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MRV *Alba na Mara*

Survey 0922A

PROGRAMME

23 June – 11 July 2022

Loading: Fraserburgh, 20 June 2022
Gear change/Rest day: Leith, 04 July 2022
Unloading: Fraserburgh, 11 July 2022

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.

Out-turn days per project: 20696 - 19 days

Equipment

Seabird CTD with FLNTU
International Young Gadoid Trawl PT154 with 6 mm Codend;
Jackson Rockhopper Trawl BT158 with 10 mm Codend
Prawn sorting table
Scanmar depth unit, trawl width and height units
Minilogger (or equivalent – i.e. DST). (x2)

Background and Objectives

0922A will conduct a survey of fish distributions within and around offshore windfarm development sites. This survey is part of the PrePARED (Predator and Prey Around Renewable Energy Development) project and aims at quantifying the fine and broad scale effects of OWF (Offshore Windfarm Development) on fish distributions and, indirectly, the effects of changes in prey distributions on marine top-predators.

Objectives

1. To conduct a fisheries acoustic survey to assess the distribution and abundance of pelagic fish in:

1.1 Moray Firth OWF development sites

To undertake an acoustic survey of sandeels and clupeid fish in the water column using 38 and 120 kHz. Concentrations of fish will be sampled using the pelagic trawl, but not within established farms. Species composition and length frequency distributions of fish caught will be determined. Subsamples will be weighed and their otoliths removed to establish length-weight relationships and age composition.

1.2 Forth and Tay OWF development sites

To undertake an acoustic survey of sandeels and clupeid fish in the water column using 38 and 120 kHz. Concentrations of fish will be sampled using the pelagic trawl, but not within established farms. Species composition and length frequency distributions of fish caught will be determined. Subsamples will be weighed and their otoliths removed to establish length-weight relationships and age composition.

2. To conduct RoxAnn survey of the substrate along the acoustic survey track (Figure 1).

3. To conduct a demersal fishing survey in the Forth and Tay region

3.1 Demersal fishing

To assess abundance, length-frequency-distribution, and weight-at-length of demersal fish at 26 fixed stations in the Forth and Tay region by demersal trawl survey. Samples will be retained for energy content analysis at a later date.

3.2 CTD and FLNTU

To sample variation in water temperature, conductivity, turbidity and chlorophyll-a through the water column using a Seabird CTD sampler and FLNTU at all demersal trawl stations and 2 additional sites within OWFs.

Procedure

Scientific equipment will be loaded onto *Alba na Mara* on 20 June at Fraserburgh harbour. Scientists will join the vessel in the early morning of Thursday 23 June. *Alba na Mara* will make passage to the Moray Firth study site the same morning following the acoustic transect depicted in Figure 1. Work around the Moray Firth OWFs will take place between 23 June and 25 June and passage to the Forth and Tay will take place on 26 of June. The Acoustic survey of the Forth and Tay will take place between the 27 of June and 3 of July.

Daily scientific sampling will occur between 0700 hrs and 1900 hrs. Concentrations of pelagic fish will be sampled using the PT154, aiming to fish twice each day if possible. Trawl samples will be worked up to determine the total catch at length of each species. Sub-samples of herring, sprats and sandeels will be weighed to determine length-weight relationships and will have their otoliths removed for age composition assessment back at the laboratory. RoxAnn data will be collected along the acoustic transect to enable the development of seabed sediment maps.

It is expected that the vessel will berth in Leith docks on the morning of 4 of July. Changes of sampling gear will take place at this time as well as a rest day.

In the days that follow, *Alba* will sample as many of the demersal and CTD stations in the Forth and Tay indicated in Figure 2 as is possible. Demersal trawl stations will be fished using the BT158. Each catch will be worked up to determine numbers at length of all species caught. Trawl performance characteristics will be monitored using Scanmar equipment to enable swept area to be determined. Catch size will then be converted to point density estimates. Size stratified samples of cod, haddock and whiting will be weighed to determine their length-weight relationships. At each location a sample of approximately 50 whole fish across the species and size ranges will be retained and frozen for energy content. Prior to each demersal fishing operation, the Seabird CTD sampler will be deployed. In addition, a further two deployments of the CTD will be made within Neart na Gaoithe and Seagreen OWFs.

