

R1/6

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FRV *Clupea*

CRUISE 1193C

REPORT

29 May-7 June 1993

Personnel

E Macdonald	SO (in charge)
R Mitchell	SSO
J Fraser	ASO
R Milne	Visitor (RGU)

Objectives

To investigate the population dynamics of *Alexandrium tamarense* in the Firths of Forth and Tay.

Narrative

The vessel sailed from Fraserburgh in the late afternoon of 27 May and proceeded towards St Andrew's Bay where sampling commenced on the morning of 28 May. Sampling was carried out using Chelsea CTD, integrated hose sampler and Van Dorn water bottle for calibration, with ROXANN sonar equipment and towed CTD running continuously. Sediment samples were taken using the Day Grab for cyst analysis and sediment calibration. The vessel anchored overnight to allow microscope analysis to be carried out. This routine continued the following day but the ROXANN system went down and attempts to restore it were unsuccessful. The drifting sediment trap rig was successfully deployed on 31 May and was recovered on the morning of 2 June in rough weather. Sampling continued in the intervening period and following recovery of the drifting instrumentation, an anchor station was attempted but the weather conditions proved unsuitable, so the vessel continued with the large scale survey before proceeding to anchor overnight in Largo Bay.

A 12 hour anchor station was carried out on 3 June and another on 5-6 June. Cores were taken using the Craib corer in addition to other environmental station parameters. Samples were taken for RNA/DNA ratios to investigate phytoplankton growth rates. A tow CTD run of the whole survey area was carried out on 4 June. Trials using an optical fibre fluorimetry system to measure phytoplankton fluorescence were also performed. The vessel docked in Fraserburgh on the afternoon of 6 June and scientific staff and equipment left the vessel on the morning of 7 June.

Results

Integrated phytoplankton samples were taken from 49 locations, with corresponding CTD casts. Upon preliminary examination of these samples carried out on board, *Alexandrium* spp. was detected in approximately 30 out of the 49 samples. This analysis will be repeated in the Laboratory using a more sophisticated microscope for greater accuracy. *Dinophysis* spp. which are regarded as being responsible for DSP intoxication were present in every sample examined. They will also be more accurately quantified during further analysis.

Chlorophyll values ranged from 0.25-5.21 mg m⁻³ but were more usually in the 1.5-3.0 mg m⁻³ range. Chlorophyll measured from the sediment trap reached a maximum of 33.75 mg m⁻³ over a 24 hour period.

Vertical stratification of the water column was much less evident than that observed during cruise 0893C. This was most likely due to the unseasonal weather causing turbulence thus preventing water column stability. This probably had an adverse effect on the formation of dinoflagellate blooms in general, and would undoubtedly have affected the survival of *Alexandrium* cells, which are very sensitive to turbulence.

E Macdonald

24 August 1993

Seen in draft: S Clark, OIC *Clupea*

CLUPEA 11/93 SAMPLING POSITIONS

