

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

MRV *Scotia*

Survey 0118S

## **PROGRAMME**

4-19 January 2018

**Loading:** Aberdeen, 18-19 December 2017

**Sailing:** Leith, 4 January 2018, (Scientific crew will join on 03/01/18)

**Unloading:** Aberdeen, 19 January 2018

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

L Feehan

G Hermann

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 and neuston trawl;

**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:** 12 days 20461; 2 days 20463; 2 days 20234.

## **Procedure**

Surface water will be collected for hydrographic nutrient studies (SCEAS) throughout the survey at fixed time intervals (Hourly for ammonia and every 30 minutes for nutrients). The vessel will sample from the Forth to Berwick initially, north to Montrose Bank then following the sediment/fish sampling track. Nutrient samples will be analysed onboard as far as possible. Any remaining at end of the survey will be returned to the laboratory for analyses.

Fish sampling will be carried out at the Montrose Bank, Fladen (Fair Isle), North Minch. and Colonsay CSEMP sites (Table 1). Weather permitting a fish site will be identified for the Faroe-Shetland Channel.

Sediment sampling will be carried out at the East coast, Inner and Outer Moray Firth, Faroe-Shetland Channel, Minch North, Minch South, Sea of Hebrides and Colonsay. 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) (Table 1).

Sediments will be sampled for chemical analyses at all locations. Fish will be sampled for chemical analyses, biological effects and fish diseases. 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 where possible. 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 1 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.

## **General Arrangements**

Liquid nitrogen and buffered formalin will be carried aboard for the preservation and storage of biological material. A full list of chemicals to be carried is attached.

Normal contacts will be maintained with the laboratory.

Submitted:  
M Russell  
22 November 2017

Approved:  
I Gibb  
12 December 2017

**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> (PCB, PBDE, trace metals) <b>Biological Effects</b> (EROD, bile metabolites, micronucleus)	<b>Fish Diseases</b>
Continuous water sampling in support of SCEAS	Continuous (2 samples per hour)			
East Coast		5 sites		
NMMP 165 (Montrose Bank)		1 site	25 dab (in pools of 5 for chemistry)	50 dab for disease
Fladen Ground		12 sites	25 plaice (in pools of 5 for chemistry)	50 dab for disease
Moray Firth		15 sites		
NMMP 95		1 site		
NMMP 105		1 site		
North Minch		5 sites		
South Minch		5 sites		
NMMP 85		1 site	25 plaice (in pools of 5 for chemistry)	50 dab for disease
Sea of Hebrides		10 sites		
Colonsay		5 sites	25 plaice (in pools of 5 for chemistry)	
Bailey		5	25 fish, (in pools of 5 for chemistry) new site, weather permitting	50 fish for disease
Rockall Plateau		5	25 fish (in pools of 5 for chemistry) new site, weather permitting	50 fish for disease
Faroe-Shetland Channel		5	25 fish (in pools of 5 for chemistry) new site, weather permitting	50 fish for disease