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

Cruise Report: LF 0203
Vessel: RV *Lough Foyle*
Date: 19th – 21st January 2003
Area: Irish Sea (north); ICES div. VIIaN
Survey Type: Biological Oceanography & Mooring Service

Personnel:

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

Objectives:

i. To maintain a nutrient and remote monitoring programme at mooring stations38A 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:
A period of unsettled weather during early January lead to a two-week postponement of the scheduled mooring service date.

Sunday 19 January 2003
With strong north-westerly winds it was decided to postpone sailing until early Monday morning. In preparation for the cruise mooring components and the automated sampler were prepared for deployment.

Monday 20 January 2003
All DARDNI scientific crew were onboard by 0600 hrs when following a talk on ship's safety and a demonstration of personal life saving equipment, the RV Lough Foyle departed Belfast at 0815 hrs. The vessel sheltered in Belfast Lough to allow the strong north-easterly winds to decrease before sailing to arrive on the mooring site station 38A at 1600 hrs. The weather was dry with a fresh to strong north easterly wind. Owing to the strong wind and sea state a decision was taken to postpone the mooring service. However weather conditions permitted the successful deployment of

the rosette water sampler and zooplankton net. The survey continued in a southerly direction to station 62 where the rosette water sampler was again deployed to acquire deep water samples. Work for the day finished at 2330 hrs and overnight the vessel steamed slowly towards the mooring site.

Tuesday 21 January 2003

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 0815 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 1240 hrs on position 53^0 46^l .810N 05^0 38^l .10W. The vessel sailed to coastal mooring site 47D off the Drogheda foreshore. The instrument mooring was recovered to ship deck at 1430 hrs, serviced and redeployed at 1530 hrs on position 53^0 44^l .511N 06^0 03^l .997W.
Following deployment of the rosette water sampler and zooplankton net the vessel sailed to dock in Belfast at 1215 hrs Wednesday morning.

Wednesday 22 January 2003

Work for the day commenced at 0745 hrs when samples and a selection of equipment were removed from the vessel for return transportation to Newforge Lane.
The scientific crew disembarked at 1100 hrs.

Parameters Monitored:

The CTD/rosette water sampler was deployed at stations 38A, 62, 47D, NMMP stations 3, 4 and 5 to acquire nutrient, chlorophyll *a*, temperature, light and salinity data from the depth profile. Three zooplankton net hauls were taken at stations 38A & 47D. The Day grab was deployed at NMMP stations 3, 4 and 5 to obtain sediment samples.

Moored Instrumentation:

During both cruises the McLane water sampler at depth 10 metres functioned as programmed. Duplicate samples, for nutrient analysis, were taken every second day during the period 6 December 2002 – 2 March 2003. 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 same period.

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 15 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:

During early January a prolonged period of heavy rainfall has caused riverine inputs to reduce temperature and salinity in the upper layers of open sea station 38A. Some 30 miles south, and beyond the influence of the River Boyne station 62 is thermally mixed and exhibits typical winter salinity and temperature values 34.6 and 9.7 ^{o}C respectively. Coastal station 47D, close to the Boyne estuary, shows surface salinity and temperature 34.2 and 8.9 ^{o}C. These values are similar to those in the upper layer at station 38A and demonstrate the extent that freshwater can influence off shore stations. During March, both 38A and coastal 47D are thermally mixed. However the mean temperature at offshore station 38A has reduced by approximately 1 ^{o}C since the January survey and thermistor data show current values are among the lowest recorded in recent years. Following the breakdown of the thermocline in early October, mixing produces a mean 3.5 micromoles inorg N l^{-1}. Thereafter concentrations continue to increase with inputs from precipitation and riverine sources.

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 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

14 March 2003