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FRV *Clupea* 3CR91

Cruise 3/91

Report

25 February - 6 March 1991

Personnel

P Balls	PSO (in charge)
D C Moore	SSO (25-27 February)
F Muller	(Visitor - Southampton University, 28 February - 6 March)
M Tranter	(Visitor - Southampton University, 28 February - 5 March)
M Zeeman (Miss)	(Visitor - Southampton University, 28 February - 2 March)
I Dekrvyk (Miss)	(Visitor - Southampton University, 3-6 March)

Objectives

1. To collect water, sediment and benthos samples from two North Sea Task Force stations, one in the Minches and the other in the North Channel.

2. To collect samples of water, suspended particulate matter, sediment and sediment pore water from the Clyde estuary and the Inner and Outer Firths of Clyde.

Narrative

Following loading at Buckie, *Clupea* sailed at noon for the Clyde. On passage work connected with the North Sea Task Force was undertaken. This included the collection of reference sea water at Cape Wrath for the Oyster Embryo Assay and the occupation of two stations for benthos and nutrients. In response to a request from Dunstaffnage Marine Laboratory, *Clupea* was diverted into upper Loch Linnhe in an unsuccesaful attempt to locate a missing current meter mooring. *Clupea* docked in Ardrossan during the afternoon of 27 February.

Scientific staff and equipment from Southampton joined the ship on the following morning and after loading *Clupea* sailed for the outer Firth of Clyde where water and sediments were sampled. This work continued for the next three days and was followed by surveys of the Clyde estuary on 3 and 4 March. Sediment and water sampling in the Inner Firth was completed on the 5th; *Clupea* docked at midday at Ardrossan. The remainder of the day was spent in sample processing and analysis. Scientific staff left *Clupea* on the morning of 6 March.

Results

Trace metal samples await analysis but that for nutrients was completed on board. As on previous surveys, the high nutrient concentrations associated with the estuary were not detectable in the outer Firth. Samples from the estuary itself indicate some stratification with low salinity/high nutrient water overlying higher salinity water with a relatively low nutrient concentration.

All of the sediment cores obtained were oxic at the surface, those from the lower estuary, however, were anoxic a short distance below the surface. In these latter sediments, pore water ammonia concentrations increased with depth (up to 400 μM). This is indicative of the breakdown of organic material within the sediment; analysis of pore waters for trace metals will indicate whether or not such sediments are sources or sinks for metals.

This cruise was the fifth and final one in a series funded by MAFF Chief Scientists Group to examine the behaviour and fate of trace metals in the Clyde system.

P Balls
18 March 1991

Seen in draft: W Smith

: p.balls room 515

clyde station positions