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FRV Clupea
Cruise 4/86

4CR86

REPORT

12-27 March 1986

Personnel

J Morrison	SSO (in charge)
P MacLachlan	HSO (pt)
P Rankine	SO
L Cargill	ASO

Objectives

- 1 To carry out echosounding and trawling surveys of the South Arran and Ballantrae Bank areas of the Clyde in an attempt to delimit spawning aggregations of herring.
- 2 To carry out a series of grab surveys on Ballantrae Bank to check for the presence of herring spawn.
- 3 To use reversing bottles and the CTD system to establish a temperature/salinity profile over Ballantrae Bank over the period of the survey.
- 4 To carry out a series of larval surveys on Ballantrae Bank to check for herring larvae and to use these to provide estimates of larval production.
- 5 To carry out biological sampling of trawl catches to establish the age and length compositions of the spring spawning stock of herring and to collect herring otoliths for stock separation studies.

Narrative

"Clupea" left Stornoway on the evening of 12 March to proceed to the Clyde, but was hindered by bad weather and consequently loading took place in Oban on 13 March instead of Troon; P MacLachlan joined the vessel in Oban.

"Clupea" resumed her journey to the Clyde on 14 March reaching Ballantrae on the morning of 15 March in very poor weather. A preliminary echo survey of the Bank was started but this had to be abandoned because of the severity of the weather and "Clupea" went into Cairnryan for shelter. By the following day the weather had moderated however, and an echosounding survey was carried out over Ballantrae Bank where several small "marks" were observed. A trawl haul was then carried out along the edge of Ballantrae Bank in which over 17 baskets of herring, mainly in maturity stages V and VI, were taken. From this catch males and females were selected for fertilisation experiments to provide larvae for the Loch Ewe project and for SMBA Oban. "Clupea" then made for Campbeltown so that the material could be transported to Oban without delay.

On 17 March "Clupea" left Campbeltown and on route for Ballantrae carried out preliminary trials with a stern trawling rig. These trials were successful and thereafter on this cruise the trawl was always operated in this manner. On reaching

Ballantrae, 6 hydro stations were completed before "Clupea" once again went into Cairnryan in very poor weather conditions.

On 18 March a metre net survey was carried out over the "Bank" and on 19 March a grid of grabbing stations was completed from 1½ miles north of Ballantrae to ½ mile south of Ballantrae. Later the same day, a trawl haul was also completed at the edge of the "Bank" before "Clupea" returned to Campbeltown for the half landing.

Hurricane force winds blew from the south-west during the half-landing and the following day "Clupea" was only able to undertake a limited echosearch in Kilbrannan Sound before once again returning to Campbeltown. There she remained stormbound on 22 and 23 March. On 24 March however, the weather improved and work was resumed at Ballantrae. On that and the following day, 6 trawl hauls, 6 hydrostations and 5 grab stations were completed before "Clupea" went into Cairnryan for the night. On 26 March, the last working day, a comprehensive grabbing survey was carried out between Decca coordinates D17.5-D19.0 and E62.5-E64.0, in the area of the historically recorded egg patches on Ballantrae Bank, before "Clupea" made for Greenock at the end of the cruise.

Results

1 Trawling

Eight trawl stations were completed during this survey, all of them at the edge of Ballantrae Bank. In addition to this, some experimental trawl hauls were carried out on 17 March with a view to working out a stern trawling rig for "Clupea". These experiments were successful and significantly speeded up the time taken to shoot and haul the gear and thereafter the gear was deployed in this way for the remainder of the trip. Hauls of 17 and 9½ baskets of herring were taken in trawl hauls on 16 and 19 March respectively. Thereafter extremely bad weather interfered with sampling and further trawling was not possible until 24 March. On 24 and 25 March 6 trawl hauls were carried out on the edge of the "Bank" but catches of herring in these were very low and never exceeded ¼ basket. Some recently spent herring were found in these catches however and the inference was that spawning on Ballantrae Bank had started. This timing was in accordance with that observed in the 2 previous years.

2 Grabbing Survey

One hundred and thirty-eight grabs were carried out using a "Day" grab over a wide area in the vicinity of the historical spawning beds on Ballantrae Bank. Whilst areas of clean gravel were delineated by these surveys, no herring spawn was discovered.

3 Hydrographic Survey

Twelve hydro-stations were carried out on and in the vicinity of Ballantrae Bank on 17 March and 24 March to obtain a temperature and salinity profile both before and during the estimated spawning period. The CTD system was only used once due to the danger of damage in the bad weather conditions in which "Clupea" operated for a major part of this survey.

4 Larval Survey

Only one Ballantrae Bank larval survey was carried out during this cruise, on 19 March, and no larvae were found in the samples taken on that occasion. Because of

the shortage of time and because the maturity of the fish caught suggested that spawning had not taken place by the half-landing, the available time was spent on other aspects of the cruise.

5 Collection of Biological Materials

Ripe male and female herring were used to carry out a fertilisation to provide material for both the Loch Ewe bag experiments and for SMBA, Oban.

6 Biological Sampling

Herring from all trawl hauls were sampled to provide age length and maturity data and otoliths were collected for stock separation studies. Herring caught ranged from 11-35 cm in length with modes between 28-31 cm. The majority of these fish were 3 and 4 ringers. In mid-March approximately 95% of the herring caught were in maturity stages 5 or 6, but by the end of the cruise up to 40% of fish caught were in maturity stage 8 and were newly spent.

J Morrison
10 November 1986

Seen in draft: Mr Calder

FRV CLUPEA

CRUISE 4/86 FIRTH OF CLYDE

