

**Biological Oceanography : Cruise Report 12 to 15th April 1994****Objectives:**

To investigate the oceanography of the coastal and central stratified region of the NW Irish Sea.

To undertake primary production experiments (simulated *in situ*) including an assessment of the relative contribution of different size fractions of the phytoplankton to total production.

To assess the distribution of different size classes of zooplankton.

To determine the distribution and biomass of dominant copepod species (DANI, MSc student).

To collect sediment core samples from stations 38 and 47 for C/N and pigment analysis and sediment grab samples from station 38 for identification and enumeration of benthic infauna.

**Personnel**

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**Cruise Narrative**

RV Lough Foyle departed Belfast 1230 h and returned on Friday 15 April at 1300 h. Details of the work programme are given in Annex I. Owing to the rupture of a hydraulic hose on the crane, the ship was delayed at station 38. As a result of the delay and because of the need to reach station 24 before 1500 h, station 32 was not worked.

**Preliminary Results**

Throughout the study area, vertical gradients in temperature were small ( $\approx 0.2^\circ \text{C}$ ), and were insufficient to stratify the water column. Concentrations of dissolved inorganic nitrogen ( $9 - 10 \text{ mmol m}^{-3}$ ) and phosphorus ( $\approx 1.0 \text{ mmol m}^{-3}$ ) were considered to be similar to winter levels. These high concentrations of nutrients and the low biomass of phytoplankton in the water suggests that the spring increase in phytoplankton had not started.

Sediment cores and grab samples were successfully collected from Station 38 and sediment core samples were collected from station 47. Initial results of pigment analysis of the core samples indicates that the concentration of pigment in the sediment (at both stations) was lower than concentrations measured in 1993. This further supports the view that at the time of the cruise the spring bloom of phytoplankton had not occurred.

## *Acknowledgements*

I wish to acknowledge the assistance of the Captain, officers and crew of the RV Lough Foyle in ensuring that the scientific programme was successfully completed. The scientific staff worked well, in particular Mr. S. Bloomfield and Mr. S. Thomson who spent many hours out on deck in the cold.

R.J. Gowen, SIC

## ANNEX I

Tuesday April 12 (On station 1415h)

Station 14B (54.37 05.27)

CTD profile.

Light and Secchi.

Water samples : Nutrients; C/N; size fractionation of chlorophyll and phytoplankton species composition; Primary production; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Station 14A (54.34 05.21)

CTD profile.

Light and secchi.

Water samples : Nutrients; standard chlorophyll; suspended solids.

Zooplankton : Two bongo net hauls.

Station 14 (54.28 05.23)

CTD profile.

Light and Secchi.

Water samples : Nutrients; C/N; Chlorophyll size fraction; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Wednesday April 13 (On station 0700h)

Station 48 (53.37 06.03)

CTD profile.

Light and secchi.

Water samples : Nutrients; C/N; Chlorophyll size fraction; suspended solids.

Zooplankton : Two bongo nets; Size fractionation using pump.

Station 46A (53.44 06.00)

CTD profile.

Light and secchi.

Water samples : Nutrients and standard chlorophyll; suspended solids.

Zooplankton : Two bongo net hauls.

Station 47 (53.44 06.09)

Sediment cores: Chlorophyll and C/N.

CTD profile.

Light and secchi.

Water samples : Nutrients Chlorophyll size fractionation; suspended solids, Size fractionation of Production and species composition.

Zooplankton : Two bongo net hauls; size fractionation with pump.

Station 36A (53.51 06.00)

CTD profile.

Light and secchi.

Water samples : Nutrients; Standard chlorophyll; suspended solids.

Zooplankton : Two bongo net hauls.

Station 36 (53.51 06.11)

CTD profile.

Light and Secchi.

Water samples : Nutrients; C/N; size fractionation of chlorophyll and phytoplankton species; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Station 35 (53.56 06.08)

CTD profile.

Light and secchi.

Water samples : Nutrients; C/N; size fractionation of chlorophyll; Primary production; suspended solids; phytoplankton species composition.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Station 34A (54.02 05.58)

CTD profile.

Light and Secchi.

Water samples : Nutrients; standard chlorophyll; suspended solids.

Zooplankton : Two bongo net hauls.

Station 33 (53.58 05.50)

CTD profile.

Light and Secchi.

Water samples : Nutrients; C/N; Chlorophyll size fraction; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Thursday April 14 (On Station 0700h)

Station 37A (53.51 05.42)

CTD profile.

Light and secchi.

Water samples : Nutrients; Standard chlorophyll; suspended solids.

Zooplankton : Two bongo nets.

Station 38 (53.51 05.34)

Sediment cores : Chlorophyll and C/N.

Sediment grabs : Macrofauna

CTD profile.

Light and secchi.

Water samples : Nutrients; C/N; Size fractionation of chlorophyll; Primary production size fraction; size fraction of phytoplankton species composition; suspended solids.

Zooplankton : Two bongo nets; Size fractionation using pump.

Station 24 (54.06 05.52)

CTD profile.

Light and Secchi.

Water samples : Nutrients; C/N; size fractionation of chlorophyll and phytoplankton species composition; Primary production ; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Station 25A (54.06 05.40)

CTD profile.

Light and secchi.

Water samples : Nutrients; standard chlorophyll; suspended solids.

Zooplankton : Two bongo nets.

Station 22A (54.11 05.45)

CTD profile.

Light and Secchi.

Water samples : Nutrients; C/N; Chlorophyll size fraction; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.

Station 22 (54.13 05.31)

CTD profile.

Light and secchi.

Water samples : Nutrients; standard chlorophyll; suspended solids.

Zooplankton : Two bongo nets.

Station 15A (54.17 05.23)

CTD profile.

Light and Secchi.

Water samples : Nutrients; chlorophyll size fraction; suspended solids.

Zooplankton : Two bongo net hauls.

Friday April 15 (On station 0730)

Station 14C (54.40 05.23)

CTD profile.

Light and secchi.

Water samples : Nutrients; standard chlorophyll; suspended solids.

Zooplankton : Two bongo nets.

Station 4 (54.41 05.20)

CTD profile.

Secchi.

Water samples : Nutrients; C/N; size fractionation of chlorophyll and phytoplankton species composition; Primary production; suspended solids.

Zooplankton : Two bongo net hauls; size fractionation using pump.