



ALGAL INDICES AS A TOOL TO ASSESS THE WATER QUALITY STATUS OF A FRESHWATER LAKE IN THIRUVANANTHAPURAM DISTRICT, KERALA

T. PRIYA GOPINATH* AND K.G. AJIT KUMAR

*Environmental Biology Division, Department of PG Studies and Research in Botany,
Mahatma Gandhi College (Affiliated to University of Kerala), Thiruvananthapuram - 695004, Kerala*

**Corresponding author: priyaasalga@gmail.com*

ABSTRACT: The aim of the present study is to assess the pollution status of Vellayani Lake, which is the largest fresh water lake in Thiruvananthapuram district. The Lake lies between 8°24'09"- 8°26'30" N Latitude and 76°59'08"- 76°59'47" E Longitude with a water spread of approximately in 450 hectares. Phytoplankton sampling from the lake was done for one year (2014-15) and counting were counted using Sedgwick – Rafter Cell method. Algal indices such as Pielou's Evenness index, Shannon Weaver Diversity index, Boyd's index and Margalef's richness index were calculated to assess the lake water quality. All the indices showed values between 1 and 3. Thus the result of the present study revealed a moderate pollution in the lake. Continuous monitoring of the lake is essential for the implementation further water conservation strategies in the lake.

Keywords: *Algal indices, phytoplankton, pollution, Vellayani lake*

Citation: Priya Gopinath T. , Ajit Kumar K.G. (2016) Algal indices as a tool to assess the water quality status of a freshwater lake in Thiruvananthapuram district, Kerala. Indian J Trop Biodiv 24(1): 96-99

Received on : 13 Jan. 2015

Accepted on : 09 Mar. 2016

Published on : 30 Jun. 2016

Lakes are the important freshwater habitats that play a major role in maintaining freshwater biodiversity. Now a days lakes have received much attention in ecological studies in relation to their nutrient composition and algal blooms. Various factors influence the physical and biogeochemical states of lakes and reservoirs such as extreme weather events, climate variability and climate change, eutrophication, acidification, land use changes and other anthropogenic impacts (Jeppesen et al., 2005; Mulholland 1997). Phytoplankton encountered in the water body reflects the average ecological condition and therefore, they may be used as an indicator of water quality (Bhatt, et al., 1999; Saha et al., 2000). In the recent years, the uses of biological indices for assessing the water quality have received much recognition. These indices gives a numerical form of biological data which includes species number, diversity and the presence and absence of bio indicators. Biodiversity-rich freshwater ecosystems are currently declining faster than any marine or land ecosystems making them the world's most vulnerable habitats (WWF, 2008); their sustainability being threatened by anthropocentrism (Botkin and Keller, 1998; UNFPA,

2003). Phytoplankton study provides a relevant and convenient point of focus for research on the mechanism of eutrophication and its adverse impact on an aquatic ecosystem. Continuous monitoring is required for the sustainability of water resources and registered changes (Giardino 2007). The data obtained from monitoring is important to determine the classification and modeling of water quality (Boyacio lu 2006). To elucidate the community structure phytoplankton in the lake, Pielou's (1975) Evenness index, Shannon Weaver (1949), Diversity index and Boyd's index (1981) were the algal indices used in the present study to assess the lake water quality.

MATERIALS AND METHODS

Study Area

Vellayani Lake lies between 8° 24'09"-8° 26'30" N Latitude and 76° 59' 08"- 76° 59'47" E Longitude with a water spread of approximately 450 hectares. The lake is situated 29 km above mean sea level and 0.1-1.5m below the mean sea level. The Lake extends for about 3.15 km with a width of 1000m. Survey carried out by CESS (2000) reveals a maximum depth of 2.3m. The