

## ABSTRACT

Retno Indriani. 24020121140136. **Community Structure and Vertical Distribution of Diatoms as Bioindicators of Water Quality in the Mangrove Forest of Taddan Village, Sampang Regency, Madura.** Ecology and Biosystematics Laboratory, Department of Biology, Faculty of Science and Mathematics, Diponegoro University. Under the guidance of Tri Retnaningsih Soeprubowati and Jafron Wasiq Hidayat.

The mangrove ecosystem in Taddan Village, Sampang Regency, is a coastal area that has a high risk of environmental damage. Changes in land use for ponds can reduce water quality. This study aims to reconstruct changes in water quality in the Taddan mangrove ecosystem through the Diversity Index, Evenness Index, and Dominance Index of diatoms found. The working method used is to take sediment samples using sediment cores and then slice them every 5 cm. Then digested with 10% HCl, centrifuged and digested again with 10% H<sub>2</sub>O<sub>2</sub> and centrifuged. The results obtained were prepared, observed, identified and analyzed. The results showed three different stratigraphic zones: Zone 1 (50-35 cm) shows stable estuarine conditions with high marine diatom diversity. Zone 2 (30-20 cm) shows flood conditions where diatom species are dominated by the freshwater species *Fragilaria tenera*. Zone 3 (15-5 cm) indicates high tides, as *Tryblionella granulata*, *Psammodictyon panduriforme*, and *Tryblionella lanceola* were found. The most stable community structure was found at a depth of 5 cm ( $H' = 3.908$ ), while the most stressed community was at a depth of 30 cm ( $H' = 2.391$ ). This research demonstrates that diatom analysis can provide scientific data for reconstructing environmental conditions in the Taddan mangrove ecosystem.

**Keywords:** *Mangrove, Taddan Village, Vertical Distribution, Diatoms, Paleoecology*