ABSTRACT

This study aims to analyze gastropod communities as bioindicators in observing changes in mangrove sediment organic matter in Lhokseumawe City. The research methods included collecting gastropod and sediment samples at five observation stations and drawing line transects, where the line transects were divided into sample plots measuring 1 × 1 m, with 5 plots from 3 line transects, resulting in a total of 60 1 × 1 m plots, as well as measuring environmental parameters such as pH, temperature, and salinity. The results of the study revealed the presence of 15 gastropod species from 8 families, with the highest density found in Terebralia sulcata (236 ind/m²) and Cerithidea cingulata (153 ind/m²). The gastropod diversity index in the mangrove area of Lhokseumawe City was classified as low (average 0.44), with the highest value at Station 5 (0.62) and the lowest at Station 1 (0.34). The uniformity index falls into the moderate category (average 0.51), with the highest value at Station 1 (0.70) and the lowest at Station 4 (0.34). Meanwhile, the overall dominance index was low (0.44), with the highest value at Station 1 (0.53) and the lowest at Station 5 (0.28). Total organic matter (TOM) content in sediments varied between 22-65%, with the highest value at Station 4. Linear regression analysis showed a strong relationship between gastropod density and TOM (R = 0.70). Bioindicator criteria tests confirmed that gastropods meet all requirements as indicators of organic matter changes. This study concludes that gastropods can be used as bioindicators of organic matter changes in mangrove ecosystems, with recommendations for further research on more specific taxonomy and other biota.

Keywords: Organic matter, bioindicators, mangrove ecosystems, gastropodas, Lhokseumawe.