R1/6

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FRV *Clupea*

Cruise 0995C

REPORT

Loading and Unloading: 19 May - 8 June 1995

Departure: Fraserburgh
End port: Fraserburgh
Half-landing: Lerwick

Personnel

P J Wright	HSO (SIC)
J R G Hislop	PSO
I M Gibb	SO

Objectives

1. To investigate the distribution of pelagic phase juvenile gadoids in the northern North Sea.
2. To collect samples of 0-group haddock for otolith studies.
3. To collect samples of sandeels for molecular studies.
4. To collect live specimens of juvenile haddock for aquarium studies.
5. To collect live specimens of adult sandeels for toxicological studies.

Out-turn costs per project: 20 days GCI1

Narrative

Scientific staff joined the vessel at 1030 hours on 19 May and the vessel sailed at high tide 1715 hours. The MIKT was deployed for an oblique tow at the first station at 1900 hours. Problems with the configuration of a SCANMAR cabinet led to gear damage, and the station had to be repeated the next day using a new net and flowmeter. A number of problems were encountered with deploying the MIKT from *Clupea*. Deployment while steaming at 4 knots (as recommended) was considered to be unsafe aboard *Clupea*. However deployment with the vessel stationary, resulted in the frame becoming unstable. Consequently it was decided to deploy the MIKT with the vessel steaming at approximately two knots. The block arrangement appeared to come under strain during the deployment of this gear and in consequence a steadying bar was fixed to one of the blocks at the half-landing. This block however showed progressive wear during the survey and was judged to have become too worn to be used by the last day of the survey.

A second flowmeter was damaged at station 24 when the bracket and rod holding it was twisted during deployment. This made it impossible to continue sampling and so the half-landing was brought forward in order that repairs could be made. *Clupea* landed at Lerwick on 26 May and repairs were made on 27 May. *Clupea* departed from Lerwick at 1045 hours on 29 May. Following the half-landing a further 21 stations were surveyed, including additional stations to the north and

west of Shetland. Live sandeels were collected at Hamna Foula, west of Shetland and from two survey stations. Densities of haddock to the west of 0°E were generally low (<0.002 m^{-3}). Consequently, in order to capture live haddock the vessel returned to a station of known high haddock density. One day was spent trawling for live haddock before returning to continue the survey. *Clupea* made an unscheduled stop at Aberdeen on 5 June in order to transfer live fish to the Marine Laboratory. This was deemed necessary as both haddock and sandeels suffered a high mortality onboard *Clupea*. The ship returned to sea the same day at 0950 hours and began stations along 57°15'N. The last two days of the cruise were dedicated to collecting haddock for otolith studies, since relatively few specimens had been caught off the Scottish east coast during the survey. Bad weather on 7 June led to the curtailment of fishing operations by late morning and *Clupea* docked at Fraserburgh at 1630 hours.

Results

A total of 45 stations and 57 MIKT deployments were made during the survey. In addition to MIKT deployments, the pelagic trawl was deployed at nine stations. The use of this gear demonstrated that the size range of 0-group haddock present during the survey included juvenile haddock larger than those taken by the MIKT (>26 mm TL). However, on the basis of comparison tows of the two gears, these large juveniles only appeared to represent a small fraction of the 0-group haddock present.

Salinity and temperature profiles were obtained at most stations using a Chelsea CTD system. However, problems with the logger resulted in loss of data for certain stations. Nevertheless, water samples taken at all stations provided data on surface water salinity and a temperature sensor SCANMAR unit enabled the collection of temperature profiles.

Based on MIKT, densities of 0-group haddock of up to 860 m^{-2} of the water column were found (Fig. 1). Few haddock were caught at stations over 200 m depth, south of 57°N or west of 3°W. The highest density of haddock was found in the central northern North Sea between 59°15'-59°45'N 01°30'E. This area was characterised by a marked thermocline. Samples from these stations also exhibited the broadest size range of haddock. Norway pout were the most abundant gadoid east of 0°, whilst whiting were the commonest gadoid to the east of 0°. Approximately 2,700 haddock were taken for otolith analysis and genetic studies. Sandeels were also taken from six stations for genetic and otolith studies.

Figure scale: 1 mm = 100 0-group haddock . m^{-2} water column.

P Wright
22 August 1995

Seen in draft: A Simpson, OIC

0-group Haddock May-June 1995