

ABSTRACT

Muhammad Jafar Rizky Darmawan. 24020121140134. **Structure of Epipellic Diatom Communities as Bioindicators of Lake Batur Waters, Bangli Regency, Bali Province.** Under the guidance of Tri Retnaningsih Soeprbowati and Lilih Khotimperwati.

Lake Batur in Bangli Regency, Bali Province, is one of the important caldera water ecosystems facing significant pressure from anthropogenic activities such as agriculture, fish farming, and domestic waste. Given its vital role for the community and ecosystem of Bali, continuous monitoring of Lake Batur's water quality is urgently needed. This study aims to analyze the structure of the epipellic diatom community in Lake Batur as a bioindicator, by examining its vertical distribution in sediments and its relationship with water environmental conditions. The research method included sediment sampling using a russian corer from four observation stations. The samples were then processed through a digestion stage to separate diatoms from sediments and organic matter, followed by preparation and identification under a microscope. Community data were analyzed using ecological indices such as the Shannon-Wiener Diversity Index, Dominance, and Evenness. The overall diatom diversity index was in the moderate category, with low dominance values, suggesting a relatively stable ecosystem. At stations close to densely populated settlements, the species *Navicula longicephala* and *Nitzschia linearis* were dominant, indicating eutrophication. The results showed that the vertical distribution of diatoms indicated that Lake Batur experienced pollution ranging from mesotrophic to eutrophic conditions. Further analysis using PCA (Principal Component Analysis) of the four stations in Lake Batur showed mesotrophic to eutrophic water conditions, with variations in diatom communities influenced by the intensity of human activity in the surrounding area. Stations 1–3 remained relatively stable despite nutrient pressure, while Station 4 was more vulnerable because it was dominated by tolerant species reflecting eutrophic conditions.

Keywords: Lake Batur, Epipellic diatoms, Bioindicators, Water quality, Community structure, Eutrophication.