

## Phytoplankton and Charophytes of Lough Bunny, Co. Clare

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### Abstract

A year-long survey of Lough Bunny, a karst lake in County Clare, Ireland, was undertaken in 1992–3. Water transparency (as determined by Secchi disc depth), plant nutrients, chlorophyll a concentrations and phytoplankton were examined. High water transparency indicated that the euphotic zone extended over the majority of the lake and may, at times, have reached the deepest parts of the lake. Silicate-silicon and nitrate+nitrite-nitrogen showed marked seasonal changes with lowest values recorded in May 1992 and August 1992 respectively. Molybdate reactive phosphate-phosphorus showed no seasonality in concentration and was often below the limit of detection of the technique used. The maximum value obtained was  $3.9\mu\text{g PO}_4\text{-P dm}^{-3}$ . Chlorophyll a concentrations were also low throughout the year, ranging from  $0.5\mu\text{g dm}^{-3}$  to  $2.6\mu\text{g dm}^{-3}$ , and these also showed no seasonal pattern of change.

Cryptophyta were present in all samples and were often the most numerous group in the phytoplankton. Small dinoflagellates occurred throughout the year, with *Ceratium* species appearing in the summer months. Cyanobacteria were common and most abundant in late autumn. Dinobryon species were found throughout the year but mostly as single thecate cells and only occasionally as large arbuscular colonies. Diatoms were not well represented in the plankton. The Chlorophyta showed greatest diversity of species but were never abundant. Quantitative counts showed cell numbers in all groups to be low, which is reflected in the low chlorophyll a concentrations. On this evidence it is suggested that the lake is oligotrophic. A comparison with two published lists of the lake's plankton was made.

There are extensive beds of Charophyta in the lake. A list of species is given. We suggest that utilisation of plant nutrients by the charophytes and benthic diatoms may be responsible for the water clarity and small phytoplankton populations.