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MRV *Alba na Mara*

Survey 0813A

PROGRAMME

13 Jun – 2 Jul 2013

Ports

Loading: Fraserburgh, 10 June 2013
Departing: Fraserburgh, 13 June 2013
Unloading: Fraserburgh, 2 July 2013
Half Landing: (provisional) Montrose, 24 June 2013

In setting the cruise 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 cruise with staff on-board before work is commenced.

In the interest of efficient data management it is now mandatory to return the Cruise Report, to I Gibb and the Cruise Summary Report (old ROSCOP form) to M Geldart, within four weeks of a cruise ending. In the case of the Cruise Summary Report a nil return is required, if appropriate.

Scientific Personnel

13 – 18 Jun	19 – 23 Jun	24 Jun – 2 Jul	provisional dates
Philip Boulcott	Philip Boulcott	Philip Boulcott	SIC
John Clarke	John Clarke	John Clarke	
José González	José González	José González	
Simon Greenstreet		Clare Greathead	
Eric Armstrong		Thomas Regnier	

Estimated days by project: 19 days, ST0070

Sampling Gear & Equipment

- 2 x 4' Sandeel dredges with 6mm cover and 6" teeth, spare tooth bars;
- Day grab and table;
- Seabird CTD, reversing bottles and chlorophyll water sampling kit;
- Dual Bongo net (68µm and 200µm mesh) and flow meters;
- Formaldehyde sample bottles;
- Scanmar depth units (x2), trawl width and height units;

- 2 x 2m Methot net
- International Young Gadoid Trawl PT154 with 6 mm Codend;
- Jackson Rockhopper Trawl BT158 with 10 mm Codend;
- Prawn sorting table.

Overview

The work carried out during this survey will inform the PICMATOP research project that examines the effects of climate change on forage fish dynamics. 0-group sandeel collected will be aged, otoliths removed for the purposes of microchemistry, and the data used to perform a survival analysis. Pelagic and demersal fish surveys along with bird surveys are carried out under PICMATOP to examine trophic relationships in the marine ecosystem.

Objectives

1. Pelagic fishing & Bird Survey

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

1.3. To conduct seabird at sea survey and survey of marine mammals along the acoustic survey track.

1.4. Any < 9cm sandeel caught in the pelagic trawl will be frozen for otolith microchemistry.

2. Larval sampling

2.1. To sample age =0 sandeel from Wee Bankie, Marr Bank, Stonehaven, off Rattray, and Turbot Bank (Figure 2). Samples will be collected using the modified sandeel dredge and, if necessary, the 2 m Methot net. At each station a sample of approximately 50 whole fish under 9 cm in length – ideally, 5 per 0.5cm size class - will be retained and frozen for otolith microchemistry. For the remainder of fish within this size range,
5 individuals per 0.5 cm size class will be retained, weighed to determine length-weight relationships and will have their otoliths removed for later age analysis.

2.2. To sample the variation in temperature and salinity in the water column using a Seabird CTD sampler. The CTD will be deployed in conjunction with the dual bongo net.

2.3. To collect further water samples and chlorophyll samples at each station. Water samples will be taken during the deployment of the dual bongo nets. Water sample depths will vary between stations.

3. Demersal fishing survey

3.1. To assess abundance, length-frequency-distribution, and weight-at-length of demersal fish predators at 19 fixed stations in the area off Wee Bankie by demersal trawl survey. Samples will be retained for stomach analysis at a later date.

3.2. To sample variation in water temperature, salinity and fluorometry through the water column using a Seabird CTD sampler at all demersal trawl stations and at 44 locations on and between the demersal trawl stations. Water (at varied depths) and chlorophyll samples will also be collected at each station.

4. Acoustic moorings

4.1 To deploy 6-7 acoustic moorings off the East coast of Scotland (see Figure 4).

Procedure

Scientific equipment will be loaded onto *Alba na Mara* on 10 June at Fraserburgh harbour. Scientists will join the vessel in the late afternoon of Wednesday 12 June. *Alba na Mara* will make passage to the study site the following morning following the acoustic transect depicted in Figure 1. Daily scientific sampling will occur between 0400 hrs and 1600 hrs (all times UTC). 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. Seabirds at sea data will also be collected using standard transect census methods to determine the numbers of seabirds using the study area on a daily basis, and their distribution over the area. It is expected that the vessel will berth in Leith docks on the afternoon of the 18 June. Changes to scientific staff and sampling gear will take place at this time in addition to the delivery of the acoustic moorings.

