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MRV Scotia

Survey 1121S

PROGRAMME

20 August – 6 September 2021

Ports:

Loading: Aberdeen, 17 August 2021

Unloading: Aberdeen, 6 September 2021

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.

Estimated Days per Project: 18 days – C44800 / 20571

Equipment:

- Dropframe and chariot camera systems
- USBL positioning system with two transponders
- 2 x Hamon grab (0.1m² and 0.25m² buckets)
- Van Veen grab
- Sieving table
- RBR concerto³ CTD

Background:

The Faroe-Shetland Sponge Belt marine protected area (FSSB) lies in offshore waters on the Scottish side of the Faroe-Shetland Channel, a large rift basin that separates the Scottish and Faroese continental shelves. Five different water masses meet and interact in the Faroe-Shetland Channel to generate ideal conditions for the boreal 'ostur' type of deep-sea sponge aggregations (DSSA) to settle. Offshore subtidal sands and gravels (OSSG) are also present, supporting a diversity of polychaete worms and a slow-growing bivalve mollusc known as ocean quahog. The site has an area of 5,278 km² and a depth range of 300 m to 1000 m depth. It was designated as a marine protected area by Scottish Ministers in July 2014 for the purposes of nature conservation. The FSSB has been identified for monitoring survey effort following discussion between JNCC and MSS, considering the JNCC MPA monitoring survey prioritisation process, the Scottish MPA Monitoring Strategy (Scottish Government, 2017) prioritisation principles and logistical considerations.

Objectives:

1. Collect evidence (video and stills imagery) to further understanding on the extent, distribution, composition, abundance and characteristic communities of the FSSB DSSA.
2. Collect evidence (imagery and grab samples) to further understanding on the extent, distribution, key and influential species, characteristic communities and function of the FSSB OSSG.
3. Collect evidence (CTD profiles) to supplement the monitoring of environmental conditions within the FSSB.

Procedure

All equipment will be loaded on *Scotia* when the previous survey returns to Aberdeen harbour. Marine Scotland personnel will set up equipment and prepare the vessel for surveying in the days leading up to 20 August. All personnel will join the vessel on 19 August in preparation for sailing. *Scotia* will transit towards the FSSB where, weather permitting and in consultation with ship officers, operations will begin.

The objectives above are listed in priority order and will be addressed sequentially on survey. Initially, the towed chariot video system will be used to define the lower depth limit of the FSSB DSSA by undertaking three, 7 km long transects at 600 m, 650 m and 700 m (Figure 1). Stations selected from a randomised transect sampling design will then be used to sample the DSSA using the dropframe camera system, with 50 transects running perpendicular to the slope within the FSSB (Figure 1). Priority will be given to the 400 m, 500 m and 600 m isobaths as available evidence suggests the highest DSSA occurrences at these depths. Targeting of further isobaths will be informed by reviewing the footage collected during the survey. The collected data will allow identification and enumeration of the epifauna (including key and characteristic epifauna) associated with the DSSA furthering our understanding of species distributions and the structure of epifaunal assemblages (for both DSSA and OSSG habitats).

On completion of the imagery work, the 800 m isobath will be targeted using a Hamon grab to collect samples (infaunal [> 1 mm], PSA and eDNA at each station) from areas of OSSG outside of the sponge belt. This will allow the identification and enumeration of infaunal species associated with the site including the biological assemblages, key and influential species and characteristic communities. CTD profiles will then be taken at existing oceanographic monitoring stations on the Nolso-Flugga (NOL) and Fair Isle-Munken (FIM) hydrographic sections that intersect with the FSSB adding to the existing time series used to monitor water masses in the Faroe-Shetland Channel.

In the event of a prolonged period of poor weather necessitating the ship to transit to a more sheltered location, inshore contingency survey locations have been identified following discussion with NatureScot.

A port call for fresh water may be undertaken if required.

Normal contact will be maintained with the laboratory.

Submitted: D Stirling & J Albrecht, 12 August 2021

Approved: I Gibb, 18 August 2021

Figure 1: Map of locations to be sampled and surveyed.

