

## ABSTRACT

Dieng Plateau is the second highest plateau in the world after Nepal, located in Wonosobo Regency, Central Java. The uniqueness of culture and beautiful natural conditions make the Dieng Plateau area a tourist attraction that attracts local and foreign tourists. Balekambang Dieng Lake, apart from being a tourist destination, is also used as irrigation for potato plantations in Dieng. Anthropogenic activities that occur around Telaga Balekambang such as deforestation, agricultural activities and tourism cause the lake to experience a decrease in water quality. Information on the quality condition of a water body can be seen from the diatom community structure because diatoms have a high sensitivity to environmental changes. Diatoms are microalgae that have silica sheaths so that they can be sedimented in the soil. This study was conducted to assess changes in water quality based on community structure and diatom index. Sediment sampling using Dissection corer then digestion, preparation, observation with 1000x magnification microscope, identification and analysis. There were 95 species of 38 genus of diatoms from Balekambang Lake. Based on Bray Curtis cluster analysis, 135 cm of Balekambang Lake sediment samples were divided into three zones. Zone 1 (125 cm - 135 cm), Zone 2 (115 cm - 75 cm) and Zone 3 (65 cm - 1 cm). Based on the Shanon Wiener Diversity Index, zone 3 was more stable than zones 2 and 3 ( $H'$  obtained 2.81 - 3.71). The abundance of *Aulacoseira granulata* in zone 1 indicates that at a depth of 125 cm - 135 cm in eutrophic conditions towards hypereutrophic with pH tending to be alkaline. The abundance of *Nitzschia palea* and *Fragilaria gracilis* in zones 2 and 3 indicates eutrophic conditions with acidic pH.

Keyword: *Diatoms, Water Quality, Balekambang Lake*