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In confidence: Not to be quoted without reference to the Laboratory.

FRV Explorer

Cruise 1/80

REPORT

10-22 January 1980

Objectives:

1. To carry out an echointegration survey for sprats in the Western North Sea, between the Moray Firth and the Firth of Forth.
2. To identify echo traces using a pelagic trawl.
3. To conduct an intercalibration with FRV Corella.

General: Explorer sailed from Aberdeen at 1000 hours 10 January. Owing to malfunction of the ships main engine the survey did not start until 1200 hours on 11 January. Explorer then steamed south to the Firth of Forth and anchored off Dunbar at 2200 hours for acoustic calibration. This was completed by 0700 hours on 12 January. The survey then continued in a southerly direction. Radio contact was established between Corella And Explorer at 1800 hours on 12 January and again at 0700 hours on 13 January. Unfortunately no fish concentration of a suitable size and position had been detected by either vessel which would enable an intercalibration to be performed. The intercalibration was cancelled. The survey then proceeded in a Northerly direction with modification to enable fish concentrations to be studied and to minimise the effects of inclement weather conditions.

A further acoustic calibration was performed in the Dornoch Firth between 1900 hours on 16 January and 0900 on 17 January.

The midwater trawl PT112 was used to sample echo traces as required. Explorer docked in Aberdeen at 1800 on 20 January.

Results: Inclement weather and the overall scarcity of fish traces dictated several modifications to the original cruise track. These generally took the form of a reduction in the number of offshore survey tracks which, without exception, yielded no fish concentrations, in favour of more detailed surveys of the inshore areas and the fish concentration they contained. The actual cruise track is illustrated in Figs 1 and 2.

The biomass estimates were calculated for the water column from 5m below the transducer to 2m above the sea bed. They are based on a target strength per kilo of -34dB's, and calculated from acoustic calibrations performed during the cruise, which gave rise to an overall echo integration constant of 59 tonnes per km² per volt per transmission.

Four midwater trawl hauls were made in the positions marked on Figs 1 and 2. All the hauls resulted in a catch of almost pure '0' group sprats mixed with some herring larvae, samples of which have been preserved in formalin for further analysis. All the trawl hauls were taken within 20m of the seabed and no herring other than the larvae were captured.

The number of fish traces observed and biomass estimates derived from the survey indicated a considerably smaller sprat population in the area surveyed than in either January 1978 or in February 1979.

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25 January 1980

Seen in draft: T H Henderson