

Cruise Report : June 1992

Biological Oceanography of the
Western Irish Sea

Personnel

R. Gowen	SSO	(SIC)
C. Gibson	PSO	
P. Elliott	ASO	
S. Bloomfield	ASO	
D. Faughey	M.Sc. Student, School of Ocean Sciences, University College North Wales.	

Objectives

To investigate the distribution of dissolved inorganic nutrients and phytoplankton biomass in relation to the vertical structure of the water column. To estimate phytoplankton production at selected locations. Miss D. Faughey participated in the cruise as part of her M.Sc. project 'the distribution of phytoplankton species in relation to the frontal boundary in the western Irish Sea'.

Narrative

A complete list of station positions and work carried out at each station is given in Table I. The following is an outline of each days work:

June 15 : the Lough Foyle departed Belfast at 0700 on the 15th of June and proceeded to stn 4. The final station of the day (stn 18) was completed by 2215.

June 16 : work at stn 36 was started at 0820 and the final stn (50) was completed by 2300.

June 17: work at stn 56 was started at 0805 and the final stn (61) was completed by 1925.

June 18: work at stn 22 was started at 0800 and the final stn (20) was completed by 1935 and the ship returned to Belfast.

Sampling

At each station a vertical profile of temperature, conductivity and fluorescence was measured with the Hydrobios CTD and Chelsea Instruments fluorometer. Water samples were collected from depths selected on the basis of the vertical distribution of temperature and salinity for estimation of phytoplankton chlorophyll and dissolved inorganic nutrients (nitrate, nitrite, ammonia, phosphate, silicate and urea). Water samples (50 ml) were preserved with acidic Lugol's iodine for microscopic

analysis of phytoplankton species composition and abundance. The CTD was calibrated for salinity against precision salinometer measurements on discrete water samples and for temperature using reversing thermometers. At each station two vertical zooplankton hauls were made using one of the Bongo nets fitted with a 300 um mesh net. One sample was preserved with formalin for later analysis of species and the second sample was filtered using pre-weighed filters to obtain an estimate of zooplankton biomass. Secchi depth was recorded at each station.

The spatial distribution of physical (temperature and salinity) chemical (dissolved nutrients) and biological (phytoplankton chlorophyll) variables in near surface water were mapped continuously when the ship was steaming between stations.

At selected stations downwelling and upwelling irradiance was measured using Licor 2 Phi sensors. At these stations water samples were collected and used to estimate carbon fixation by phytoplankton using a standard ^{14}C incubation technique.

Samples of near bottom water were collected from selected stations for the estimation of dissolved oxygen.

Equipment

All stations were successfully worked and a total of 7 productivity experiments were carried out. The Hydrobios CTD gave a few minor problems and only 5 water bottles were operational at the end of the cruise.

The Traaks autoanalyser was successfully run throughout the cruise. Only minor faults were encountered and these did not affect the sampling programme.

Acknowledgements

I wish to express my thanks to the captain, officers and crew of the Lough Foyle for their assistance during the cruise. I would also like to thank the scientific staff for their support.

R.J. Gowen SIC
(1st September 1992)

TABLE I

June 15

Station	Position	Activity
4	5441 0520	CTD; Light; secchi; Zooplankton; [P]
6	5436 0510	CTD; Zooplankton; Secchi
16	5421 0510	CTD; Light; Secchi; Zooplankton; [P]
15	5421 0525	CTD; Zooplankton; Secchi
14	5428 0523	CTD; Zooplankton; Secchi
13	5427 0511	CTD; Zooplankton; Secchi
12	5430 0451	CTD; Zooplankton; Secchi
18	5421 0451	CTD; Zooplankton; Secchi

June 16

36	5351 0611	CTD; Zooplankton; Secchi
47	5343 0609	CTD; Zooplankton; Secchi Light; [P]
48	5337 0603	CTD; Zooplankton; Secchi
46	5343 0550	CTD; Zooplankton; Secchi
38	5351 0534	CTD; Zooplankton; Secchi Light; DO [P]
39	5351 0515	CTD; Zooplankton; Secchi
40	5351 0458	CTD; Zooplankton; Secchi
43	5343 0457	CTD; Zooplankton; Secchi
44	5343 0514	CTD; Zooplankton; Secchi
50	5337 0528	CTD; Zooplankton; Secchi; DO

June 17

56	5328 0511	CTD; Zooplankton; Secchi
63	5321 0515	CTD; Zooplankton; Secchi
62	5321 0530	CTD; Zooplankton; Secchi Light; DO [P]
57	5328 0528	CTD; Zooplankton; Secchi; DO
50	5337 0528	CTD; Zooplankton; Secchi
45	5343 0532	CTD; Zooplankton; Secchi; Light; DO [P]
49	5337 0546	CTD; Zooplankton; Secchi
59	5328 0603	CTD; Zooplankton; secchi
61	5321 0544	CTD; Zooplankton; secchi

June 18

22	5413 0531	CTD; Zooplankton; Secchi
24	5406 0552	CTD; Zooplankton; Secchi Light; [P]
33	5358 0550	CTD; Zooplankton; Secchi
31	5358 0520	CTD; Zooplankton; Secchi
30	5358 0506	CTD; Zooplankton; Secchi
27	5406 0505	CTD; Zooplankton; Secchi
26	5406 0521	CTD; Zooplankton; Secchi
21	5413 0516	CTD; Zooplankton; Secchi
20	5413 0500	CTD; Zooplankton; secchi

Note: [P] ship-board primary production experiment