

Not to be cited without prior reference to Marine Scotland, Marine Laboratory, Aberdeen

FRV *Scotia*

Cruise 0811S

PROGRAMME

6 July – 26 July 2011

Ports

Loading: Aberdeen, 4 July

Departure: Aberdeen, 6 July

Half-landing: Lerwick, 15 July

Arrival and unloading: Aberdeen, 26 July

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.

Personnel

| | |
|--------------|-------------------------------|
| P Copland | (In Charge) |
| J Hunter | |
| E Hatfield | |
| S Lusseau | |
| S Keltz | |
| O Goudie | |
| J Hommelhoff | (Part 1 6 -15 July) |
| R Catarino | (Part 2 15 - 26 July) |
| G Slesser | (6 July – mooring deployment) |
| M Geldart | (6 July – mooring deployment) |

Estimated days by project: 21 days - RV1109 (10761)

Sampling Gear

Midwater trawl PT160 x 3.

Multisampling pelagic cod-end with one fine mesh cod-end.

Seabird 911 CTD

Objectives

- To conduct an acoustic survey to estimate the abundance and distribution of herring in the north western North Sea and north of Scotland between 58°30'-62°N and from the shelf edge to 2°E, excluding Faroese waters.
- To obtain biological samples for echosounder trace identification using a pelagic trawl.
- To obtain samples of herring for biological analysis, including age, length, weight, sex, maturity and ichthyophonus infection.
- To obtain hydrographic data for comparison with the horizontal and vertical distribution of herring.
- To deploy Stonehaven hydrographic mooring.

Procedure

All gear will be loaded in Aberdeen on Monday 4 July. Access will be required to the drop keel area to allow removal of the Reson swathe transducer used on the previous cruise and installation of the multi sampler transducers. It is hoped that this can be done on 4 July. The vessel will depart Aberdeen on Wednesday 6 July and make passage for Stonehaven Bay to deploy the hydrographic mooring, after which two staff members will be disembarked and transported ashore by RHIB. The vessel will then head for Scapa Flow, Orkney Islands, where a calibration of all echosounders will take place (approximately 8-12 hours at anchor). Crew training and trial deployments of fishing gear will take place en route as convenient for the fishing master.

The survey will commence after calibration and follow a pattern of parallel transects running east/west, at normal steaming speed (approximately 10.5 knots), progressing northwards, along the east side of Orkney/Shetland, and southwards along the west side. The survey area is bounded by 58°30'-62°N and 02°E to the 250 m contour. This survey differs from previous ones in the series in that it will include an additional area previously surveyed by the West Coast charter. In order to cover the additional area, transect spacing has been increased to a minimum of 15 nm for the majority of the survey area. However, a pelagic vessel will be chartered to conduct an acoustic survey simultaneously with Scotia by interlacing between these transects giving an effect transect spacing for the combined surveys of 7.5 miles. The proposed Scotia survey design is shown in Figure 1. The charter vessel will not collect biological samples other than those obtained during its commercial tow(s).

A half landing will take place on 15 July in Lerwick to allow for the transfer of staff and to comply with the WTD policy. A second calibration will be conducted in Orkney at the end of the cruise if time permits.

Acoustic data will be collected at four frequencies (18, 38, 120 and 200 kHz) between 0300 and 2300 hours. Fish shoals seen on the echosounder will be identified using a pelagic trawl (PT160). Trawling operations will be carried out between two and four times per day at anytime between 0300 and 2300. Fishing operations will normally be carried out using the multisampler

cod end but if there is a possibility that large shoals are in the area, the normal net may be used.

Samples of all species caught will be measured for length to partition the echo integral amongst species and size classes for target strength functions. Fish will also be weighed to establish a length-weight relationship. In the survey area east of 4° W, otoliths will be collected from a sub-sample of the herring to determine age according to three length strata, two per 0.5 cm class below 22 cm, five per 0.5 cm class from 22.5 - 27.5 cm and ten per 0.5 cm class for 28.0 cm and above. In the area west of 4° W, random sampling of 120 fish above 24 cm length will be carried out for each haul with photographs taken for maturity analysis. Where there are herring below 24cm, or missing length classes, a further sample will be analysed to ensure there will be ages at all lengths. The maturity scale used throughout the survey will be the Scottish 8 stage scale. Presence of *Icthyophonous* infection will also be recorded.

Where required, a vertical hydro dip will be carried out immediately following a pelagic trawl, this will require the vessel to use its DP system to remain on station. The decision to carry out hydro dips will be based on achieving at least one station in each ICES rectangle. The ships thermosalinograph will be run continuously to obtain sea surface temperature and salinity throughout the survey area. Data from the CTD will be up loaded on a daily basis to the METOCEAN site.

Normal contact will be maintained with the Marine Laboratory. Radio contact will also be maintained with the charter vessel and other vessels taking part in the internationally co-ordinated survey.

Scotia will be unloaded of fishing and scientific gear on her return to Aberdeen on Tuesday 26 July.

Submitted:
P Copland
14 June 2011.

Approved:
I Gibb
28 June 2011.

Figure 1: Survey track 0811S.