The vessel's routine will switch thereafter from day-time to night-time working mode, working between 1600h and 0400h. In the days that follow, *Alba* will sample as many of the dredge stations on the Wee Bankie, Marr Bank, Berwick's Bank, Stonehaven, Rattray Head and Turbot Bank indicated in Figure 2 as is possible. Acoustic marker buoys will be deployed opportunistically during this survey. The CTD and dual bongo net will be deployed at each dredge station prior to deploying the dredge. At each location a sample of approximately 50 whole fish under 9 cm in length (potentially age-0 individuals) – ideally, 5 per 0.5cm size class - will be retained and frozen for otolith microchemistry. Remaining fish will be used to derive length-weight relationships and will have their otoliths removed for later age analysis. Upon completion, the vessel will berth at Montrose on the evening of the 23 June (provisional date and port) for the purposes of a half landing. Changes to fishing gear and scientific staff will take place on the 24 June. The vessel will also revert to day-time work mode.

Alba na Mara will leave Montrose/Aberdeen at the earliest possible juncture on the morning of the 25 June. It is hoped that between 25 June and the morning of 1 July a total of 19 trawl stations (Figure 3) will be fished using the BT158. All stations have been fished in previous surveys. 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. Samples of fish will be retained for analysis back at the laboratory to determine diet and food consumption rates, energy reserve status and age. Prior to each demersal fishing operation, the Seabird CTD sampler will be deployed. In addition, a further 25 deployments of the CTD will be made between fishing stations. The demersal survey will cease in time to arrive in Fraserburgh by the evening of the 1 July. Scientific equipment will be offloaded at the earliest opportunity on 2 July, and the scientists will leave the vessel.

Normal contacts will be maintained with the Marine Laboratory.

Submitted
P Boulcott
07 June 2013

Approved
I Gibb
07 June 2013.

