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MRV Alba na Mara

Survey 1419A

PROGRAMME

27-30 August 2019

Ports:
Loading: Fraserburgh, 24 August 2019
Unloading: Fraserburgh, 30 August 2019

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.

Costs to Project: RE01W0 (5 days).

Equipment:
Pelagic net PT 154
"Bongo" plankton net sampling equipment
Seabird SBE19 CTD
Water sampling mini-rosette
Sandeel dredge
Day grab and grab table
EK 60 sounder

Objectives:

Primary Objectives

1. To study the distribution of prey species (fish schools and zooplankton patches) across Smith Bank in relation to data available from BOWL post-construction digital aerial surveys and UoA PAM surveys of top predators.

2. To compare the distribution of schooling sandeels in summer with data on their presence in the sediment from the BOWL/MEOW winter sandeel monitoring

3. Recover two ADCP devices deployed in the BOWL area.

Secondary Objectives:

1. To collect hydrographic data to further validate the Scottish Shelf Model (SSM) and incorporate its outputs into assessment of drivers of predator distribution.

Procedure

All sampling gear will be transported to the vessel in Fraserburgh and rigged on 24 August.

Visitors and MS staff will join the vessel the day before the survey starts on Monday 26 August. Provided all vessel stores are loaded, *Alba na Mara* will make her way to the survey area during the pm of 26 August to maximise available survey time.

This survey will operate a daily working timetable of 06:00 to 18:00 hours

On Tuesday 27 August, *Alba na Mara* will begin surveying at the first transect in the BOWL wind farm. The survey will finish on 29 August in Fraserburgh and all staff, scientific equipment and collected samples will be returned to the Marine laboratory on 30 August.

Contact will be maintained with the MEOW and BOWL operations teams throughout the survey and before any work commences.

Alba na Mara will conduct an acoustic survey at an average speed of 8 knots along key transects between wind farm turbine rows (see Figure 2), to capture data on mid-water feeding sandeels using all available frequencies from the EK60 echo sounder.

Concurrent seabird and cetacean visual surveys will collect predator data during the transects.

Pelagic sampling for sandeels using the PT154 will normally be conducted early on in the day. Sandeel dredge tows or Day grabs will be deployed as a back-up if required.

Fishing haul positions will be chosen along the survey transects but not necessarily in the same orientation.

Plankton sampling will be conducted using the dual "bongo" net, fitted with mesh sizes of 200 and 68 µm. Collected samples will be preserved in each of: 70% alcohol, 4% formaldehyde and frozen in vital stain neutral red.

Sampling positions have been selected to cover the southern part of the BOWL area based on the survey transect lines. Three of the selected positions will be prioritised and the two remaining ones will be done if time allows. Figure 3 shows all plankton sampling positions.

The two ADCP devices will be retrieved during the survey when possible, Figure 4 shows the locations of these devices.

This survey continues the work undertaken during Alba na Mara survey 0919A.

Survey Activities During Turbine Piling Activities

The *Alba na Mara* will survey around any turbine piling activities should these start at the MEOW site. *Alba na Mara* will collect biological samples at a predetermined safe distance from piling activities. Daily contact with the MEOW operation team will ensure that the *Alba* can sample soon after piling events begin.

CTD and water sampling (seabed and mid-water) will be simultaneously undertaken at each plankton station, with data collected for the Scottish Shelf Model. See Figure 3 for locations. Normal contact will be maintained with the laboratory

Submitted: R Watret, 16 August 2019

Approved: I Gibb, 16 August 2019

Location names:

- Beatrice Offshore Wind farm Limited (BOWL)
- Moray East Offshore Wind farm (MEOW)
- Moray West Offshore Wind farm (MWOW)

