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

FRV *Scotia*

Cruise 1003S

PROGRAMME

27 June – 21 July 2003

Ports

Departure:	Aberdeen
Half-landing:	Lerwick, July (date subject to change)
Arrival and unloading:	Aberdeen, 21 July

Personnel

John Simmonds	(In charge)
Sandy Robb	pt 2 nd half
Robert Watret	pt 1 st half
Phil Copland	
Marco Kienzle	
Michael Stewart	pt 1 st half
Owen Goudie	
Angus Mair	Phd Student
Jose Xavier	BAS student
Norma Garcia-Nunez	MSc Student pt 1 st half
Juan Zwalinowski	Student pt 2 nd half

Fishing Gear

Midwater trawl PT160 x 3
Bottom Trawl (Monk Trawl)

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°-61°45'N and 4°W to 2°E, Faroese waters.
- To obtain echosounder trace identification using pelagic trawl and demersal trawl.
- To obtain samples of herring for biological analysis, including age, length, weight, sex, maturity and ichthyophonus infection.
- To obtain samples of herring for genetic analysis for HERGEN.
- To obtain photographic records for fish maturity analysis.
- To obtain hydrographic data for comparison with the horizontal and vertical distribution of herring.
- To obtain plankton samples for acoustic identification work.

Procedure

All gear will be loaded onto the vessel on Monday 24 June and general sample bottles etc. on Wednesday 26 June. The vessel will depart in the afternoon of Thursday 27 June and head for Scapa Flow, Orkney Islands, where calibration of all echosounders will take place (approximately 8-12 hours).

The survey will commence immediately 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 58-61°30'N and 02°E-04°W. A half landing will take place at an approximate half way stage in Lerwick to allow for the transfer of staff. The survey will be completed in the south-western part of the area to coincide with the acoustic survey in the adjacent area (ICES division VIa). The survey will stop at 60°N to the east of Shetland. A calibration will be conducted either east of Shetland or in Orkney at the end of the cruise.

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, and not between 2300 and 0300 hours. On approximately half of the trawls, following the pelagic haul, a second bottom will be carried out. The hauls chosen will be those where the risk of damage to the bottom trawl is least likely. 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. Otoliths will be collected from a sub-sample of the herring to determine age and the state of maturity. The presence of *Icthyophonus* infection will also be recorded. Five pelagic hauls to the west of Shetland will be used to provide samples of herring for genetic analysis for the project HERGEN.

The ship's thermosalinograph will be run continuously to obtain sea surface temperature and salinity throughout the survey area. CTD casts will be taken at 2300 hours each day. XBT casts will be taken on an opportunistic basis in between trawl hauls.

Normal contact will be maintained with the Marine Laboratory and the appropriate Fisheries Officers.

J A Morrison
11 June 2002