	25 fish for effects 50 fish for disease