

RINGKASAN

WITA LAMRIA BR MANURUNG. Pendugaan Kualitas Perairan Pesisir Pulau Penyengat Berdasarkan Komunitas Makrozoobentos. Dibimbing oleh TRI APRIADI dan ANDI ZULFIKAR.

Pulau Penyengat merupakan kawasan pesisir yang memiliki nilai ekologis dan historis tinggi serta dimanfaatkan sebagai kawasan permukiman, transportasi laut, dan pariwisata. Berbagai aktivitas tersebut berpotensi memengaruhi kualitas perairan sehingga diperlukan pemantauan kondisi lingkungan. Makrozoobentos merupakan organisme benthik yang memiliki mobilitas rendah dan sensitif terhadap perubahan lingkungan sehingga banyak digunakan sebagai bioindikator kualitas perairan. Penelitian ini bertujuan untuk mengetahui kondisi parameter fisika-kimia perairan, kelimpahan dan indeks ekologi makrozoobentos, menentukan kualitas perairan menggunakan indeks AMBI (*A Marine Biotic Index*), serta menganalisis hubungan antara parameter fisika-kimia dengan kelimpahan makrozoobentos di perairan pesisir Pulau Penyengat. Penelitian dilaksanakan pada Februari 2026 di perairan pesisir Pulau Penyengat, Kota Tanjungpinang, Provinsi Kepulauan Riau. Pengambilan sampel dilakukan menggunakan metode survei dengan teknik *systematic random sampling* pada 30 titik pengamatan. Sampel makrozoobentos dikoleksi menggunakan Ekman Grab 30×30 cm. Parameter fisika-kimia yang diamati meliputi suhu, salinitas, kekeruhan, kedalaman, pH, oksigen terlarut (DO), tipe substrat, dan *Total Organic Matter* (TOM). Analisis data meliputi kelimpahan, indeks keanekaragaman Shannon-Wiener, indeks keseragaman, indeks dominansi, indeks AMBI, serta uji korelasi Spearman. Hasil penelitian menunjukkan bahwa diperoleh 24 genus makrozoobentos yang termasuk dalam lima kelas, yaitu Gastropoda, Bivalvia, Malacostraca, Polychaeta, dan Oligochaeta. Kelimpahan rata-rata makrozoobentos sebesar 42,22 ind/m² dengan Gastropoda sebagai kelas yang mendominasi. Nilai indeks keanekaragaman (*H'*) sebesar 2,67 tergolong sedang, indeks keseragaman (*E*) sebesar 0,84 tergolong tinggi, dan indeks dominansi (*C*) sebesar 0,10 tergolong rendah. Nilai indeks AMBI sebesar 2,13 menunjukkan bahwa perairan berada pada kategori sedikit tercemar dengan kondisi komunitas benthik tidak seimbang. Parameter fisika-kimia perairan secara umum masih mendukung kehidupan makrozoobentos, sedangkan hasil uji korelasi Spearman menunjukkan bahwa seluruh parameter fisika-kimia memiliki hubungan yang lemah hingga sangat lemah dan tidak signifikan terhadap kelimpahan makrozoobentos ($p > 0,05$).

Kata kunci: AMBI, kelimpahan, kualitas perairan, makrozoobentos, Pulau Penyengat.

SUMMARY

WITA LAMRIA BR MANURUNG. Assessment of Coastal Water Quality Using Macrozoobenthos Communities on Penyengat Island. Supervised by TRI APRIADI and ANDI ZULFIKAR

Penyengat Island is a coastal area with high ecological and historical value and is used as a residential area, sea transportation, and tourism. These various activities have the potential to affect water quality, so environmental monitoring is necessary. Macrozoobenthos are benthic organisms that have low mobility and are sensitive to environmental changes, so they are widely used as bioindicators of water quality. This study aims to determine the condition of the physicochemical parameters of the waters, the abundance and ecological index of macrozoobenthos, determine water quality using the AMBI (A Marine Biotic Index), and analyze the relationship between physicochemical parameters and the abundance of macrozoobenthos in the coastal waters of Penyengat Island. The study was conducted in February 2026 in the coastal waters of Penyengat Island, Tanjungpinang City, Riau Islands Province. Sampling was carried out using a survey method with a systematic random sampling technique at 30 observation points. Macrozoobenthos samples were collected using a 30 × 30 cm Ekman Grab. The physicochemical parameters observed included temperature, salinity, turbidity, depth, pH, dissolved oxygen (DO), substrate type, and Total Organic Matter (TOM). Data analysis includes abundance, Shannon-Wiener diversity index, evenness index, dominance index, AMBI index, and Spearman correlation test. The results of the study showed that 24 genera of macrozoobenthos were obtained which were included in five classes, namely Gastropoda, Bivalvia, Malacostraca, Polychaeta, and Oligochaeta. The average abundance of macrozoobenthos was 42.22 ind/m² with Gastropoda as the dominant class. The diversity index (H') value of 2.67 was classified as moderate, the evenness index (E) of 0.84 was classified as high, and the dominance index (C) of 0.10 was classified as low. The AMBI index value of 2.13 indicated that the waters were in the slightly polluted category with unbalanced benthic community conditions. The physicochemical parameters of the waters generally still supported the life of macrozoobenthos, while the results of the Spearman correlation test showed that all physicochemical parameters had a weak to very weak and insignificant relationship to the abundance of macrozoobenthos ($p > 0.05$).

Keywords: Abundance, AMBI, Macrozoobenthos, Penyengat Island, Water Quality.