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IN CONFIDENCE: Not to be quoted without reference
to the Laboratory.

CRUISE REPORT

FRS "CLUPEA"

22 FEBRUARY-16 APRIL 1971

OBJECTIVES

1. To carry out a herring egg survey on Ballantrae Bank.
2. To survey the Ballantrae Bank area for herring larvae to assess larval production.
3. To carry out an intensive larval survey for herring larvae off the south coast of Arran to determine the importance of herring spawning in this area.

PART 1. BALLANTRAE BANK HERRING EGG SURVEY, 22 FEBRUARY-11 MARCH

'Clupea' sailed from Greenock at 10.45 hours on 22 February and made a passage to Ballantrae Bank to begin the survey for herring eggs. Weather conditions were exceptionally favourable throughout this part of the cruise and the work proceeded unhindered until 11 March when 'Clupea' returned to Greenock to exchange scientific staff.

RESULTS

The egg survey was carried out by grab and underwater TV. The distribution of gravel and other sediments on the Bank were plotted. Results from this work showed that there were several areas on the Bank suitable for herring spawning.

Spawning took place between 25 February and 4 March. A patch of eggs was located in the same area as the patch surveyed in 1970. The area covered by eggs was smaller and the density of eggs was much lower than in 1970. Samples of eggs were collected for detailed studies at the laboratory.

The TV and grab survey was continued over a wide area of the Bank until the evening of 10 March, but no additional patches of spawn were located.

The underwater TV equipment worked extremely well and proved to be very effective and efficient for this type of survey. Much more detailed information was obtained of the spawn and its relation to the substrate than would have been possible from grab samples only.

A small airlift sampler was tested. It worked well in conjunction with the TV equipment confirming the presence or absence of herring eggs.

Plankton samples were taken at regular intervals over the Bank during the period of the egg survey. No herring larvae were observed in the collections.

On 9 March a line of six hydrographic stations was worked between Bennane Head and the south coast of Arran. Temperatures, salinity and nitrate samples were taken at all standard depths.

PART 2. HERRING LARVAL SURVEYS, 16 MARCH-16 APRIL

'Clupea' sailed from Greenock at 1500 hours on 16 March and returned to the Ballantrae Bank area. On 16 and 17 March tests were carried out with the electronic equipment for estimating metre net depth and some grab hauls were made in the area where eggs had been located at the beginning of the cruise. No spawn was taken in any of these hauls. Strong winds on 18 March hindered the work but conditions improved sufficiently on 19 March for a larval survey to be carried out off the south coast of Arran. On 22 March a larval survey was carried out in the Ballantrae Bank area.

During the remainder of the cruise the Ballantrae Bank and south Arran grids of larval stations were worked alternately.

At the end of the cruise, on 16 April, 'Clupea' berthed in Campbeltown at 1615 hours.

RESULTS

On 22 March when the first full larval survey was completed in the Ballantrae Bank area there were fair concentrations of recently hatched herring larvae on the Bank. In subsequent surveys the numbers of larvae in the collections steadily decreased, suggesting that peak hatching had been reached on or before 22 March.

In areas surveyed south of Arran, no significant numbers of larvae were taken in any of the surveys which were made.

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4 May 1971