

ABSTRAK

Fitoplankton merupakan mikroorganisme fotosintetik yang melayang di kolom air dan berperan sebagai produsen utama dalam ekosistem perairan. Keberadaan fitoplankton sangat sensitif terhadap perubahan lingkungan, sehingga kerap dimanfaatkan sebagai bioindikator kualitas air. Penelitian ini dilakukan di ekosistem mangrove Karangtalun, yang berbatasan langsung dengan area persawahan, permukiman, serta kegiatan budidaya perikanan yang berpotensi mencemari perairan. Tujuan penelitian adalah menilai kualitas air berdasarkan kelimpahan fitoplankton, konsentrasi nitrat dan fosfat, serta nilai indeks saprobitas. Pengambilan sampel dilakukan di tiga stasiun yang mewakili karakteristik lingkungan berbeda. Analisis meliputi identifikasi fitoplankton hingga tingkat genus, pengukuran parameter kualitas air secara *in situ* dan *ex situ*, serta perhitungan indeks saprobitas. Hasil penelitian menunjukkan bahwa stasiun dengan kelimpahan fitoplankton tertinggi berada di Stasiun 2 dengan jumlah mencapai 56.617,15 individu per liter, didominasi oleh genus *Peridinium*. Tingginya kadar nitrat dan fosfat diketahui mendukung pertumbuhan fitoplankton, namun berpotensi memicu eutrofikasi. Berdasarkan indeks saprobitas, kualitas perairan termasuk dalam kategori tercemar sedang hingga berat. Ditemukan pula korelasi yang sangat kuat antara kadar nitrat dan kelimpahan fitoplankton ($r = 0,967$), serta korelasi kuat antara kadar fosfat dengan kelimpahan fitoplankton ($r = 0,614$). Temuan ini memberikan informasi awal mengenai kondisi perairan di kawasan mangrove, yang penting dalam mendukung strategi pengelolaan wilayah pesisir secara berkelanjutan.

Kata kunci: *Fitoplankton, Fosfat, Indeks Saprobitas, Kualitas Perairan, Karangtalun, Nitrat.*

ABSTRACT

Phytoplankton are photosynthetic microorganisms that float in the water column and act as primary producers in aquatic ecosystems. Phytoplankton are highly sensitive to environmental changes, and are therefore often used as bioindicators of water quality. This research was conducted in the Karangtalun mangrove ecosystem, which borders rice fields, residential areas, and fish farming activities that have the potential to pollute the waters. The objective of the study was to assess water quality based on phytoplankton abundance, nitrate and phosphate concentrations, and the saprobity index. Sampling was conducted at three stations representing different environmental characteristics. Analysis included phytoplankton identification down to the genus level, in situ and ex situ water quality parameter measurements, and saprobity index calculations. The results showed that Station 2 had the highest phytoplankton abundance, with 56,617.15 individuals per liter, dominated by the genus *Peridinium*. High levels of nitrate and phosphate are known to support phytoplankton growth but have the potential to trigger eutrophication. Based on the saprobity index, water quality is categorized as moderately to heavily polluted. A very strong correlation was also found between nitrate levels and phytoplankton abundance ($r = 0.967$), as well as a strong correlation between phosphate levels and phytoplankton abundance ($r = 0.614$). These findings provide preliminary information on water conditions in mangrove areas, which is important for supporting sustainable coastal management strategies.

Keywords: *Karangtalun, Nitrate, Phytoplankton, Phosphate, Saprobic Index, Water Quality.*