

Department of Agriculture and Rural Development (Northern Ireland)
Agriculture and Environmental Science Division

Cruise Report: LF 4003

Vessel: RV *Lough Foyle*

Date: 28th – 30th September 2003

Area: Irish Sea (north); ICES div. VIIa

Survey Type: Biological Oceanography & Mooring Service

Personnel:	B Stewart(SIC)	SSO	DARDNI
	C Smyth	SO	DARDNI
	A M Coyle	ASO	DARDNI

Objectives:

- i. To maintain a nutrient and remote monitoring programme at mooring stations 38A and 47D.
- ii. To assess temperature, salinity and nutrient distributions over depth at stations 38A and 47D.

Cruise Narrative:

Sunday 28 September 2003

In preparation for the cruise, all DARDNI scientific crew were onboard by 2000 hrs when mooring components and the automated sampler were prepared for deployment. Following a talk on ship's safety and a demonstration of personal life saving equipment, the RV Lough Foyle departed Belfast at 2015 hrs and sailed overnight in a light wind to station 38A mooring site.

Monday 29 September 2003

The vessel arrived on the mooring site at 0600 hrs when the weather was dry and cloudy with a light south-westerly breeze. Work for the day commenced at 0745 hrs with the complete instrument mooring eventually recovered to ship deck at 0810 hrs. The mooring components were inspected for corrosion and parts replaced where necessary. The thermistor chain was removed from the mooring wire, temperature data downloaded and individual units reprogrammed. The CTD's and fluorometer were programmed in preparation for deployment. The mooring components were reassembled and readied for deployment. The nutrient water sampler, CTD's, and

fluorometer were attached and the mooring redeployed in water depth 92 metres at 0936 hrs on position $53^{\circ} 46' .878\text{N}$ $05^{\circ} 38' .036\text{W}$.

Following deployment of the water sampler and zooplankton net the vessel sailed to the in shore-mooring site 47D. The mooring was efficiently recovered to ship deck at 1345 hrs. Components were inspected for corrosion, parts replaced where necessary; buoy reattached and then redeployed at 1425 hrs on position $53^{\circ} 44' .514\text{N}$ $06^{\circ} 03' .989\text{W}$.

Following deployment of the water sampler and zooplankton net the vessel sailed to dock in Belfast at 1045 hrs.

Tuesday 30 September 2003:

Work for the day commenced at 0800 hrs when instruments and equipment were dismantled in preparation for return to Newforge Lane. The scientific crew disembarked at 1050 hrs.

Parameters Monitored:

The CTD/rosette water sampler was deployed at stations 38A and 47D to acquire nutrient, chlorophyll *a*, temperature, light and salinity data from the depth profile. Three zooplankton net hauls were taken at stations 38A & 47D.

Moored Instrumentation:

As a result of recent malevolent damage to the mooring configurations, instruments were removed during the August survey as a precautionary measure. However temperature data recorded at 3 hourly intervals was recovered from seven thermistors positioned at intervals throughout the water column.

Summary of Results:

The CTD data from station 38A shows a further weakening of the thermocline with temperature difference between the surface and bottom layers now reduced to 1°C , compared to 3.8°C recorded during the August survey. As a result of thermocline erosion, bottom layer temperatures have increased through mixing down of the warmer upper layers. Nutrient concentrations in the surface layers have increased by approx. 2 micromoles inorg N l^{-1} since the August survey; a further demonstration of mixing as nutrient rich bottom layers diffuse throughout the water column. The in-shore shallower station 47D is totally mixed with nutrients depleted throughout the column. High fluorescence and chlorophyll values together with large amounts of plankton recovered from the net hauls provide evidence of an early autumn bloom.

Hotel Report & Operational Aspects of the Ship:

During the cruise the A-frame, main trawl winches, both hydrographic winches and the ship's clean seawater supply were used. No problems were encountered with any of the ship's equipment nor indeed with any of the scientific equipment. The hotel and

catering service was of the usual high standard and there was a good working relationship between the scientists and the ship's crew. Prior to the ship departing Belfast a comprehensive and detailed safety briefing was delivered to the scientific crew.

Acknowledgements:

I am indebted the deck crew of the RV Lough Foyle for their co-operation and assistance, particularly during the mooring recovery and deployment operation. The ship's master, officers, engineers and catering staff are also thanked for their co-operation during this cruise.

B M STEWART

15 October 2003