

R1/6

4pt1 CR85

SM

In Confidence: Not to be quoted without prior reference to the laboratory

Report.

FRV Clupea  
Cruise 4/85 Part I

27 March - 4 April 1985

#### PERSONNEL

J A Morrison SS0 (in charge)  
P W Rankine SO  
B E Edelman SO

#### 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 areas in order to estimate larval production from these grounds.

#### NARRATIVE

Scientific staff joined "Clupea" at Greenock on 27 March and "Clupea" made for Rothesay for the night. On 28 March a metre net survey was carried out over Ballantrae Bank but no herring larvae were observed. During this survey, however, good herring marks were observed on the echo sounder in 16 metres of water on the outer edge of Ballantrae Bank, but bottom conditions precluded trawling in this area. The following day "Clupea" carried out a sonar search over the bank and once again good herring marks were observed in the same general area as on the previous day. A bottom trawl haul was carried out in close proximity to the marks just over the edge of the bank and one basket of herring was taken. Approximately 75% were in maturity stage 6 and the rest were newly 'spent'.

Between 30 March and 1 April two further Ballantrae Bank metre net surveys were completed as well as a Dutch Gulf III survey off the Iron Rock ledges, to the south west of Arran. No herring larvae were observed in the samples taken in any of these surveys. 2 April was spent as a half landing at Troon and 3 and 4 April were again spent working in the vicinity of Ballantrae Bank in the area in which marks had been observed, and on both these surveys herring shoals were encountered in daylight in shallow water (<18m). A bottom trawl haul was made in close proximity to the area in which these shoals were observed and four baskets of herring of which 95% were in maturity stage 8 were taken. A final larval survey on the "Bank" was also completed in this period but once again no herring larvae were observed.

On the evening of 4 April "Clupea" returned to Troon at the end of the survey.

#### RESULTS

##### Echo integration

Herring shoals were found in a narrow band on the western edge of Ballantrae Bank and two detailed surveys were carried out over this area on consecutive days. However, because of the irregularity of the sea bed, the extreme shallowness of the water column and the fact that herring shoals had a very

restricted vertical distribution the acoustic estimates obtained were not unsatisfactory.

#### Trawling

Two bottom trawl hauls were carried out, on 29 March and 3 April respectively and herring were caught in both of these. Length ranges were from 23 to 35.5cm with modes at 26.0 and 29.5/30.0cm, and the proportion of spent herring in each of these two samples was approximately 25% and 95% respectively. During cruise 3/85 herring in maturity stage 6 were first caught on 8 March and on the present cruise in early April some were still present in this maturity stage.

#### Larval sampling

Larval grids were carried out at Ballantrae Bank on 28 and 30 March, and on 1 and 4 April. Visual inspection of the samples taken on these surveys suggested that no herring larvae were present.

From the results of this and the previous cruise (Clupea 3/85), it appears that in 1985 herring in maturity stage 6 assembled around Ballantrae Bank from approximately the second week of March onwards. Since no larvae were recorded in this area in the period from early March to 4 April, and since herring at maturity stages 6 and 8 were again caught in late March - early April it seems likely that no spawning took place until after about 20 March. Assuming that the timing of the spawning in 1985 was typical, it would seem necessary for future surveys designed to cover the period of larval production to be extended into the last three weeks of April.

J Morrison  
10 May 1985

Seen in draft:

James A Calder

# CLUPEA 4/85 PART 1

## SURVEY STATIONS

