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Diatoms as Indicators of Trophic State Change: A Comparative Study from Lakes of Bhandara District, Maharashtra, India

Prachi Bodele, Samaya S. Humane*, Sumedh K. Humane and Sonal Kamble

Post Graduate Department of Geology, Rashtrasant Tukadoji Maharaj Nagpur University, Rao Bahadur D. Laxminarayan Campus, Law College Square, Nagpur- 440 001(MS), India
*(*Corresponding author, E-mail: samaya.humane@gmail.com)*

Abstract

Diatom assemblage from the surface sediments of the Rampur-Hamesha Lake (RHL) and the Kurhada Lake (KL) of the Bhandara district Maharashtra have been sampled and analysed in order to explore the relationship between diversity and distribution of diatom taxa in relation to their water quality. Both these lakes occur in varied land use patterns that had directly affected the water quality and thereby the occurrence of specific diatom species. *Nitzschia palea* (Kutz.) W. Smith (~16%) and *Ulnaria ulnabiseriata* Liu *et al.* (~15%) are the most dominant diatom species in the RHL, while *Navicula viridula* (Kutz.) Ehrenberg (~22%) and *Anomoeoneis sphaerophora* (Ehr.) Pfitzer (~21%) are the most abundant forms in the KL. The presence of the pollution tolerant species *Nitzschia palea* indicates higher pH and the heavy organic pollution in the RHL. The prevalence of *N. viridula* points presence of the high nutrient concentrations, moderate - heavy pollution, alkaliphilous and mesotrophic water in the KL. The Principal Component Analysis (PCA) also clearly establishes that the physiochemical parameters such as pH, alkalinity, conductivity and nutrients like N, P *etc.* have mainly influenced the distribution of diatom population in both the lakes. On the basis of total alkalinity, the RHL water is deduced as hard and very hard for the KL. The excessively high alkalinity indicates that the KL water is not suitable for drinking purpose.

Keywords: Diatoms, Water Quality, Sediments, Rampur-Hamesha Lake and Kurhada Lake, Bhandara district