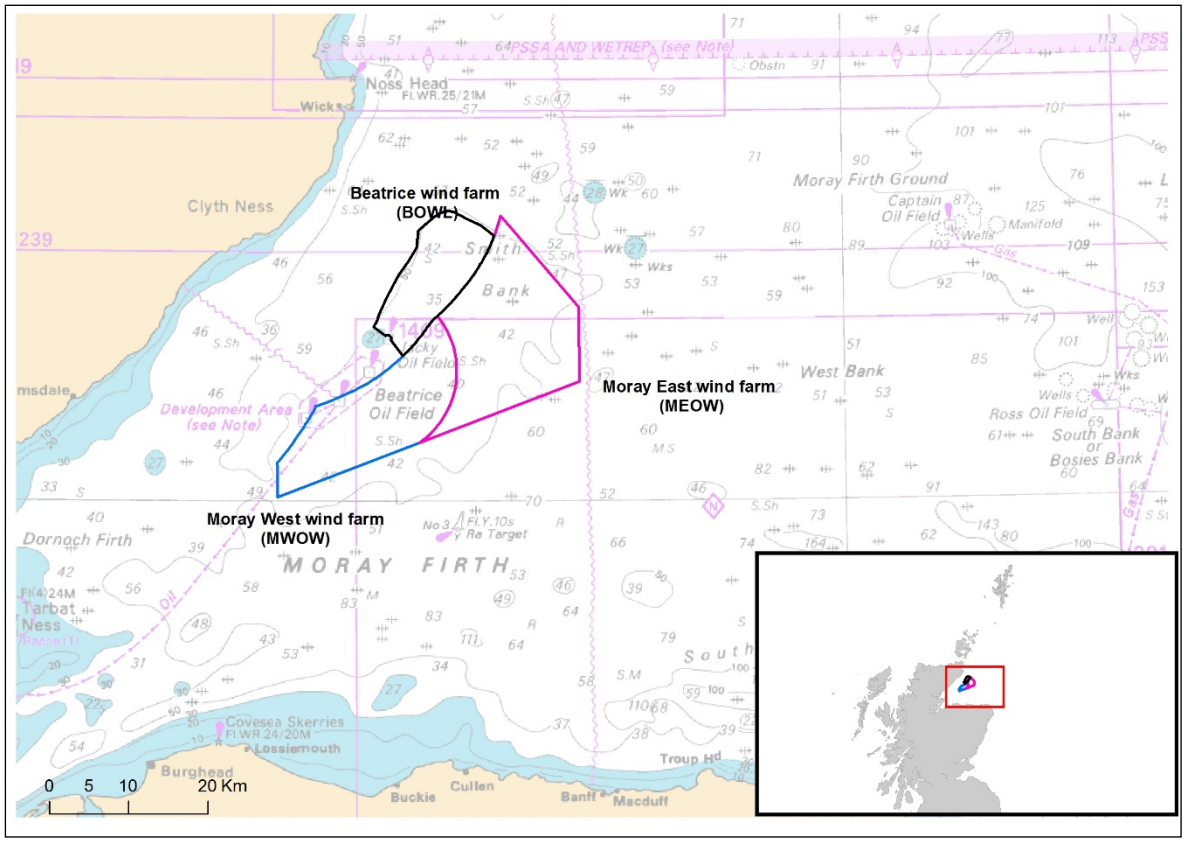

Figure 1: Survey location and wind farm development sites.

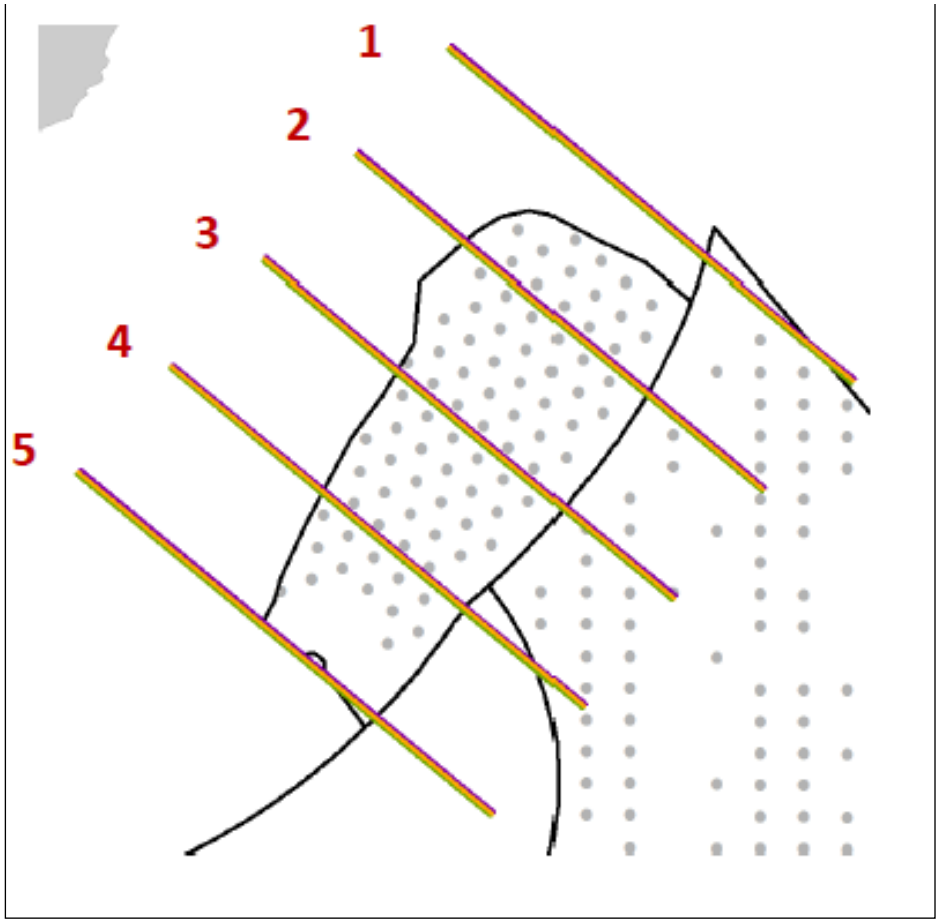

Figure 2: Proposed transects for fisheries acoustic surveys (grey dots represent wind turbine locations, both built and planned).

