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

Cruise Report: LF 0803
Vessel: RV *Lough Foyle*
Date: 2nd – 5th March 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 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:
This survey originally scheduled for 17 February 2003 was rescheduled owing to a period of unsettled weather.

Sunday 2 March 2003
In preparation for the cruise, all DANI scientific crew were onboard by 1945 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 fresh south easterly breeze towards the mooring site at station 38A.

Monday 3 March 2003
The vessel arrived on the mooring site at 0600 hrs. The weather was dry with a fresh south easterly breeze when work for the day started at 0715 hrs with the complete instrument mooring eventually recovered to ship deck at 0800 hrs. After breakfast the mooring components were serviced, instruments downloaded and reprogrammed before redeployment at 1045 hrs on position 53^0 47^l .27N 05^0 38^l .90W. The rosette water sampler and zooplankton net were then deployed before the vessel sailed to coastal mooring station 47D off the Drogheda foreshore. With an increasing south

easterly wind the mooring recovery was delayed while the water sampler and zooplankton net were deployed. Later as the wind subsided the instrument mooring was recovered to ship deck at 1620 hrs. Following a thorough service the mooring was redeployed at 1750 hrs on position 53^0 44^l .50N 06^0 04^l .10W. Overnight the vessel sailed slowly towards the National Marine Monitoring Plan (NMMP) station 5.

Tuesday 4 March 2003

Work for the day commenced at 0745 hrs on NMMP station 5 when the rosette water sampler and Day grab were successfully deployed. The survey continued to NMMP station 3 where the sampling process was repeated. However owing to gale force winds, work was abandoned mid way through the sampling at NMMP station 4. The vessel sailed to shelter overnight off the Down coast.

Wednesday 5 March 2003

The vessel arrived on station NMMP 4 at 0820 hrs when the Day grab was successfully deployed to complete the sampling schedule at this site. Work on the station was completed at 0900 hrs and the vessel sailed to dock in Belfast at 1330 hrs. All samples and equipment were removed from the ship and transported to Newforge Lane. The scientific crew disembarked at 1530 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 ^oC respectively. Coastal station 47D, close to the Boyne estuary, shows surface salinity and temperature 34.2 and 8.9 ^oC. 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 38 A 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