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FRV *Clupea*

Cruise 0798C

REPORT

4-10 May 1998

Ports

Loading:	Fraserburgh
Unloading:	Fraserburgh

Personnel

M Kelly	SO (in charge)
R Adams	SO
A Wiegand	Visitor (RGU)
J Bergmann	Visitor (RGU)
L Joyce	PhD Student (Heriot Watt) 5 May

Objectives

1. To conduct a hydrographic and biological survey of the Orkney area.
2. To deploy water level recorders at three locations in Scapa Flow.
3. To collect sediment samples by Day Grab.
4. Sea trials using Laser Marine Surface Fluorosensor (LMSF) system (visitors from RGU).

Out-turn Days per Project: 7 days F07N

Narrative

Clupea sailed from Fraserburgh at 1530 hours on 4 May and headed for Scapa Flow following mobilisation of gear.

Continuous surface records of temperature and salinity were obtained from a thermosalinograph throughout the cruise.

On 5 May L Joyce joined the ship at Stromness pier. Sampling then commenced on the west side of Scapa Flow. Fourteen stations were successfully sampled on 5 May. At each station an integrated water sample (0-10 m) was collected using a hose sampler and "CTD", fluorometer, transmissometer and irradiance meter depth profiles were taken. Water samples were collected at 3-5 discrete depths for phytoplankton and nutrient analysis. A chlorophyll sample was collected from a depth of 5 m at each station. Salinity and chlorophyll samples were also collected at each station for calibration purposes. All water samples were preserved immediately on collection using Lugols iodine for transportation back to the Laboratory for phytoplankon identification. At 1915 hours *Clupea* berthed at Stromness. L Joyce left the ship and a water level recorder was deployed off the pier.

On 6 May *Clupea* left Stromness pier and proceeded towards the two lines of stations west of Orkney. On 6 May, 10 stations were successfully sampled. Water and hydrographic sampling procedures were carried out at each station as described above. Sediment samples were collected at seven

stations using a Day Grab. Sampling finished at 1715 hours to allow for the three hour steaming time to Lyness pier, where a water level recorder was successfully deployed.

On 7 May, 16 stations were sampled in Scapa Flow. Water and hydrographic sampling was carried out at each station as described above. In the evening, *Clupea* proceeded to Scapa pier, where a water level recorder was deployed.

On 8 May at 0730 hours, Mr A Simpson (Orkney Islands Council) visited the vessel at Scapa pier to discuss location of mooring and collection of toxic phytoplankton monitoring samples.

At 0800 hours, two stations close to Scapa pier were sampled as above. *Clupea* the proceeded to Cava where samples were taken over a 12 hour period commencing at 1030 hours. Water and nutrient samples were taken from four depths (2 m, 5 m, 10 m and 20 m) at this station over the study period.

On 9 May, a mooring was successfully deployed at the Cava site. Three temperature recorders were attached to this at depths of 2 m, 10 m and 20 m.

A total of 27 stations were grab sampled in Scapa Flow on 9 May.

Sampling was completed at 1530 hours on 9 May. The vessel then made a passage back to Fraserburgh docking at 0000 hours.

Results

1. The survey was completed satisfactorily. A total of 43 water sampling/hydrographic stations were completed, including nine stations to the west of Orkney. One station (Cava) was sampled hourly over a 12 hour period.

   Fifty-four integrated water samples and 224 discrete depth samples were collected, preserved in Lugols iodine and transported to the laboratory for subsequent phytoplankton analysis.

   Water samples from the regular monitoring programme collected in the Orkney area at the time of the cruise have been analysed and found to contain relatively high numbers of *Alexandrium* spp. Some shellfish samples collected from this area contained PSP (Paralytic Shellfish Poison) toxins.

2. All three water level recorders were successfully deployed.

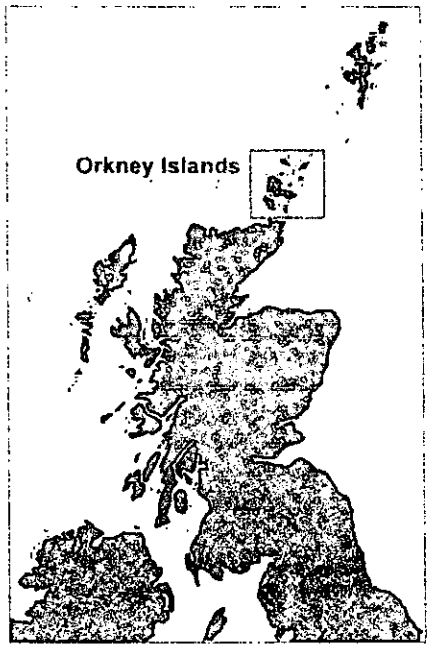
3. Grab samples were successfully collected at 34 stations, including seven stations to the west of Orkney. These samples will be examined for dinoflagellate cysts back in the Laboratory.

4. RGU visitors carried out tests to examine the effect of back scattered light from the sea surface on the signal from the LMSF system. It was found that sunlight is polarised at certain angles. By optimising the angle of the direction of the polariser the background solar light level can be reduced.

M Kelly
1 June 1998

Seen in draft: A Simpson, OIC

Survey map and sampling stations - FRV *Clupea* 0798C



- Water sampling
- Grab sampling
- Mooring / 24 h sampling station
- Water level recorders