

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

MRV *Alba na Mara*

Survey 1321A

## PROGRAMME

30 September – 12 October 2021

**Loading:** Troon, 24 September 2021

**Unloading:** Troon, 12 October 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 cruise ending. In the case of the Survey Summary Report a nil return is required, if appropriate.

**Out-turn days per project:** 20658 - 14 days

## Equipment

2 x Day grab, grab table

Sandeel dredge x 2 (modified 4' scallop dredge with 6" teeth and spare toothbars) with towing bar and camera attachment.

TV camera.

Minilogger (or equivalent – i.e. DST). (x1)

Scanmar Depth sensor x 2

## Background and Objectives

1321A will conduct a survey to determine habitat suitability, presence and abundance indices of sandeel (*Ammodytes marinus* and *Ammodytes tobianus*) on the Scottish West coast, in a region extending from the North-East Lewis pMPA to the North to the Sea of Hebrides pMPA to the South. Data on sandeel in this region are necessary to assess and monitor sandeel stock status, obtain a reference point in the region necessary to assess the relevance and efficiency of local MPA aiming to protect directly or indirectly this PMF and develop and extend a Species Distribution Model on sandeel as a tool for further marine planning applications.

## Objectives

1. To determine the abundance, length and age of sandeels in the sediment in a region extending from the North-East Lewis pMPA to the North to the Sea of Hebrides pMPA to the South.
2. To collect and preserve samples of *A. marinus*, specifically i) all 0-group sandeels (size to be estimated from age/length keys of sampled catches) not required for age determination; ii) 100 age-1 individuals from each of the northerly and southerly sub-regions.
3. To determine the sex and maturity stage of all sandeels selected for ageing.
4. To collect sediment samples using a Day Grab.

## Procedure

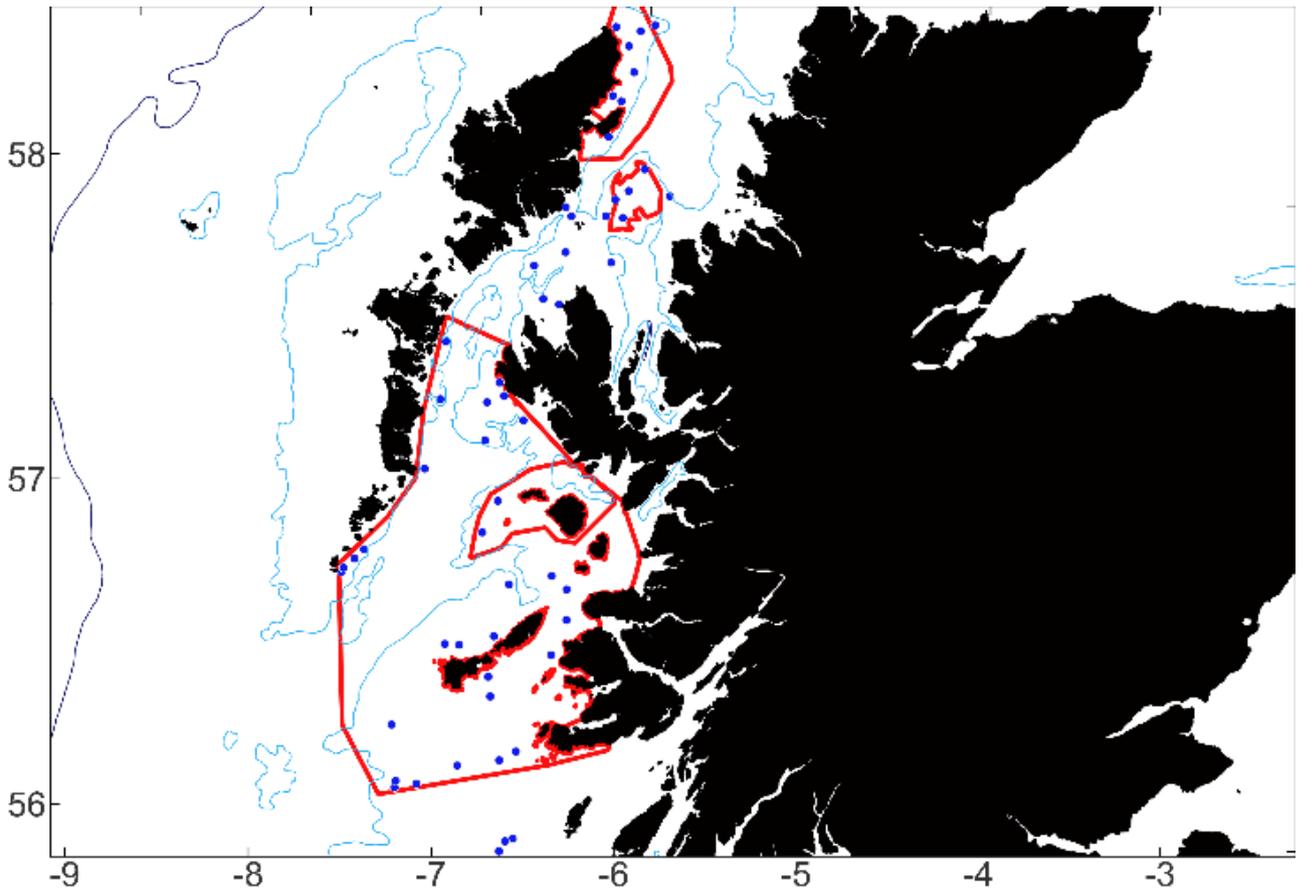
All required gear will be loaded onto the vessel on 24 September. Scientific staff will join the vessel on 29 September in Troon.

