

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

Cruise Report: LF 4902

Vessel: RV *Lough Foyle*

Dates: 4th – 6th December 2002

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

Survey Type: Biological Oceanography & mooring service

Personnel:

B Stewart(SIC)	SSO	DARDNI
C Smyth	SO	DARDNI
R Gilmore	SO	DARDNI
A Downie	ASO	DARDNI
A M Coyle	Res. Tech.	QUB

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.
- iii. To characterise deep, high saline Atlantic water in the central Irish Sea.

Cruise Narrative

Wednesday 4 December 2002

With the prospect of light winds forecast for the next few days the survey recommenced to complete the outstanding service of the moored instrumentation. In preparation for the cruise, all DANI scientific crew were onboard by 1930 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 north easterly breeze towards the mooring site at station 38A.

Thursday 5 December 2002

The vessel arrived on the mooring site at 0600 hrs. The weather was dry with a light north easterly breeze when work for the day started 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 also removed, data downloaded and reprogrammed. The sub surface water sampler was serviced; samples removed, rebuilt, reprogrammed and attached to the mooring wire. The mooring components were reassembled and readied for deployment. The CTD's and fluorometers were attached and the mooring redeployed at 1540 hrs on position $53^{\circ} 46^{\prime} .875N$ $05^{\circ} 38^{\prime} .113W$. Work for the day finished at 1830 hrs. The vessel sailed to coastal station 47D and drifted overnight off the Drogheda foreshore.

Friday 5 December 2002

Work for the day commenced at 0745 hrs when the complete instrument mooring was recovered to ship deck. The mooring components were inspected for corrosion and parts replaced where necessary. The CTD and fluorometer were removed, data downloaded and reprogrammed. The mooring components, CTD and fluorometer were then reassembled and the mooring was successfully redeployed at 0910 hrs on position $53^{\circ} 44^{\prime} .472N$ $06^{\circ} 04^{\prime} .006W$. Work on the station was completed at 0930 hrs and the vessel sailed to dock in Belfast at 1630 hrs.

Parameters Monitored

The CTD/rosette water sampler was deployed at stations 38A, 62 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

The McLane water sampler at depth 10 metres functioned as programmed. Duplicate samples, for nutrient analysis, were taken every second day during the period 3 October – 18 November 2002. A second McLane water sampler on long term deployment at depth 82 metres functioned as programmed. Duplicate samples, for nutrient analysis, were taken every fourth day during the period 30 August – 30 November 2002. Temperature data recorded at 3 hourly intervals was recovered from seven thermistors positioned at intervals throughout the water column. Temperature, salinity and fluorescence data recorded at 10 minute intervals was recovered from CTD's positioned at near surface and near bottom at station 38A and at near surface only at coastal station 47D.

Summary of Results

Open sea stations 38A and 62 were thermally mixed with CTD data showing a constant temperature and salinity pattern across the entire profile. While temperature values at both stations were similar at 13.2 °C, southerly station 62 exhibits higher salinity (typically 34.6) which may be due to ingress of Atlantic water to the southern Irish Sea. In general nutrient concentrations were similar at both stations and also constant throughout the profile; typically 6–7 micromoles inorg N l⁻¹.

Freshwater influence of the River Boyne can be observed at coastal station 47D with the presence of a cooler less saline near surface layer. Elevated nutrient concentrations in this upper layer (typically 12–14 micromoles inorg N l⁻¹) provide further evidence of freshwater influence at this station.

Currently, values for the major nutrients inorganic nitrogen, phosphate and silicate from the *insitu* sampler are similar to those from previous years as they slowly progress towards the “winter max”.

Acknowledgements

I am indebted to the deck crew of the RV Lough Foyle for their co-operation and assistance 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 (SIC)