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Not to be cited without prior reference to the FRS Marine Laboratory, Aberdeen

FRV *Clupea*

Cruise 0705C

PROGRAMME

18–31 May 2005

Ports

Loading: Fraserburgh, 14 May

Unloading: Fraserburgh, 31 May

Half Landing: (provisional) Montrose, 24 May

***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 FRS' Working Time Policy (which is published on the Intranet). 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 John Morrison and the Cruise Summary Report (old ROSCOP form) to Dougal Lichtman, within four weeks of a cruise ending. In the case of the Cruise Summary Report a nil return is required, if appropriate.

Personnel

*Simon Greenstreet

Helen Fraser

Mike Robertson 18–24 May

Leonie Robinson 18–24 May

Nicolas Jacob 18–24 May

Iain Gibb 24–31 May

Eric Armstrong 24–31 May

Katie Longo 24–31 May

A N Other 18–24 May

Sampling Gear

- Jackson Rockhopper Trawl BT158 with 10 mm Codend (to be loaded at Fraserburgh prior to 18 May).
- International Young Gadoid Trawl PT154 with 6 mm Codend (to be loaded at Montrose on 24 May).

Equipment

Seabird CTD, water sample bottles.

Objectives

1. To carry out a demersal trawl survey to determine the abundance and distribution of whiting, haddock and cod, the main fish predators of sandeels. At each trawl station the length frequency of all fish species caught will be determined. Sub-samples of the three gadoids will be weighed to determine length-weight relationships. Otoliths will be taken to determine age composition. Stomach samples will be collected to establish diet and food consumption rates, and livers and gonads will be removed to determine Hepato- and Gonado- Somatic Indices. (Any sandeels and clupeid fish caught during the demersal trawling will be worked up to determine length frequency distributions, length-weight relationships and age composition.)
2. To determine spatial variation in water temperature and salinity across the Wee Bankie/Marr Bank study area using a Seabird CTD sampler. Approximately 40 vertical dip stations will be sampled utilising the demersal trawl stations and additional locations mid-way between the trawl stations.
3. 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. Sub samples will be weighed and their otoliths removed to establish length-weight relationships and age composition.
4. To conduct a RoxAnn survey of the substrate in the study area to investigate variation in the sandbank structure between this and previous cruises.
5. To conduct a survey of seabirds using the study area, to determine their abundance and distribution, using standard census methods.
6. To record all sightings of marine mammals (number of animals, species if possible, and their location) observed during the course of the cruise.

Procedure

Scientific equipment (except the pelagic PT154 fishing gear) will be loaded onto *Clupea* on 14 May. Scientists will join the vessel by 0900 hours on the morning of 18 May and the *Clupea* will sail by 1000 hours, making for a suitable anchorage in the Firth of Forth ready for fishing the following morning. *Clupea* will sail at 0400 hours on 19 May to commence demersal fishing operations. Between 19 and 23 May a total of 19 trawl stations will be fished. All these stations have been fished in previous cruises. 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 can then be converted to point density estimates. Size stratified samples of cod, haddock and whiting will be weighed to determine their length-weight relationships. Stomachs, livers and otoliths will also be collected from these fish 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, further deployments of the CTD will be made between fishing stations.

On completing the demersal fishing and the main CTD programme *Clupea* will steam for Montrose, arriving by late afternoon of 23 May. The pelagic fishing gear PT154 and sandeel dredges will be brought to Montrose and loaded onto *Clupea* on 24 May. The demersal fishing gear will be offloaded. Eric Armstrong, Iain Gibb and Katie Longo will travel to Montrose by Laboratory car to join the vessel during the morning of 24 May. Mike

Robertson, Leonie Robinson, Nicolas Jacob and A N Other will leave the vessel, using this car to return to Aberdeen.

Clupea will depart Montrose by 0300 hours on Wednesday 25 May to commence acoustic survey work as soon as she reaches the study area. Acoustic survey work will continue over the next five days, mostly between 0430 and 1530 hours. The vessel will start work on each day so as to be on station by 0430 hours. A mini-logger will be attached to the acoustic towed-body so as to collect information regarding spatial variation in water temperature at a depth of around 5 m. If time permits additional survey track around the Wee Bankie will be steamed to examine the diel behaviour of sandeels in relation to time of day, stage of tide, and hydrographic conditions. Concentrations of pelagic fish encountered will be sampled by pelagic trawl. It is anticipated that between two and three trawl operations will be required each day. 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 have otoliths removed for age composition assessment back at the laboratory. RoxAnn data will be collected along the same fish assessment acoustic transects 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. The number, species (if possible) and position of all marine mammals observed throughout the entire cruise will be logged. Acoustic survey will cease on the afternoon of 29 May in time to arrive in Fraserburgh by the evening of Monday 30 May. The scientific equipment will be offloaded at the earliest opportunity on Tuesday 31 May, and the scientists will leave the vessel.

Normal contacts will be maintained with the Marine Laboratory.

J A Morrison
4 April 2005