Figure 3: Hydrographic (CTD and water samples) and plankton sampling positions, (grey dots represent wind turbine locations, both built and planned, cyan dots represent sampling locations from 0919A).

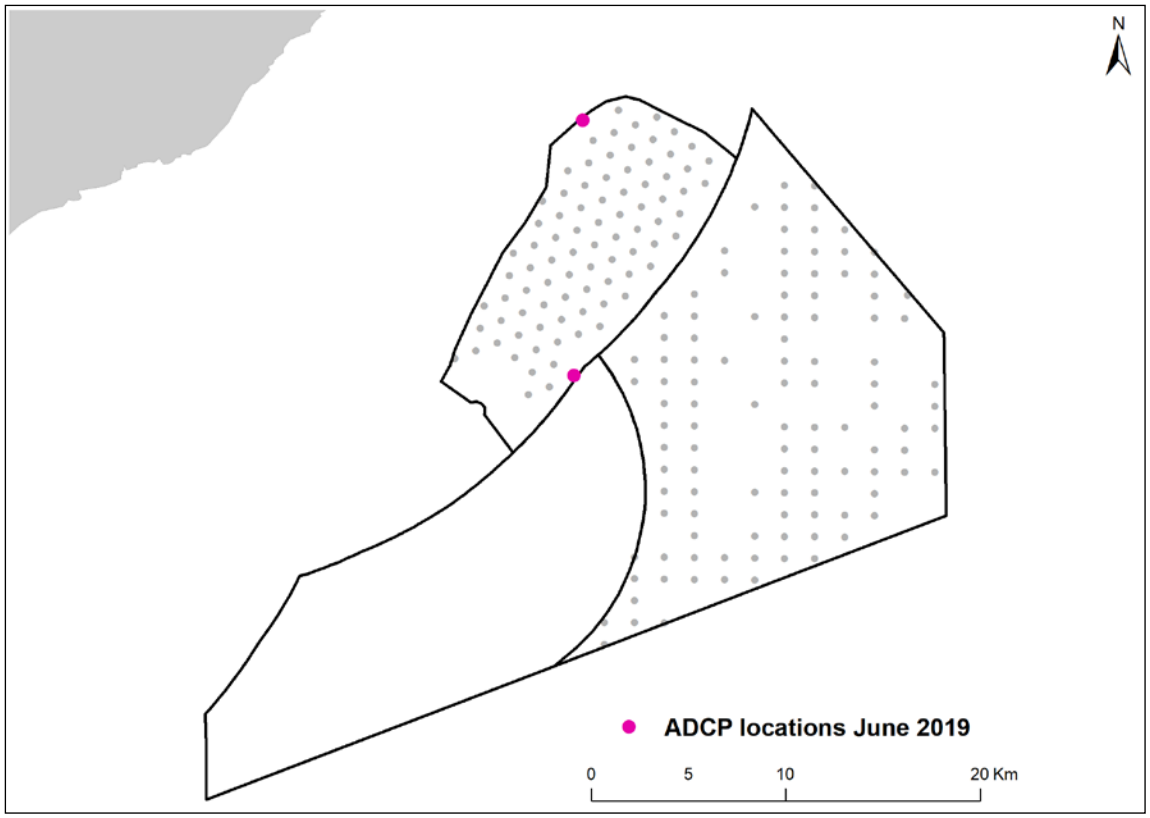

Figure 4: ADCP locations. These will be collected during 1419A, (grey dots represent wind turbine locations, both built and planned.

Table 1: Priority and optional hydrographic and plankton sampling positions and ADCP positions.

	Degrees Latitude	Degrees Longitude	Decmin Latitude	Decmin Longitude
Priority sampling site 1	58.304	-2.723	58° 18.298' N	2° 43.402' W
Priority sampling site 2	58.247	-2.859	58° 14.856' N	2° 51.558' W
Priority sampling site 3	58.168	-2.945	58° 10.109' N	2° 56.703' W
Optional sampling site 1	58.283	-2.807	58° 17.007' N	2° 48.469' W
Optional sampling site 2	58.212	-2.912	58° 12.739' N	2° 54.721' W
ADCP North of BOWL	58.3178	-2.887	58° 19.068' N	2° 53.235' W
ADCP South of BOWL	58.2	-2.895	58° 12.000' N	2° 53.700' W