

RINGKASAN

MEOLAN. Struktur Komunitas Plankton di Perairan Semi-Tertutup Tanjung Sebauk Kota Tanjungpinang. Dibimbing oleh FADHLYAH IDRIS, S.Pi., M.Si dan NANCY WILLIAN, S.Si., M.Si.

Struktur komunitas plankton dan pengaruh logam berat di perairan semi-tertutup Tanjung Sebauk, Kota Tanjungpinang. Kawasan ini rawan tercemar logam berat seperti timbal dan kadmium akibat aktivitas antropogenik, seperti pemukiman dan perikanan. Paparan logam berat ini berpotensi mengganggu metabolisme, pertumbuhan, dan kelangsungan hidup plankton yang merupakan bioindikator penting kualitas perairan. Penelitian ini dilakukan melalui pendekatan kuantitatif, dengan metode observasi dan analisis laboratorium. Data yang dikumpulkan meliputi identifikasi plankton, analisis logam berat timbal dan kadmium menggunakan ICP-OES, serta pengukuran parameter kualitas perairan seperti suhu, salinitas, pH, DO, kecerahan, nitrat dan fosfat. Hasil penelitian menunjukkan bahwa komunitas plankton didominasi oleh fitoplankton (87%), khususnya dari kelas Bacillariophyceae (81%), sedangkan zooplankton (13%) didominasi oleh Copepeoda. Indeks ekologi menunjukkan fitoplankton memiliki keanekaragaman sedang, keseragaman tinggi, dan dominansi rendah. Sedangkan zooplankton menunjukkan keanekaragaman dan keseragaman rendah, serta dominansi tinggi. Analisis logam berat menunjukkan bahwa timbal melebihi baku mutu diseluruh stasiun, dengan nilai tertinggi di stasiun 1 (0,043 mg/L). Sedangkan kadmium melebihi baku mutu hanya di stasiun 3 (0,016 mg/L). Hasil PCA menunjukkan bahwa parameter seperti pH, salinitas, DO, kecerahan, dan nitrat berpengaruh positif terhadap kelimpahan fitoplankton, sedangkan suhu, fosfat, serta logam berat timbal dan kadmium berkorelasi negatif.

Kata Kunci: Indeks ekologi plankton, Kadmium, *Principal Component Analysis* (PCA), Tanjung Sebauk, Timbal.

SUMMARY

MEOLAN. Structure of Plankton Community in Semi-Enclosed Waters of Tanjung Sebauk, Tanjungpinang City. Supervised by FADHLIYAH IDRIS, S.Pi., M.Si and NANCY WILLIAN, S.Si., M.Si.

Plankton community structure and the influence of heavy metals in the semi-enclosed waters of Tanjung Sebauk, Tanjungpinang City. This area is prone to heavy metal pollution such as lead and cadmium due to anthropogenic activities, such as settlements and fisheries. Exposure to these heavy metals has the potential to disrupt the metabolism, growth, and survival of plankton which are important bioindicators of water quality. This study was conducted through a quantitative approach, with observation and laboratory analysis methods. The data collected included plankton identification, analysis of heavy metals lead and cadmium using ICP-OES, and measurement of water quality parameters such as temperature, salinity, pH, DO, brightness, nitrate and phosphate. The results showed that the plankton community was dominated by phytoplankton (87%), especially from the Bacillariophyceae class (81%), while zooplankton (13%) were dominated by Copepeoda. The ecological index shows that phytoplankton has moderate diversity, high uniformity, and low dominance. While zooplankton shows low diversity and uniformity, and high dominance. Heavy metal analysis showed that lead exceeded the quality standard at all stations, with the highest values at stations 1 (0.043 mg/L). While cadmium exceeded the quality standard only at station 3 (0.016 mg/L). PCA results showed that parameters such as pH, salinity, DO, brightness, and nitrate had a positive effect on phytoplankton abundance, while temperature, phosphate, and heavy metals lead and cadmium were negatively correlated.

Keywords: Plankton ecological index, Cadmium, *Principal Component Analysis* (PCA), Tanjung Sebauk, Lead.