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

Cruise Report: LF 0704
Vessel: RV *Lough Foyle*
Date: 22nd – 26th February 2004
Area: Irish Sea (north); ICES div. VIIa
Survey Type: Biological Oceanography & Mooring Service

Personnel:

B Stewart (SIC)	SSO	DARDNI
C Smyth	SO	DARDNI
S McCracken	Temp ASO	DARDNI
J Hill	Student	QMUL
K Kennington	Port Erin	IOM
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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 assess surface temperature, salinity and nutrient distributions throughout a grid of stations in the north western Irish Sea.

iv. To assess sediment, epifauna and *Nephrops* samples for isotopic and pigment content.

v. To assess temperature, salinity and nutrient distributions over depth along an east-west Irish Sea transect at latitude 54 degrees.

Cruise Narrative:

Sunday 22 February 2004
In preparation for the cruise, all DARDNI scientific crew and visitors were onboard by 2000 hrs when mooring components and the automated sampler were prepared for deployment. Repairs to a faulty hydrographic wire delayed sailing but following a talk on ship's safety and a demonstration of personal life saving equipment, the RV Lough

Foyle departed Belfast at 2300 hrs and sailed overnight in a light wind to station 38A mooring site.

Monday 23 February 2004

The vessel arrived on the mooring site at 0600 hrs. The weather was dry with a light north westerly breeze when work for the day started at 0750 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 fluorormeter were also removed, data downloaded and reprogrammed. The sub surface water sampler was removed and substituted with a similar pre-programmed instrument. The mooring components were reassembled and readied for deployment. The CTD's, fluorometers and water sampler were attached and the mooring was redeployed at 1020 hrs in depth 95m on position 53^0 46^l .866N 05^0 38^l .060W (buoy) and 53^0 46^l .755N 05^0 38^l .062W (instrument). Following this the rosette water sampler and zooplankton was deployed. After lunch the rosette water sampler was again deployed, followed by the sediment multi-corer and the beam trawl to acquire water, sediment, epifauna and *Nephrops* samples. The vessel then sailed to inshore mooring station 47D where the rosette water sampler and zooplankton net was deployed before work for the day finished at 1900 hrs. The vessel drifted overnight in proximity to the mooring station.

Tuesday 24 February 2004

Work for the day commenced on station 47D at 0800 hrs with an attempted mooring recovery. During the operation wires became entangled with the ship's propeller and a diving crew was summoned to inspect the extent of the problem. Meanwhile the mooring wires in contact with the propeller were severed above the surface, which then enabled recovery of the entire mooring to ship deck. Damaged components were replaced and the mooring was readied for redeployment. A diving team arrived at 1515 hrs and successfully removed several lengths of wire from the propeller. With no apparent damage to the propeller or rudder the survey continued with the successful redeployment of the mooring at 1645 hrs in depth 29m on position 53^0 44^l .495N 06^0 03^l .993W (buoy) and 53^0 44^l .418N 06^0 03^l .971W (instrument). The vessel commenced sailing along a standard grid of stations when samples were taken at regular intervals through the ship's clean sea water supply.

Wednesday 25 February 2004

Sampling continued overnight along the standard grid and was completed on station 14 off the Portavogie coast at 1615 hrs. The vessel then sailed south to latitude 54 degrees when the rosette water sampler was deployed at 7 stations along 90 mile west – east transect.

Thursday 26 February 2004

Sampling continued overnight in strong north westerly winds and concluded at 0530 hrs close to Morcambe bay off the English coast. The vessel sailed to dock in Belfast at 1615 hrs.

Friday 27 February 2004

Scientific crew returned to the ship at 0900 hrs when samples and equipment were removed from the ship and transported to Newforge Lane.

Parameters Monitored:

The CTD/rosette water sampler was deployed at stations 38A, 47D, and 61 to acquire nutrient, chlorophyll *a*, temperature, light and salinity data from the depth profile. Three zooplankton net hauls were taken at stations 38A & 47D. Samples were taken along two separate transects for nutrient and chlorophyll analysis. Sediment and biomass samples were taken for pigment and isotopic nitrogen measurement.

Moored Instrumentation:

During all cruises the McLane water sampler deployed at depth 20 metres functioned as programmed. Duplicate samples, for nutrient analysis, were taken every second day during the period 5 January – 22 February 2004. 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.
Currently no instruments are deployed on the station 47D mooring.

Summary of Results:

Temperature and salinity data for 38A and coastal 47D show complete surface to bottom mixing. Mean temperature continues to fall with a 2 ^{o}C reduction at offshore station 38A since the January survey. Conversely nutrient values at the off shore site show a modest increase of approximately 0.6 micromoles inorg N l^{-1} and at typically 6.7 micromoles inorg N l^{-1} are slowly approaching the impending "winter max".

Demonstrating freshwater influence from the Boyne river the inshore station 47D, in comparison to the off shore site, shows reduced temperature and salinity values and increased nutrient concentrations.

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

10 March 2004