Figure 1: 0813A acoustic and bird survey transect

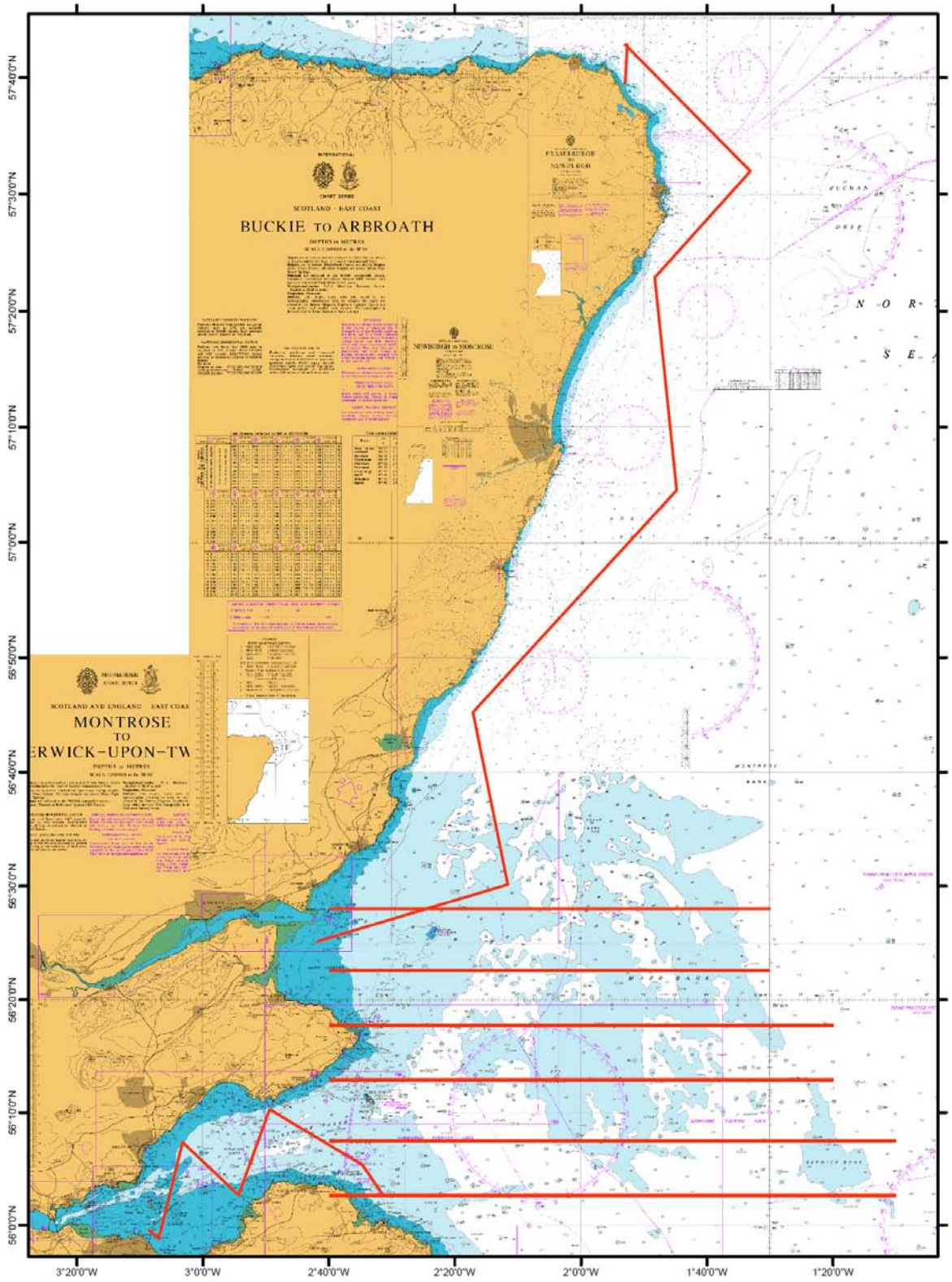

Figure 2: 0813a proposed 0-group dredge stations.

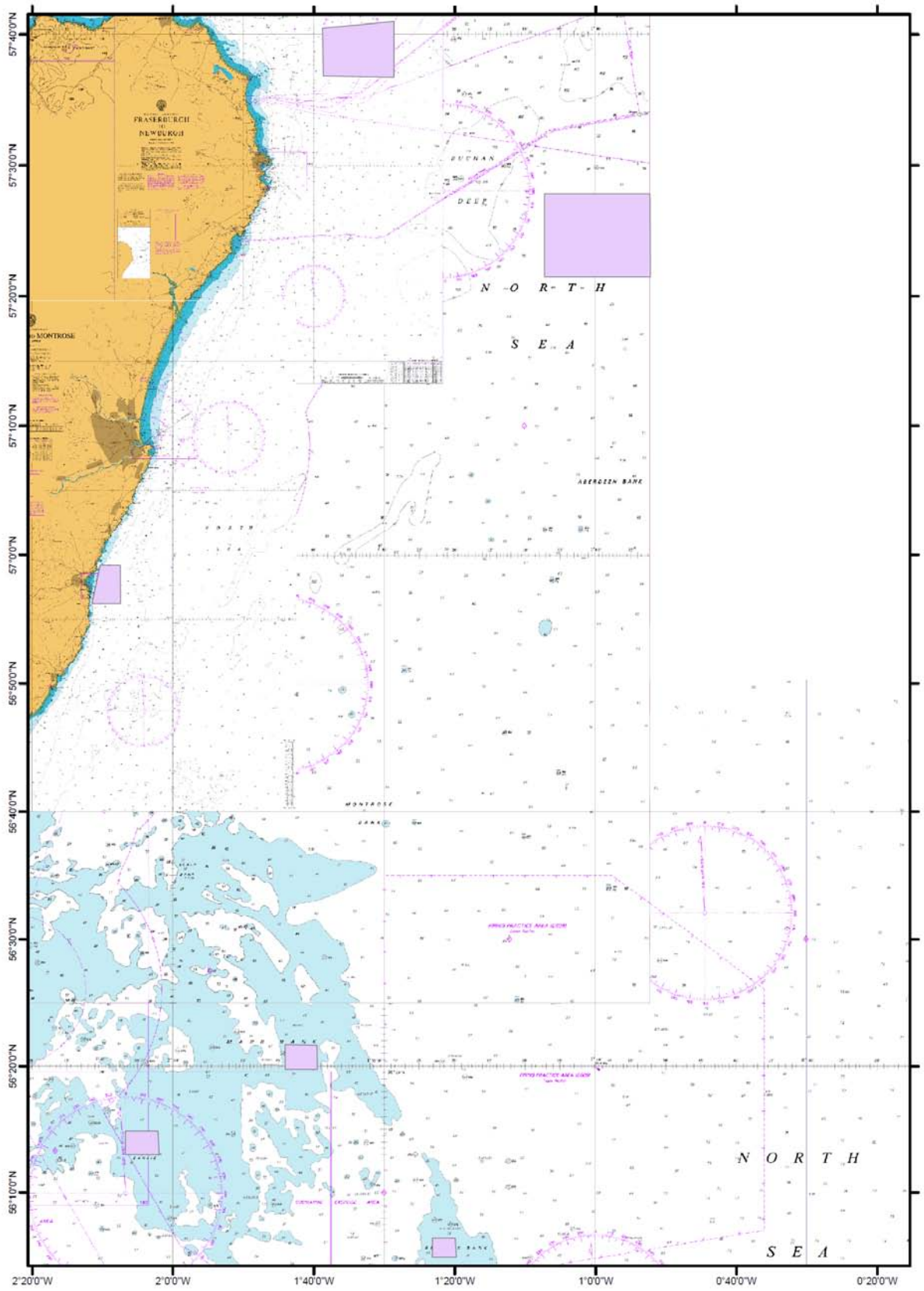

Figure 3: 0813A demersal fishing + CTD (blue circle) and CTD (red) stations.