Stations in and near the newly designated MPAs will be surveyed (see Figure 1). Stations will be sampled following the protocol established in 1999. At first a grab sample will be taken to confirm seabed suitability and then, a modified scallop dredge will be used to catch sandeels buried in the substrate at the priority stations given in Table 1 and Figure 1. The dredge will be deployed only if the ground is suitable and the risk of affecting other PMFs is low. Ideally three to five repeat tows will be conducted at each station although this may be reduced to a minimum of 2 if catch quantities are low or available time is limited. Dredge duration will be approximately ten minutes at a towing speed between two and three (ideally 2.5) knots.

At each dredge station, all sandeels will be identified to species level, measured, and otoliths (five, eight or ten depending on length strata, per half centimetre) will be taken for age determination (Objective 1).

All 0-group sandeels will be retained and frozen for later analysis. Sub-samples of 100 age-1 (size to be determined from age-length keys of sampled catches) *A. marinus* will be taken (Objective 2).

Sandeels selected for ageing will be hand stripped and assigned a maturity stage based on a simple three-point scale (I = immature/indeterminate sex; MM= mature male; MF = mature female). Immature individuals will be individually frozen for further dissection and assigned to one of two stages (IM =Immature male or IF= Immature Female). (objective 3).



**Figure 1:** Map of the survey region. MPAs boundaries are indicated by a thick red line and survey stations by blue dots.

**Table 1:** Coordinates of the stations for survey 1321A

id	Longitude	Latitude	MPA
1	-6.63	55.95	NA
2	-6.559	55.991	NA
3	-6.6	55.982	NA
4	-6.655	56.231	Sea of Hebrides
5	-6.885	56.208	Sea of Hebrides
6	-6.565	56.261	Sea of Hebrides
7	-7.104	56.144	Sea of Hebrides
8	-7.223	56.13	Sea of Hebrides
9	-7.219	56.149	Sea of Hebrides
10	-6.741	56.487	Sea of Hebrides
11	-6.724	56.427	Sea of Hebrides
12	-6.397	56.565	Sea of Hebrides
13	-6.321	56.675	Sea of Hebrides
14	-7.261	56.323	Sea of Hebrides
15	-6.993	56.581	Sea of Hebrides
16	-6.913	56.581	Sea of Hebrides
17	-6.722	56.613	Sea of Hebrides
18	-6.653	56.776	Sea of Hebrides
19	-7.595	56.784	Sea of Hebrides
20	-7.585	56.797	Sea of Hebrides
21	-6.328	56.77	Sea of Hebrides
22	-6.417	56.809	Sea of Hebrides
23	-7.527	56.828	Sea of Hebrides
24	-7.477	56.859	Sea of Hebrides
25	-6.819	56.933	Small Isles
26	-6.742	57.033	Small Isles
27	-7.164	57.119	Sea of Hebrides
28	-6.832	57.218	Sea of Hebrides
29	-6.621	57.286	Sea of Hebrides
30	-6.739	57.359	Sea of Hebrides
31	-6.834	57.336	Sea of Hebrides
32	-7.1	57.337	Sea of Hebrides
33	-6.769	57.399	Sea of Hebrides
34	-7.088	57.515	Sea of Hebrides
35	-6.545	57.665	NA
36	-6.453	57.65	NA
37	-6.608	57.766	NA
38	-6.43	57.812	NA
39	-6.165	57.787	NA
40	-6.443	57.951	NA
41	-6.208	57.93	NA
42	-6.109	57.927	Shiant E Bank
43	-6.157	57.982	Shiant E Bank

44	-6.408	57.924	NA
45	-6.083	58.011	Shiant E Bank
46	-5.997	58.08	Shiant E Bank
47	-5.843	58	NA
48	-6.214	58.176	NE Lewis
49	-6.149	58.287	NE Lewis
50	-6.201	58.302	NE Lewis
51	-6.083	58.379	NE Lewis
52	-6.121	58.459	NE Lewis
53	-6.201	58.516	NE Lewis
54	-6.055	58.506	NE Lewis
55	-5.972	58.527	NA

## 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.

The vessel will leave the study area on 11 October to allow sufficient time to travel to Troon (TBC). Unloading will occur in Troon (TBC) on Tuesday 12 October. Scientists will disembark at this time.

Normal contact will be maintained with the Laboratory.

Submitted:  
T Regnier  
15 September 2021

Approved:  
I Gibb  
29 September 2021