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MRV *Alba na Mara*

Survey 1915A

PROGRAMME

4-18 December 2015

Loading: Leith, 1 December 2015
Unloading: Fraserburgh, 18 December 2015

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.

Personnel

J Clarke (SIC)
M Gault
T Regnier
C Hall

Out-turn days per project: SU02ND - 15 days

Equipment

Sandeel dredge × 2 (modified 4' scallop dredge with 6" teeth and spare toothbars) with towing bar and camera attachment.
TV camera.
Minilogger (or equivalent – DST).

Objectives

1. To determine the abundance, length and age of sandeels in the sediment in regions east of the Firth of Forth and around Turbot bank.

2. Conduct exploratory tows within the EIWiF Neart na Gaoithe survey box (see Figure 2, inset), with the aim of establishing new dredge stations over suitable sandeel habitat.

3. 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; and
    iii) 100 individual fish, randomly sampled across the entire size range, from each of the northerly and southerly sub-regions.

4. Collect and preserve fish samples (sandeel spp. and Gobiidae spp.) for UoA MSc student.

Procedure

All required gear will be loaded onto the vessel on 1 December. Scientific staff will be transported to Leith to join the vessel on 4 December.

Two regions of historical importance for sandeel fishing will be surveyed (see Figure 1). In the first half of the survey a series of eight dredge stations to the east of the Firth of Forth will be sampled following the protocol established in 1999. A modified scallop dredge will be used to catch sandeels buried in the substrate at the priority stations given in Table 1 and Figure 2. Further stations in this region will be sampled if time permits. In the second half of the survey, the dredge will be deployed at stations 20-36 in the Turbot bank region (Table 1, Figure 2). Ideally five repeat tows will be conducted at each station although this may be reduced to a minimum of two 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 (5, 8 or 10 depending on length strata, per half centimetre) will be taken for age determination.

Weather and time permitting, exploratory tows will be conducted within the Neart na Gaoithe survey box (see Figure 2), previously surveyed in 0915A. Dredging sites will be selected using available knowledge of the seabed characteristics within the area, including sediment GIS layers and local bottom trawl catch data. The aim is to establish dredge stations that can be monitored as part of a new ROAME examining potential ecological impacts of offshore wind developments.

0-group sandeels will be retained and frozen individually 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 from the northerly (latitude > 57°N) and southerly (latitude < 57°N) sub-regions. Similarly 100 sandeels from each sub-region will be randomly sampled across the size range caught by the dredge to investigate inter-annual variation in maturity (Objective 3). Additional fish samples requested by a University of Aberdeen MSc student will be taken on an ad hoc basis (Objective 4).

Following the completion of survey work, *Alba na Mara* will return to Fraserburgh for unloading on 18 December 2015.

Normal contacts will be maintained with the laboratory.

Submitted:
J Clarke
20 November 2015

Approved:
I Gibb
26 November 2015

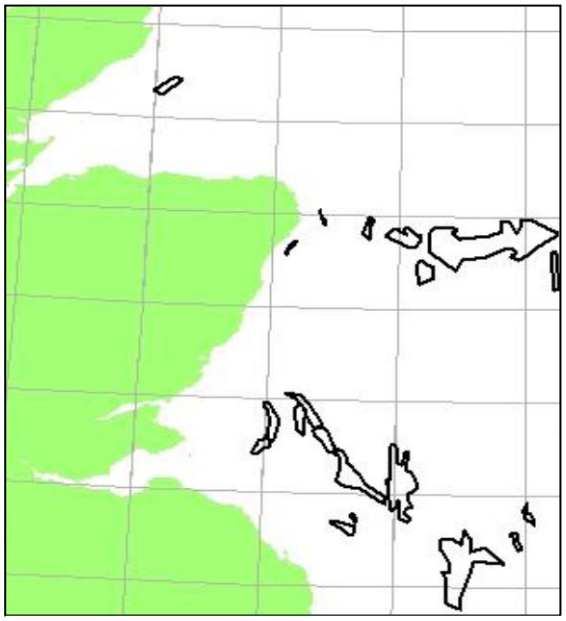

Figure 1: Location of important sandeel fishing areas.

Table 1

Location of dredge stations. Priority stations (1-10) are highlighted.

