

R1/6

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FRV *Clupea*

Cruise 4/91

REPORT

11-20 March 1991

Personnel

J. Gamble	PSO (in charge)
J Morrison	SSO (14-20 March)
C Shand	HSO (14-20 March)
T Howell	HSO (14-20 March)
W S Macdonald	SO
J Hunter	PTO (12-14 March)
A Gallego	PhD Student (11-12 March)
I Napier	PhD Student

Objectives

1. To make a collection of gonads and fertilise eggs from herring caught on Ballantrae Bank, Firth of Clyde.
2. To set up trisponder system on *Clupea*.
3. To deploy current meter and sediment trap at South Arran site.
4. To carry out hydrographic and phytoplankton surveys in vicinity of the South Arran site.
5. To carry out trawling for pre-spawning Clyde herring.
6. To make pre-spawning diving, grab and TV surveys of the Ballantrae Bank and South Arran spawning grounds.

Narrative

Scientific staff joined the vessel in Ardrossan during the afternoon of 11 March. *Clupea* departed for Ballantrae Bank on the following day and commenced trawling for herring along previously successful trajectories on the western edge of the Bank. A substantial haul of herring was made on the second attempt. Eggs were fertilised on board ship and then taken, immediately, to Aberdeen by Mr Gallego.

Mr Hunter, having set up shore stations for the trisponder system, replaced Mr Gallego on 12 March. Messrs Morrison, Shand and Howell exchanged with Mr Hunter on 14 March.

A current meter and sediment trap system were deployed at the South Arran site. Trawl samples of herring were taken for stock analysis.

The remainder of the cruise was dedicated to work on the two spawning sites. Grab samples were taken and diving carried out. In addition, hydrographic and suspended particulate samples were taken at fixed stations over both spawning grounds together with STD profiles. An extensive towed CTD, fluorescence and transmissometer survey centred around the South Arran site was made on one occasion. The new ROV and a suspended camera system fitted with laser range finders were deployed on Ballantrae Bank.

Time was lost at the end of the cruise through bad weather and due to a mechanical fault to the ship.

Results

1. Gonads were collected and eggs fertilised on 12 March.
2. The trisponder system was made operational and the current meter deployed (55°26.03'N 05°17.26'W) at 1521 on 13 March. The sediment trap was deployed (55°26.20'N 05°17.24'W) at 1550 on 13 March, recovered and redeployed on 17 March.
3. Large quantities of herring were caught at both Ballantrae Bank and South Arran. Although the gonads of the majority of fish were full and the eggs could be fertilised *in vitro*, they were not fully ripe and running. A very small number of fish were spent.
4. Over 50 grab samples were taken and a very small spawning site was found, and dived at, on Ballantrae Bank. The herring were estimated to have spawned on 12-13 March. No spawn was found at South Arran.
5. Four hydrostations were carried out, (one at Ballantrae, three at South Arran) and one towed CTD/fluorescence/temperature station. The water column was mixed, chlorophyll concentrations were generally low although the fluorimeter survey indicated that higher concentrations were present towards the entrance to the Firth of Clyde.

John C Gamble

10 June 1991

Seen in draft: W Smith