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MRV *Alba na Mara*

Survey 1912A

## **PROGRAMME**

26 October – 5 November 2012

### **Ports**

**Loading:** Fraserburgh, 23 October 2012

**Unloading:** Fraserburgh, 5 November 2012

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 Marine Scotland's 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 I Gibb and the Cruise Summary Report (old ROSCOP form) to M Geldart, within four weeks of a cruise ending. In the case of the Cruise Summary Report a nil return is required, if appropriate.

### **Personnel:**

K Summerbell (SIC)

J Hunter

**Costs to Project:** 11 days – 20119

### **Equipment**

- BIGG sledge (Benthic Interactions with Ground Gear);
- Ground gear elements and weights;
- Rubber matting;
- Load cells;
- LISST 100X;
- Day grab (including table);
- Video Cameras;
- Flashback recorders and housings;
- Scanmar (height and depth);

### **Objectives**

- To estimate horizontal drag forces (hydrodynamic and pelodynamic drag) for ground gear shaped objects towed on the sea bed, at different towing angles and vertical loads.
- To measure the quantity of sediment remobilised by ground gear shaped objects.

## Procedure

Weather permitting *Alba na Mara* will sail from Fraserburgh on 26 October and steam towards the site at Lossiemouth (Figure 1). Sediment samples will be taken with the day grab at the work site. The rest of the survey will be dedicated to sledge sampling experiments. If work is not possible at the Lossiemouth area due to adverse weather, sampling may be transferred to the Dornoch area (Figure 1). *Alba na Mara* will return to Fraserburgh on 4 November with scientific personnel and equipment unloaded on 5 November.

The BIGG sledge has been designed to allow the horizontal drag of the ground gear (hydrodynamic and pelodynamic drag) to be measured via load cells mounted within the framework. The sledge allows the ground gear to be angled at 30, 60 or 90 degrees to the towing direction and weights from 0 -120kg can be applied to the ground gear - altering the vertical force.

There are four ground gear shapes to be tested on the sledge (200, 300, 400mm discs and NACA0025 - "Hydro-Hopper"). The shapes are made out of high density polyethylene (HDPE) and will be arranged into three configurations during the survey (six objects "spaced", six objects together in a "block", 12 objects in a "long block").

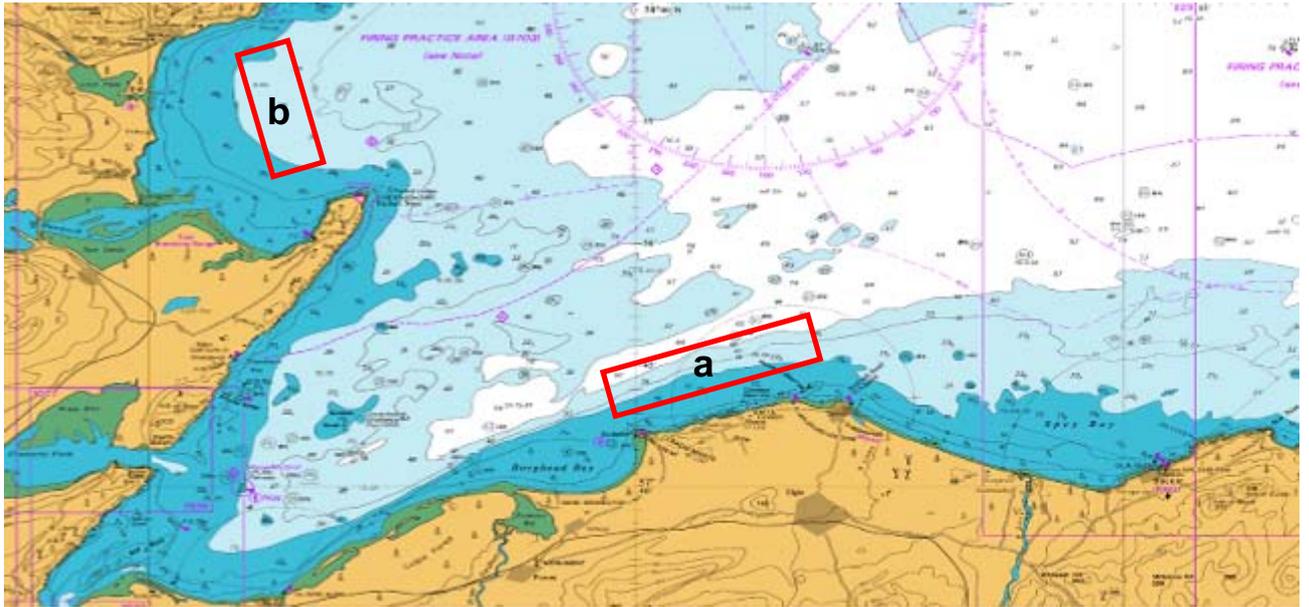
The sledge will have a LISST 100X mounted 1.4m behind the ground gear. This will enable particle size and quantity to be measured within the sediment plume created by the ground gear. Two video cameras will be mounted on the framework of the sledge. One will be angled to verify the ground gear is in contact with the seabed, and the other will show if the LISST is within the sediment plume.

The sledge will be towed off the central warp with a wire bridle (Figure 2). A dyneema rope will lift the sledge in and out of the water by the deck winch through a block on the gamma frame. Each tow will last 30-40 minutes. During the tow the speed will be altered at 10 minute intervals (2.5kn 3.0kn and 3.5kn - dependent on tide, swell and windage). Once the sledge is back aboard, a quick alteration to either the ground gear angle or weights will be carried out before redeploying.

Normal contacts will be maintained with the laboratory.

Submitted:  
K Summerbell  
01 October 2012

Approved:  
I Gibb  
16 October 2012



**Figure 1:** Chart of the Moray Firth, with sampling sites at a) Lossiemouth and b) Dornoch indicated.



**Figure 2:** The Bigg sledge with towing bridle and lifting line attached, the ground gear being tested is 400mm discs in the “block” arrangement.