The demersal survey will cease in time to arrive in Fraserburgh by the evening of 10 July. Scientific equipment will be offloaded at the earliest opportunity on 11 July, and the scientists will leave the vessel.

Normal contacts will be maintained with the Marine Laboratory.

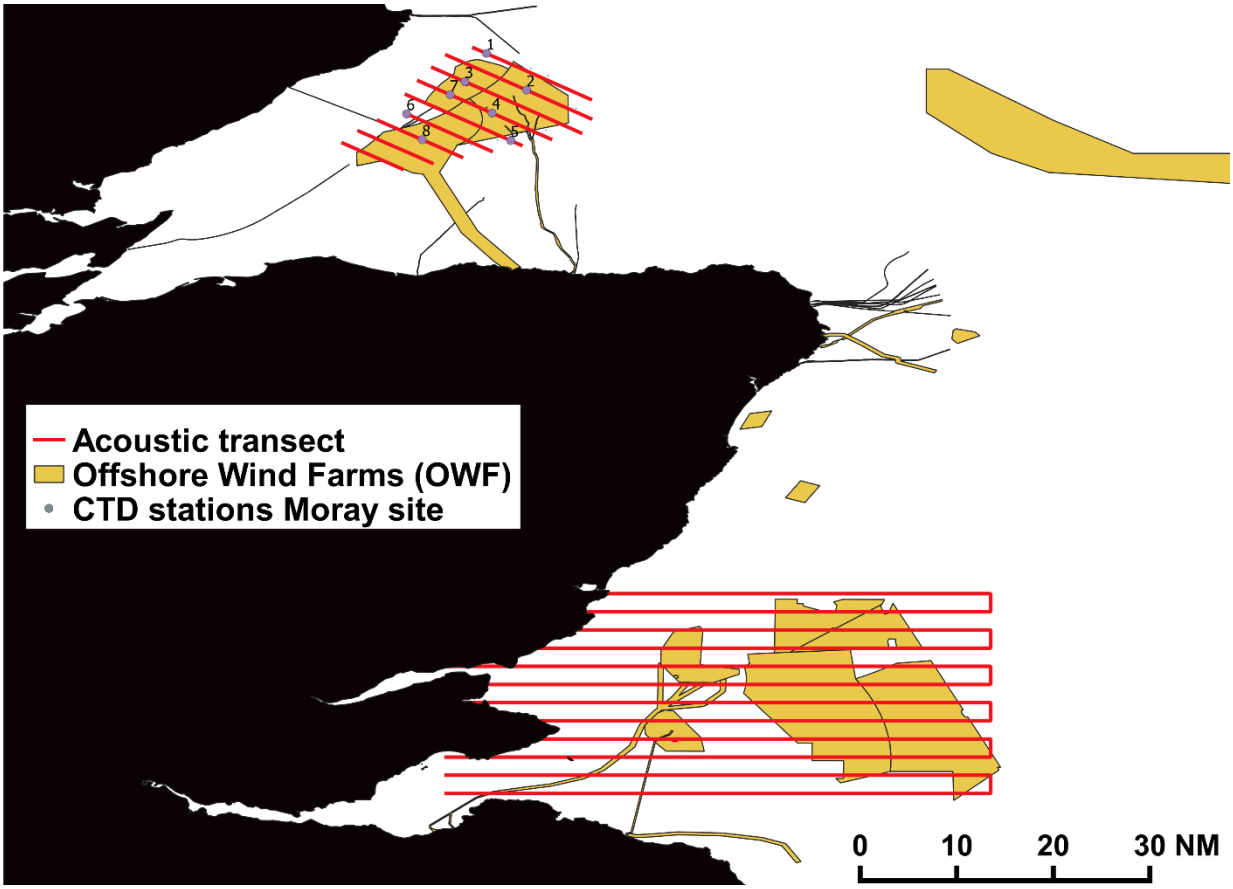

Figure 1: Map showing the acoustic transects in the Moray Firth and the Forth and Tay. CTD stations in the Moray Firth are also indicated.

