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MRV *Alba na Mara*

Survey 1518A

## **PROGRAMME**

29 September – 16 October 2018

**Loading:** Fraserburgh, 25 September 2018

**Boarding:** Fraserburgh, 29 September 2018

**Unloading:** Greenock, 16 October 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**

P Boulcott	SIC
T Regnier	
J Clarke	
B Langton	29.09.18 – 07.10.18
D Stirling	07.10.18 – 16.10.18

**Project:** 18 days, SP02B / 20232

### **Gear**

Jackson Rockhopper Trawl BT158 with 10 mm Codend + Spare

Scanmar net sensors – trawl width, height, and depth (x2 units)

2 fleets of fish traps

Fish/prawn sorting table

SBRUV – baited camera frames – (QTY 3)

EMFF camera frame, umbilicals (300m + 100m), camera system, lights and control unit.

Flashback net camera, bracket and low light camera.

## **Background and Objectives**

1518A will conduct a benthic survey of juvenile gadoids within the Firth of Clyde. The primary objective of 1518A is to identify whether the availability, quality and distribution of habitat acts as a constraint on the number of juvenile fish that can grow and be recruited into the adult population. This study focusses on three gadoids with differing habitat preferences; Atlantic cod, whiting and haddock in which year-class strength appears to be established around the period of settlement to the demersal habit. The study will utilise three sampling methods: demersal tows, fish traps, and a baited-camera census techniques. Data from these surveys will inform the development of species distribution models at a regional and stock scale and will also be used to compare the selectivity of the three sampling methods. Otolith based survivorship analyses will also be carried out post-survey to examine selection on settlement time and size-specific mortality. Genetic tissue will be stored and used post-survey to examine stock structure, primarily in cod.

Specific survey objectives are as follows:

1. To collect measures of juvenile gadoid abundance using three different sampling methods.
2. To record substrate features at the point of sampling.
3. To collect sufficient otolith samples suitable for survival analysis studies.
4. To collect sufficient genetic material to investigate issues relating to stock structure.

## **Embarkation**

Scientists will join the vessel on the morning of 29 September ~10:00 (BST). Weather permitting *Alba na Mara* will depart on the same day, heading for the Firth of Clyde. Fish traps will be loaded directly from an EMFF charter onto the vessel by J Clarke.

## **Survey Work:**

The survey will be split into three or four distinct activities – demersal trawling, fish trap work, baited camera work, and a UWTV survey of the substrate - which will be performed at each station (with the exception that trawling will not occur at those sites within the S Arran MPA, and only baited camera footage will be taken within the Lamlash Bay NTZ).

### **1. Demersal Fishing Survey**

The demersal survey (30 minute tows) will assess the abundance, length-frequency-distribution, and weight-at-length of juvenile gadoids at nine fixed stations within the Firth of Clyde (i.e. those shown to be lying outside the S Arran MPA boundary, Figure 1). Samples collected at each 1 cm size class will be retained and frozen for analysis at a later date. Occurrences of invertebrates and other fish species will be recorded and measured.

Scanmar units will be fitted to the wings and head line of the BT158 trawl to ensure the net is fishing correctly. If possible, a low light UW camera will also be fitted to the wing/headline to enable footage of the substrate to be taken.

## **2. Fish Trap Survey**

A fish trap survey at all survey sites within the Firth of Clyde will be carried out during 1518A with the exception of the four sites within the Lamlash Bay NTZ: sites 1-19. Traps (up to two fleets of four traps) will be deployed in the first half of the day and collected in the afternoon after a soak time of approximately six hours. Species composition and length frequency distributions of fish caught will be determined. Gill samples will also be taken from selected fish for genetic study at a later date. All samples will be weighed and, where appropriate (Cod, Whiting, Haddock), frozen. Occurrences of invertebrates and other fish species will be recorded and measured.

## **3. SBRUV Baited Cameras**

Stereo Baited Remote Underwater Video Camera (SBRUV) frames will be deployed during daylight hours (2-3 units will be available). These will be left in the water for approximately 1.5 hours before being retrieved. The deployment of baited cameras will happen at the same time as that of the fish traps and at distances sufficient to avoid any interaction with either the fleet ground gear or the other baited system (recommended minimum is 500 m). Footage will be downloaded to external media at the end of each working day. Species type, relative species densities (MaxN) and substrate type (assessed visually) will be classified post-survey.

## **4. UWTV Benthic Survey**

To further aid the classification of the substrate at each sampling site, 1518A will also undertake a series of short (~5 minutes) UWTV video tows at two points along each demersal tow. To achieve this, the survey will utilise the EMFF UWTV system. This system is not operated from *Alba's* UWTV umbilical, but is deployed from the hydro-winch on the vessel. As the system is lowered, the camera's umbilical is attached to the winch wire to prevent fouling the propeller. The camera display unit will be set up in the bridge to allow the winch to be adjusted according to depth/height from the ground.

## **Operations**

Survey operations will take place between the hours of 07:00 and 19:00 (all times BST). Stations will be surveyed depending on the prevailing weather conditions i.e. if wind strengths or wave heights are adverse, a precautionary approach will be adopted and those with adequate shelter from the weather will be selected. Alternatively, in poorer weather the trawl survey may be prioritised over other activities.

A half landing will take place on 7 October to comply with working hours and to allow planned changes to the scientific crew. It is expected that the half-landing will take place in Ardrrossan. Work will cease on the late morning of 28 September to allow sufficient time for the vessel to travel to Greenock. Unloading will occur in James Watt Dock on Monday 29 September. Scientists will disembark at this time.

Normal contact will be maintained with the Laboratory.

Submitted:

P Boulcott  
17 August 2018

Approved:

I. Gibb  
06 September 2018

**Figure 1:** 2018 survey sites within the Firth of Clyde.

