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FRV *Clupea*

Cruise 2198C

REPORT

4-17 December 1998

Ports

Loading: Fraserburgh 3 December

Unloading: Fraserburgh 17 December

Personnel

P A Gillibrand	B2 (in charge)
G Slesser	B2
R D Adams	B1
G Grewer	Contract worker

Objectives

1. To survey 13 sea lochs in the Outer Hebrides and the mainland to obtain temperature, salinity and background nutrient data for testing and calibration of computer models.
2. To collect sediment samples for polyaromatic hydrocarbon (PAH) analysis.
3. To dredge for scallops at four sites to the North-east of Orkney for PSP analysis.

Out-turn days per project: 14 days BGM1

Narrative

Equipment was loaded onto *Clupea* during 3 December and set up the following day. Due to bad weather, sailing was delayed until 2200 hours on 5 December. A third objective had been added to the cruise programme and *Clupea* proceeded north to Orkney. Dredging for scallops began at about 1000 hours and was completed by 1400 hours on 6 December. Due to the continuing poor weather forecast, *Clupea* immediately steamed west to Loch Broom, arriving in the early hours of 7 December. Hydrographic measurements and grab samples were taken in Loch Broom during the day until late afternoon, when *Clupea* went alongside at Ullapool and the scallop samples were delivered to the Post Office for delivery to FRS.

On 8 December, *Clupea* proceeded south to Loch Ewe, where further hydrographic and grab samples were taken. Measurements were completed by 1615 hours and *Clupea* made for Loch Gairloch where further hydrographic measurements were made, before the vessel anchored for the night. The following morning, hydrographic and grab sampling was completed in Loch Gairloch and *Clupea* proceeded to Loch Torridon, completing the sediment sampling there and beginning the hydrographic survey before anchoring. The following morning the

hydrographic survey was completed, but due to bad weather and the onset of dark, a crossing of the Minch was not attempted and *Clupea* anchored off Staffin.

Early on 11 December, *Clupea* proceeded to East Loch Tarbert and a hydrographic and grab survey was completed during the day. In the strong south-easterly winds, Lochs Seaforth and Claidh were not workable and *Clupea* made for Loch Shell where some hydrographic stations were completed before anchoring for the night. During the evening, *Clupea* dragged her anchor in strong southerly winds and so proceeded to Stornoway to tie up for the night, arriving at midnight.

On 12 December, surveys of Loch Erisort were completed and *Clupea* moved south to Loch Shell, where a grab survey was carried out and the hydrographic stations completed, before returning to Stornoway for the night. On Sunday 13 December, *Clupea* proceeded to Loch Seaforth where hydrographic and grab surveys were completed, following which a line of hydrographic stations in Loch Claidh was worked. *Clupea* returned to Stornoway for the night in deteriorating weather conditions. The following day, 14 December, *Clupea* remained weather bound in Stornoway. At 1030 hours on Tuesday 15 December, with worsening weather conditions forecast, *Clupea* sailed for Fraserburgh, arriving at 0600 hours on Wednesday 16 December. Equipment was packed away and processing of some of the collected data took place during the 16th, and staff returned to the Laboratory on 17 December.

Results

1. Due to poor weather throughout the cruise, including time lost at the start and end of the cruise, hydrographic surveys were completed in only nine sea lochs, including Broom, Ewe, Gairloch, Torridon, East Loch Tarbert, Seaforth, Claidh, Shell and Erisort. In total 79 stations were profiled for temperature, salinity and nutrients. The hydrographic data have been processed and generally show typical sea loch conditions for the time of year, i.e. a strong halocline in the top 10-20m, and a thermocline in the same depth range with cold surface waters overlying warmer deep water. Nutrient samples have been returned to FRS for analysis.
2. Grab sampling was carried out in eight sea lochs (all those named above except Loch Claidh). In total, 121 grab samples were taken, frozen and returned to FRS for PAH analysis.
3. Scallop dredges were performed at four locations to the north-east of Orkney. Samples were taken, boxed and posted to FRS for PSP analysis.

P A Gillibrand
25 January 1999

Seen in draft: A Simpson (OIC)

Clupea 21/98 Cruise Track

