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FRV *Scotia*

Cruise 1007S

REPORT

29 June - 19 July 2007

Personnel

Paul Fernandes	(In Charge) Part 1
Dave Reid	(In Charge) Part 2
Mike Stewart	
Sarah Clarke	
Robert Watret	
Stephen Keltz	
Jane Mills	Part 1
Owen Goudie	Part 2
Jim Hunter	
Martin Burns	
Sascha Faessler	Student, FRS
Samantha Cox	Student, Aberdeen University

Objectives

1. To conduct an acoustic survey to estimate the abundance and distribution of herring in the north western North Sea and north of Scotland between 58º15-61.45'N and 4ºW to 2ºE, excluding Faroese waters.

2. To obtain biological samples for echosounder trace identification using a pelagic trawl.

3. To obtain samples of herring for biological analysis, including age, length, weight, sex, maturity, ichthyophonus infection and fat content.

4. To obtain hydrographic data for comparison with the horizontal and vertical distribution of herring.

5. To obtain plankton samples map the distribution and abundance of zooplankton.

6. To obtain in-situ target strength data on herring using the autonomous echosounder mounted in a drop frame.

7. To obtain live herring and live juvenile haddock for transport back to the laboratory.

Out-turn days per project: RV0708 – 21 days

Narrative

All gear was loaded in Aberdeen on 27 & 28 June. Scientific staff joined the vessel at 0800 UTC on 29 June and it departed at 1000 on the same day. A small meeting was held with all scientists to explain the objectives of the survey and to describe general operating procedures. The survey commenced just outside Aberdeen at 1030 on 29 June. Transects progressed northwards along lines of latitude, at spacings of 30, 15 or 7.5 nautical miles (n.mi.). Transect spacing was based on the results of previous surveys and transects were placed relative to ICES rectangles. Transects extended as far east as 1° 45E, and as far as safely possible to the west, on approaching the coast. Calibration of the transducers took place in Scapa Flow between 1600 on 1 July and 0300 on the 2 July. The survey resumed immediately afterwards. A half landing took place on 9 July in Lerwick in accordance with rest provision for the Working Time Directive and for the exchange of personnel, (P Fernandes and Jane Mills left and Dave Reid and Owen Goudie joined). The vessel resumed surveying at 1100 on 10 July. West of the Shetland Isles, transects extended from the coast to the shelf edge or longitude 4° west. The survey was completed on 17 July at around 1800. Three of the four transducers were calibrated successfully in Scapa Flow between 2100 on 17 July and 1500 on 18 July. The vessel returned to Aberdeen on the morning of 19 July.

Results

The survey was completed successfully, with no time lost due to weather and no damage to the acoustic or fishing gear. The total mileage surveyed was approximately 2200 n.mi. with 991 acoustic log intervals recorded, providing approximately 38 GB of data (*.raw files). All acoustic data were scrutinised and saved as daily Echoview (*.EV) files. The firs calibration in Scapa Flow on the 2 July was compromised due to bad weather. A second, successful calibration was carried out in Scapa Flow on 17 July and 18 July, which gave good results for the 38 kHz, 18 kHz and 120 kHz transducers, but was unsuccessful for the 200 kHz transducer. Fishing exercises were generally successful; 38 trawl hauls were carried out, of which 32 contained more than 30 herring. In addition to length frequency data, 9678 herring were measured and 2307 sampled for weight, sex, maturity and otoliths. Most of these were also sampled for fat content.

No preliminary indications are available for the amount of fish detected. The distribution of fish was broadly similar to 2006, with many herring schools being detected close to the coast of Shetland, and at Sumburgh Head. Very little herring were detected in the northern part of the area. Most schools in the western area were relatively small and isolated, as well as difficult to catch, although there were large schools seen west of Fair Isle. Some herring schools were of the typical tall pillar shape, but many were detected as more diverse forms, such as long layers in mid-water or very close to the seabed stretching for many miles. A full stock estimate for herring and survey report will be prepared shortly.

A total of 45 deployments of the GULF VII sampler were made, which collected integrated whole water column plankton samples using a 250 micron cod end. Oceanographic data (sea salinity and temperature) were collected from a CTD mounted on the GULF VII vehicle.

The multisampler worked very well for most of the survey, although there were a few occasions when it caused tangling in the nets.

There were a number of problems with the autonomous echosounder systems at the start of the survey, largely due to communication and software problems. These were resolved by the half landing. Thereafter, the system was deployed for up to 3 hours during most down periods between 2300 and 0300. The co-mounted camera systems worked reasonably well, but few useable fish images were found.

The live sampler cod end was deployed on two occasions, and failed to catch any herring. Subsequently some live fish were obtained from the standard cod end, but these did not survive due to the supply pump being switched off.

D.G. Reid & P. G. Fernandes
1 August 2007

As seen in draft
N. Paddle