

R1/6

3CR85

In Confidence - Not to be quoted without prior reference to the Laboratory

LD

FRV "Clupea"

Cruise 3/85

Report

27 February - 19 March 1985

Personnel

J A Morrison	SSO (in charge)
P Rankine	SO
F Armstrong	SO
D L Baird	ASO
S Almatar	Visitor

Objectives

1. To carry out echointegration surveys of the South Arran and Ballantrae Bank areas in an attempt to quantify spawning aggregations of herring.
2. To carry out a series of larval surveys on Ballantrae Bank and in adjacent waters to estimate herring larval production.
3. To trawl and use set nets to collect herring for investigation of trological composition including, fecundity analysis, morphometric measurement and to establish the weight length relationship.
4. To use a light meter to investigate light intensity in relation to the diurnal behaviour of herring.

Narrative

Scientific staff joined "Clupea" at Buckie on 27 February after the ship was loaded and "Clupea" proceeded to the Firth of Clyde, reaching Troon on the morning of 29 February. From 29 February until the first half-landing on 7 March, most of the time was spent conducting echointegration surveys in Kilbrannon Sound and in the area to the east of Arran, largely because of adverse weather conditions. Despite this, however, an echointegration grid and a metre net survey were carried out in the Ballantrae Bank area at this time, but with negative results.

As echo targets had been very scarce in the period up to the half landing, and as it was possible that herring in the area of Ballantrae Bank were not rising off the seabed, the bottom trawl was rigged at the half landing and trawling was started off the outer edges of Ballantrae Bank on 8 March. During 8 and 9 March, catches of up to 1 $\frac{1}{4}$ baskets of herring in maturity stage 6 were caught in this area. Echointegration grids still gave very low biomass estimates at this time. 10 March: was spent on a larval survey on the bank, - but again with negative results.

On 11 and 12 March echointegration grids were carried out in the areas to the south and east of Arran. In order to check whether the level of acoustic biomass present in the water column increased in the hours of dusk or darkness, echointegration was carried out until 2200, by which time it had been fully dark for several hours. No appreciable increase in acoustic biomass was discernible during this period, however.

On 13 March "Clupea" returned to Ballantrae Bank and trawled in close proximity to the western edge of the bank. Catches of up to 9 baskets of herring - mostly in maturity stage 6 - were taken. On 14 March, the second half-landing was spent in Campbeltown, and from then until the 18 March, the remaining time was spent in the vicinity of Ballantrae Bank where 2 larval surveys, 2 echointegration grids and one trawl haul were carried out. No larvae were taken and little was recorded on the echointegration runs, but once again a catch of spawning herring was taken in the bottom trawl.

On the evening of 18 March "Clupea" made for Greenock at the end of the cruise.

Results

Echointegration

Despite extensive echointegration grids carried out over a wide area of the Clyde both in daylight and in darkness, only relatively insignificant echo traces were encountered.

Larval sampling

Four metre net surveys were carried out on Ballantrae Bank on 5, 10, 15 and 17 March respectively. Visual inspection of the samples taken on these occasions suggested that few if any larvae were present.

Trawling

Pelagic trawling was not carried out because of the lack of suitable midwater trawls but 8 bottom trawl hauls were completed on the edge of Ballantrae Bank. Catches of up to 12 baskets of mature herring were taken, the majority being in the range 23 to 35.5 cm and in maturity stage 6.

The modal lengths of those herring occurred at 29.5/30.0 and at 26 cm. The remainder of the catches consisted of sprats, small whiting, a few large cod and a variety of flatfish.

Herring samples for fecundity analysis, morphometric measurements and for weight/length relationships were taken in addition to those used for racial and non racial sampling. In addition samples of spawning herring were supplied to SMBA, Oban, and to the Plankton section for the Loch Ewe "Bag" Experiment.

Light intensity readings

Light intensity readings were taken during the daylight to dusk cycle at a variety of depths, but these did not correlate with levels of acoustic abundance on these occasions.

J A Morrison

13 May 1985

Seen in draft: J Calder

clupea 3/85 - cruise track