Station	Latitude	Longitude	Depth (m)
1	56°05.880' N	01°20.460' W	46
2	56°07.380' N	01°23.280' W	51
3	56°13.560' N	02°03.240' W	37
4	56°14.580' N	02°02.340' W	41
7	56°24.840' N	02°25.980' W	29
8	56°25.080' N	01°58.800' W	44
9	56°28.020' N	01°43.920' W	49
10	56°21.840' N	01°41.760' W	42
12	56°14.940' N	01°58.620' W	44
17	56°03.900' N	01°19.620' W	45
18	55°47.700' N	01°19.680' W	54
19	56°39.960' N	01°48.300' W	60
20	57°19.200' N	01°06.420' W	
21	57°42.780' N	01°13.080' W	
22	57°44.400' N	01°25.620' W	
23	57°46.500' N	01°28.980' W	
24	57°23.940' N	00°42.300' W	
26	57°23.460' N	01°47.340' W	
27	57°42.720' N	01°35.400' W	
28	57°41.100' N	01°35.040' W	
29	57°43.200' N	02°12.960' W	
30	57°22.140' N	00°41.580' W	
31	57°24.300' N	00°48.600' W	
32	57°22.080' N	00°50.280' W	
33	57°21.900' N	00°57.060' W	
34	57°25.020' N	00°53.340' W	
35	57°25.560' N	01°06.960' W	
36	57°24.000' N	01°02.520' W	

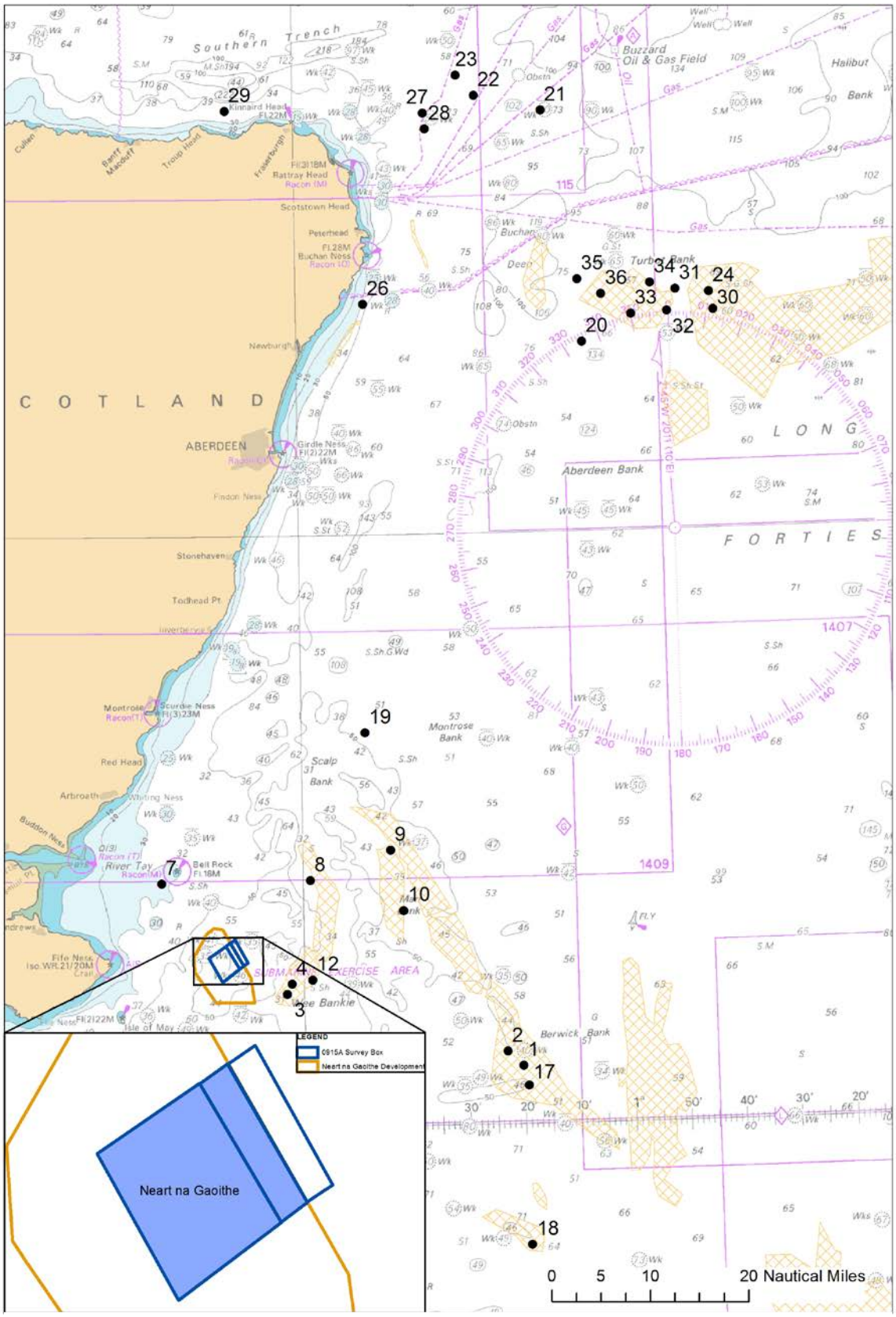

Figure 2: Chart of dredge stations to be sampled in 0915A. Randomly stratified exploratory dredging will take place within the shaded area (inset) according to existing knowledge of seabed characteristics.