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FRV *Clupea*

Cruise 0292C

REPORT

20-29 January 1992

Personnel

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R Adams	SO
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M Lyons	PhD student

Objectives

To undertake a hydrochemical survey along the east coast of Scotland, Moray Firth to the Tweed.

Narrative

Following loading at Fraserburgh *Clupea* sailed at approximately 1300 and proceeded to the Moray Firth where the first station was occupied at 2030. Work continued overnight and during the following day two lines of stations were completed one off Spey Bay and the other off Kinnairds Head. During the 22nd, stations off the Dee, Don and Ythan estuaries were completed. *Clupea* spent the night at anchor in Aberdeen Bay, enabling a replacement piece of equipment to be supplied by the Laboratory and for chemical analysis to be brought up to date.

The following morning further stations were completed off the Dee subsequent to which *Clupea* proceeded further south, where stations were completed off the Esk and in the outer part of the Tay estuary. Overnight a line of stations off Fife Ness was completed as was a line south across the Firth of Forth to Dunbar. Owing to ill health the Chief Engineer left *Clupea* on the morning of the 24th. This necessitated the vessel remaining at anchor for the remainder of the day and overnight awaiting the arrival of a relief engineer. The opportunity was taken to bring chemical analysis up to date and collate CTD data.

Following the arrival of the replacement engineer *Clupea* proceeded south on the 25th to complete a line of stations off the Tweed. *Clupea* returned to the Firth of Forth, and after completing another line of stations, spent the night at anchor off Methil. During the 26th the inner Firth of Forth was surveyed followed by an extension of the line of stations off Fife Ness and a further line into St Andrews Bay. A more extensive CTD

survey of the Tay discharge occupied the 27th. This was completed in the early hours of the 28th, after which *Clupea* proceeded to anchor off Musselburgh to complete chemical analysis and initial data processing.

Clupea docked in Leith on the morning of the 29th.

Results

Data processing is still proceeding but initial results are available. Hydrographic results revealed that the Inner and Outer Moray Firths exhibited significant vertical stratification. South of Fraserburgh inshore waters along the east coast were predominantly well-mixed. Stratification was observed, however, outside river mouths owing to their fresh water discharge.

Nutrient salinity relationships in the vicinity of individual estuaries show consistent differences. At equivalent salinities concentrations of nitrate are higher close to the Ythan and Don estuaries (intensively agricultural catchments) than in the vicinity of the Tay. By contrast for silicate, essentially a product of weathering with no anthropogenic input, the differences are less distinct.

P Balls
27 March 1992

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