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2. as in ...
*functioning of the Irish Sea. Observations in Liverpool Bay contribute to a larger JONES project involving IAF&F and which funds the QUB R.A. The project also has an involvement with the USA. The striking finding is the very high chlorophyll *a* levels in Liverpool Bay equalling those of Belfast Lough & indicating Coastal enrichment. Iron # 2/6*

Cruise Report
 (April 25 - May 09)

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 CSO'S OFFICE

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Cruise Objectives

The objectives of this cruise were to study the impact of copepod grazing on the spring bloom and quantify the flux of particulate organic carbon to the benthos. Detailed objectives were to:

1. quantify phytoplankton production in two size fractions (whole and < 5.0 μ m).
2. estimate copepod grazing.
3. collect samples of phytoplankton and zooplankton for later identification and enumeration.
4. collect sediment samples for the determination of sediment pigment concentration.
5. collect water samples for the determination of particulate aluminium and dissolved inorganic nutrients.
6. service the DANI moorings.

Cruise Narrative

R.V. Lough Foyle departed Belfast at 1000 h on Monday April 28 and sailed for station 47 in Dundalk Bay (Figure 1). Beginning at 0530 h, production and grazing studies were carried out on Tuesday and Wednesday April 29/30. To estimate copepod gut pigment content, zooplankton were collected by vertical net haul every three hours over a 24 h period. The production and grazing studies were repeated at S38A (mooring station) on Thursday May 01. On Friday May 02 a grid of stations were worked in the vicinity of the mooring station. The ship docked in Dublin at 2030 h for a mid-cruise break and exchange of scientific personnel. The Lough Foyle departed Dublin at 1530 on Saturday May 03 and steamed for the process station in Liverpool Bay. Beginning at 0300 on Sunday May 04, vertical hauls with a ring net were undertaken at 3 hour intervals over 24 h. Production and grazing studies were also carried out at LBP on Sunday May 04. Strong to gale force winds prevented

impling and servicing of the DANI moorings on Monday May 05 and the ship lay at anchor in Dundrum Bay. Continued strong to gale force winds on Tuesday May 06 together with a forecast for further gales for the remainder of the week left insufficient time to service the moorings and the cruise was curtailed. Lough Foyle docked in Belfast at 1530 on Tuesday May 06.

Preliminary Results

All of the planned stations were worked and the experimental work was completed. Owing to strong to gale force winds the DANI moorings were not serviced and the additional process work planned at S38A was cancelled.

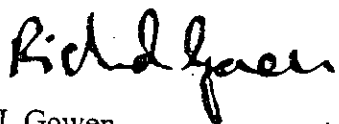
Selected nutrient data are presented in Table 1A. At both coastal stations depletion of nitrate (+nitrite) phosphate and silicate relative to winter concentrations was evident throughout the water column. In comparison depletion of nutrients at station 38A was restricted to the upper 18 m of the water column. Below this depth the concentration of nitrate (+nitrite) ranged from 5.4 to 9.5 mmol m⁻³.

At all three stations concentrations of chlorophyll (Table IB) indicate that the spring bloom was well under way in each of the regions. A striking feature of the data are the high levels of chlorophyll (up to 88.1 mg m⁻³) in Liverpool Bay. As was observed in early April, at the two coastal sites only a small proportion of the chlorophyll biomass was associated with the < 5.0 µm fraction, compared to the station in the central region.

The colonial flagellate *Phaeocystis pouchetii* was observed in water samples from Liverpool Bay and probably accounted for the high concentrations of chlorophyll measured at that location. The mesozooplankton was dominated by the copepod *Temora longicornis* in the coastal stations and *Pseudocalanus elongatus* at the station in the central region. The abundance of *Calanus* spp. had increased compared to abundance in early April, but was low relative to the abundance of *Temora* and *Pseudocalanus*.

Acknowledgements

I would like to thank the captain, officers and crew of the R.V. Lough Foyle for their assistance during the cruise.



R.J. Gowen

May 27, 1997

Table 1A. Concentrations of nitrate (+ nitrite) phosphate and silicate (mmol m^{-3}) in near surface waters at the three process stations in the Irish Sea during April 28 - May 05 1997.

Station	Nutrient concentration (mmol m^{-3})		
	Nitrate (+nitrite)	Phosphate	Silicate
47	0.15	0.24	1.12
38A	0.28	0.26	0.54
LBP	1.13	0.55	0.37

Table 1B. Concentrations of chlorophyll (mg m^{-3}) in near surface waters of the three process stations during April 28 - May 05 1997.

Station	Chlorophyll concentration (mg m^{-3})		5.0 μm fraction as % of total chlorophyll biomass
	Whole sample	< 5.0 μm fraction	
47	10.22 - 11.5	0.38 - 1.10	<2.0%
38A	5.46 - 5.92	0.12 - 0.19	6.5 - 20%
LBP	55.88 - 88.10	0.09 - 0.54	< 1.0%

Figure 1.

A map of the Irish Sea showing the positions of the three process stations. The DANI mooring is located at station 38A