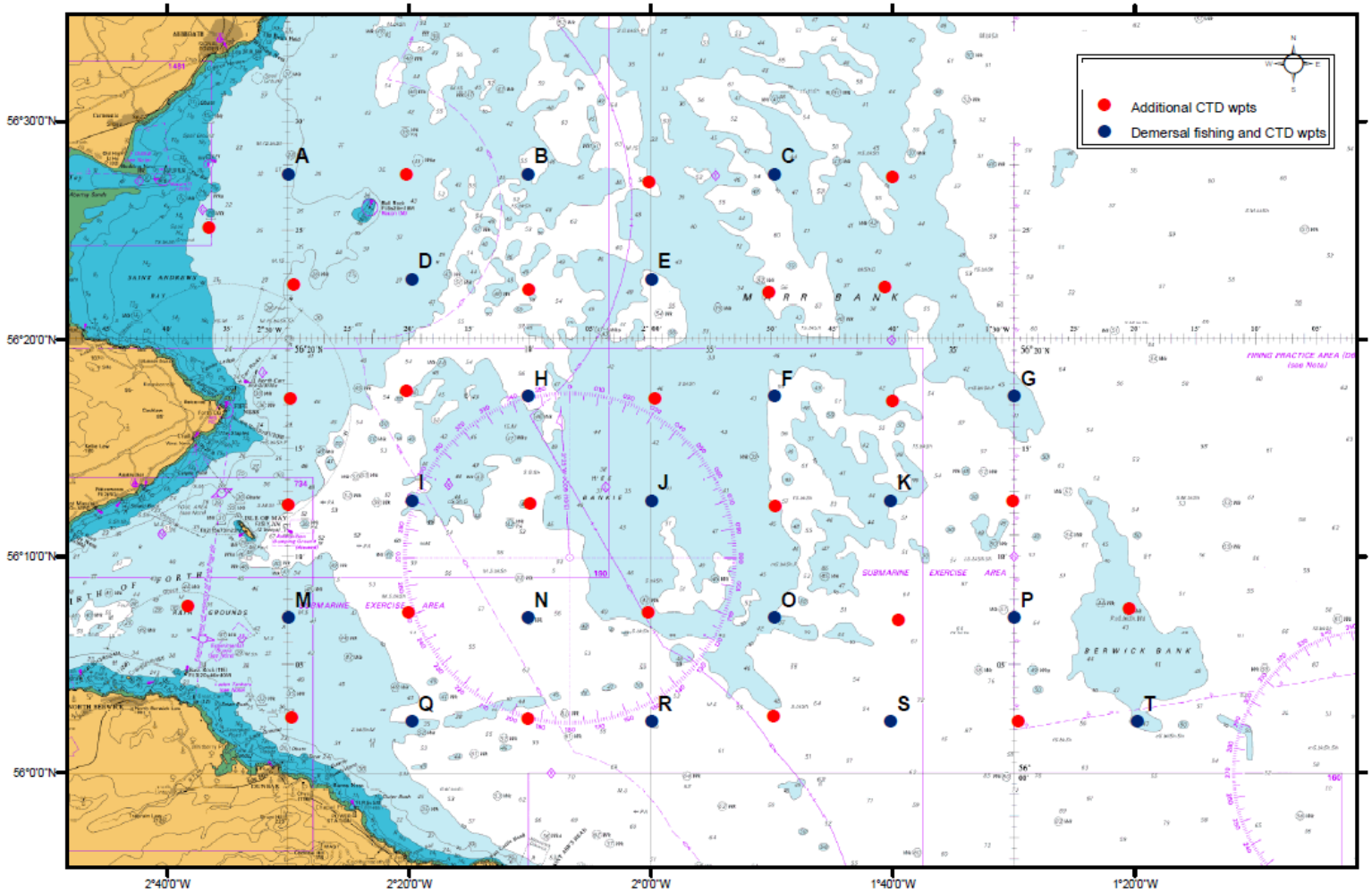

Figure 4: 0813A East coast positions of acoustic moorings. It is anticipated that 6 -7 moorings to the south of Cruden Bay will be placed by *Alba na Mara.*