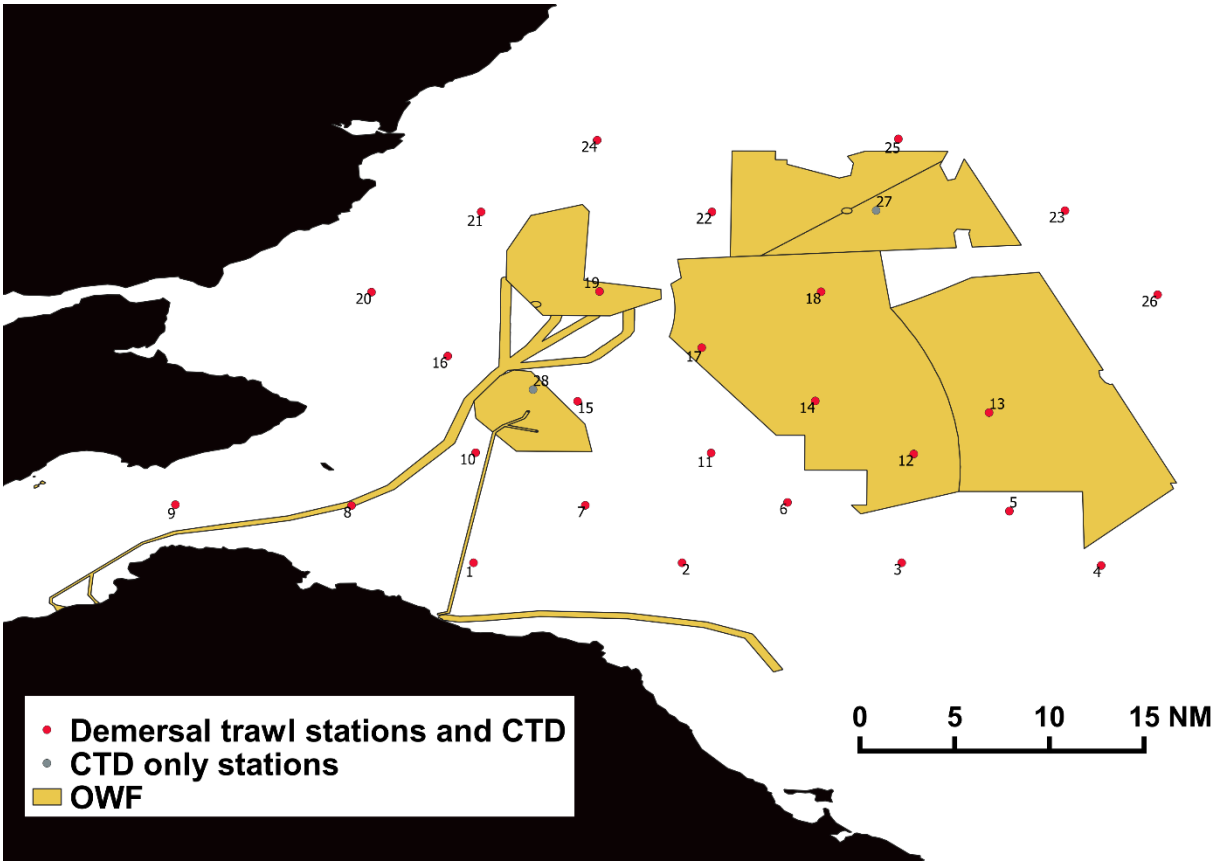

Figure 2: Map showing Demersal trawl stations and CTD stations in the

Submitted: T Regnier, 15 June 2022

Approved: I Gibb, 22 June 2022