

ABSTRACT

Cut Mamplam Village is one of the villages in Lhokseumawe City which has a mangrove ecosystem dominated by the *Avicennia* sp. Epiphytic diatoms are organisms that attach to aquatic plants (mangroves) which are influenced every day by tidal currents. This research aims to determine the distribution and abundance of epiphytic diatoms vertically on the parent mangrove stems of *Avicennia* sp. as well as the relationship between its abundance and water quality. This research was conducted in June 2024 where the method used in determining the location of this research was the purposive sampling method and the sampling method was carried out using the scraping method. Research results show that the epiphytic diatoms found consist of 12 families and 15 species. The abundance of epiphytic diatoms ranges from 450.000 – 570.000 cells/mL. Furthermore, overall the diversity index is classified as moderate, the uniformity index is classified as high and the dominance index is classified as low. The results of simple linear regression calculations between the abundance of epiphytic diatoms (dependent variable) and water quality, pH, temperature, salinity (independent variables) show that the correlation is very strong (r value 0.75 – 0.99), while the relationship between the abundance of epiphytic diatoms and nitrate is relatively strong (r value 0.50 – 0.75) and the relationship between the abundance of epiphytic diatoms and phosphate is very weak (r value 0.00 – 0.25). Principal Component Analysis (PCA) also shows that water quality is related to the abundance of epiphytic diatoms, indicating that temperature and salinity parameters have a very strong relationship.

Keywords : *Avicennia* sp., Cut Mamplam, epiphytic diatoms, principal component analysis, purposive sampling, simple linear regression