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CRUISE REPORT

F.R.S. "CLUPEA"

6th February-25th March 1967

- Objectives:
- (1) To carry out a herring egg survey on Ballantrae Bank.
  - (2) To collaborate with "Scotia" in sampling herring larvae in vicinity of Ballantrae Bank.
  - (3) To obtain ripe herring from trammel net hauls for artificial fertilisation and to study their development and that of hatched larvae in anchored cages.

"Clupea" sailed from Buckie on 6th February 1967 and proceeded to the Clyde via the Caledonian and Crinnan Canals. The scientific staff joined "Clupea" on the evening of 9th February and grabbing on Ballantrae Bank for herring eggs was begun on the following morning. From 10th-15th March an extensive grab survey was made on the Bank but no herring eggs were found. On 16th February ripe herring were obtained from trammel nets for artificial fertilisation. Ten rearing cages with about 200 fertilised eggs in each were anchored about  $\frac{1}{4}$  mile offshore at Currarie Port; 3 miles south of Ballantrae. This position was selected because it was clear of the area where fishing boats were operating. The grab survey was continued on 17th February when a small number of eggs were obtained in two hauls to the north-west of the position of the 1966 egg patch. Some eggs were also taken in a haul made at the southern edge of the 1966 patch. Plankton hauls made over the Bank contained no herring larvae. Stormy weather prevented any further work until 22nd February when grabbing was continued but no eggs were found even at the positions where small numbers had been taken on 17th February. No herring larvae were observed in plankton hauls which were made. An inspection of the mooring units for the rearing cages revealed that all were still in position. Gale to storm force winds hindered the survey and work was not resumed on the Bank until 8th March when "Clupea" was joined by "Scotia". Plankton samples indicated that no major hatching had yet occurred. The grab survey was continued and a small number of 'eyed' eggs were taken in a few hauls N.W. of the 1966 egg patch. This was clearly a very small localised spawning. An inspection of the mooring units off Currarie Port showed that two of the units with four rearing cages had disappeared. One of the rearing cages from the three remaining mooring units was recovered. About  $\frac{1}{3}$  of the eggs had hatched out and the majority of the remaining eggs were at the 'eyed' stage. The average length of the larvae was 8-9 mm. While the cage was being recovered, it was noted that it was full of muddy water and some of the mud had settled on the bottom of the cage.

On 9th March the dye was released by "Scotia" and the dispersion studies were begun. "Clupea" anchored two rearing cages with 'eyed' herring eggs which had been obtained by grab on the previous day, at a position off Ballantrae, then carried out an intensive larval survey over the Bank. Few larvae were taken, the highest number being about 50 at stations over the N.W. corner of the Bank. Stormy weather again hindered the work and the larval survey was not resumed until the evening of 12th March. On this survey 100-150 larvae per haul were taken at stations on N.W. part of the Bank. It was clear that no major hatching had yet taken place. After completing the larval survey on the morning of 13th March a number of grab hauls were made; no herring eggs were found but this work had to be abandoned because of strong to gale force winds and heavy swell. "Scotia" left the Clyde, and "Clupea" proceeded to Ayr. Work was resumed on the Bank on

16th March when an intensive larval survey was carried out. Few larvae were taken in the hauls. An inspection of the rearing cages revealed that the mooring unit set off Ballantrae on 9th March had disappeared and that there was now only one mooring unit remaining at Currarie Port. This unit was recovered together with the two attached rearing cages. Both cages were silted up with mud and all the larvae were dead.

After another period of stormy weather the larval survey was continued on 20th and 21st March. The number of larvae in hauls made in the vicinity of the Bank were much larger than in previous surveys. At one station near the entrance to Loch Ryan 5,000-6,000 recently hatched larvae were taken, indicating that a major hatching had taken place one or two days previously.

On the evening of 21st March the scientific staff disembarked at Ayr and "Clupea" returned to the east coast.

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