ABSTRACT

Coral reefs are among the most productive and biodiverse tropical marine ecosystems in the world. They provide essential ecological functions, including habitat for marine organisms, protection of coastlines from waves and erosion, and support for the livelihoods of coastal communities. Coral reefs also have high economic, ecological, and aesthetic value. However, coral reef ecosystems are under serious threat from both natural and anthropogenic factors. The Global Coral Reef Monitoring Network reported that the world lost approximately 14% of coral cover between 2009 and 2020 due to climate change, ocean warming, and human activities. Nationally, data from the Indonesian Institute of Sciences in 2018 showed that of 1,067 monitoring sites across Indonesia, 386 were categorized as damaged, while only 6.56% were in excellent condition. Indonesia is part of the "Coral Triangle" and has the highest coral diversity in the world, with an estimated 569 coral species from 82 genera. Despite this potential, coral reefs continue to be degraded by unsustainable resource use, pollution, sedimentation, and coastal development. One coastal area with potential coral reef ecosystems is the waters of Lhokseumawe City, Aceh Province. Lhokseumawe is a strategic industrial zone with Perta Arun Gas, PT Pupuk Iskandar Muda, PT Pertamina, the Java-Bali Power Plant, Pelindo, as well as commercial ports and tourism areas. These industrial and port activities can directly and indirectly impact the marine ecosystem, particularly coral reefs, through declining water quality and pollution. However, scientific data on the structure of coral reef communities in the waters of Lhokseumawe remain limited. This study aims to: 1) analyze coral cover in Lhokseumawe waters, and 2) analyze ecological indices of coral reefs, including diversity, evenness, and dominance indices. Field surveys were conducted using the Point Intercept Transect method. The data collected included the percentage of live coral cover, coral species identification, and supporting water quality parameters. The results of this study are expected to provide baseline scientific data on the condition of coral reefs in Ujong Batee waters, Lhokseumawe, and serve as a reference for coastal management and conservation efforts in industrial areas.

Keywords: Community Structure, Coral Density, Coral Reefs, Diversity Index, Dominance Index, Evenness Index, Water Quality