

Temporal variation in nitrate levels

Nitrate levels in the water in feeder streams discharging to Lady's Island Lake vary over time due to a complex combination of natural and human factors including soil type, rainfall, plant growth, evapotranspiration, soil and air temperature changes accelerating biological processes, and agricultural practices like the volume and timing of fertiliser application and the intensity and duration of stocking of pastures discharging to watercourses and/or groundwater (see Burgess, 2023). Water quality sampling in the feeder streams at Lady's Island Lake was conducted on four occasions during 1984 providing some insight into temporal variation in nitrate levels at the subject site.

In 1984, at the request of Wexford County Council, chemical and biological sampling, chemical analysis, and reporting were conducted at Lady's Island Lake by the Kilkenny Regional Water Laboratory of An Foras Forbartha Teoranta, The National Institute for Physical Planning and Construction Research. Sampling was conducted of water quality, macroinvertebrates, zooplankton, and phytoplankton. Water samples were collected from the twelve feeder streams on four occasions (17 April, 21 May, 9 July, and 19 September). A 21-page report for Wexford County Council, compiled by Michael Neill, Regional Chemist, was produced on 5 October 1984 (Neill, 1984).

Sampling stations were generally near the discharge points of the feeder streams to the lake. On all four sampling dates both feeder streams No 1 and No 12 were small drains and were dry, so no samples were taken. Sampling of feeder stream No 11 was at Our Lady's Well. Results measured as "Nitrate + Nitrite (mg/l N)" are shown below (Table 1).

Feeder stream number	1984						
	17 Apr	21 May	09 Jul	19 Sep	Max	Min	Mean
1	-	-	-	-	-	-	-
2	2.4	0.9	0.1	-	2.4	0.1	1.1
3	1.4	0.4	0.3	1.2	1.4	0.3	0.8
4	1.7	-	-	-	1.7	1.7	1.7
5	0.8	2.0	2.3	1.6	2.3	0.8	1.7
6	2.4	2.8	1.3	1.2	2.8	1.2	1.9
7	2.9	2.7	1.7	1.9	2.9	1.7	2.3
8	2.0	1.7	0.4	0.2	2.0	0.2	1.1
9	1.3	1.4	0.2	1.0	1.4	0.2	1.0
10	2.8	1.0	2.0	2.8	2.8	1.0	2.2
11	12.0	8.7	8.2	4.6	12.0	4.6	8.4
12	-	-	-	-	-	-	-
Mean							2.2

Table 1. Results of nitrate sampling on four occasions in 12 feeder streams during 1984.

(Source: data extracted from Neill, 1984)