

RETNO INDAH ROCHANI 22.03.4.1.1.00098. Analisis Indeks Biologi Makrozoobentos pada Ekosistem Mangrove Sebagai Biomonitoring Kualitas Perairan di Desa Bancaran Madura. Dibawah **bimbingan ibu Novi Indriyawati, S. Kel., M.Si.**

ABSTRAK

Ekosistem mangrove merupakan habitat penting bagi berbagai organisme benthik, salah satunya makrozoobentos yang dapat dimanfaatkan sebagai bioindikator dalam menilai kondisi kualitas perairan. Aktivitas antropogenik di kawasan mangrove Bancaran, Kabupaten Bangkalan, seperti pembuangan limbah domestik dan penumpukan sampah, diduga memengaruhi kondisi lingkungan serta struktur komunitas makrozoobentos. Penelitian ini bertujuan untuk menganalisis kepadatan dan komposisi jenis makrozoobentos, menentukan indeks biologi makrozoobentos sebagai biomonitoring, mengukur parameter kualitas perairan (suhu, salinitas, pH, DO, dan BOD), serta menganalisis karakteristik sedimen di ekosistem mangrove Bancaran. Penelitian dilaksanakan pada Januari–Februari 2026 menggunakan metode *purposive sampling* dengan transek sepanjang 500 m dan kuadran berukuran 1 × 1 m yang diamati sebanyak tiga kali pengulangan. Analisis meliputi kepadatan, komposisi jenis, indeks keanekaragaman (H'), keseragaman (E), dominansi (C), kualitas perairan, serta analisis tekstur sedimen. Hasil penelitian menunjukkan bahwa kepadatan dan komposisi jenis tertinggi berasal dari kelas Gastropoda, *famili Potamididae*, khususnya *Cerithidea obtusa* dengan kepadatan sebesar 128 ind/m² dan komposisi jenis sebesar 57%. Nilai indeks keanekaragaman berkisar antara 1,39976–1,91496 (kategori sedang), indeks keseragaman 0,563006–0,746588 (kategori sedang), dan indeks dominansi 0,174417–0,381896 (kategori rendah), yang mengindikasikan kondisi perairan tercemar ringan hingga sedang. Parameter kualitas perairan secara umum masih memenuhi baku mutu untuk kehidupan biota laut, sedangkan sedimen didominasi oleh jenis lempung liat berpasir yang mendukung keberadaan makrozoobentos. Hasil penelitian menunjukkan bahwa makrozoobentos berpotensi digunakan sebagai biomonitoring untuk menilai kondisi ekologis ekosistem mangrove Bancaran.

Kata Kunci: Makrozoobentos, Mangrove, Bioindikator, Indeks Biologi, Kualitas Perairan, Sedimen

RETNO INDAH ROCHANI. 22.03.4.1.1.00098. *Biological Index Analysis of Macrozoobenthos in Mangrove Ecosystems as Biomonitoring of Water Quality in Bancaran Village, Madura. Under the supervision of Novi Indriyawati, S.Kel., M.Si.*

ABSTRACT

Mangrove ecosystems provide essential habitats for benthic organisms, including macrozoobenthos, which can be used as bioindicators to assess water quality. Anthropogenic activities in the Bancaran mangrove ecosystem, Bangkalan Regency, such as domestic waste disposal and solid waste accumulation, are suspected of affecting environmental conditions and the macrozoobenthic community structure. This study aimed to analyze the density and species composition of macrozoobenthos, evaluate biological indices as biomonitoring indicators, measure water quality parameters (temperature, salinity, pH, dissolved oxygen, and biochemical oxygen demand), and analyze sediment characteristics in the Bancaran mangrove ecosystem. The study was conducted from January to February 2026 using a purposive sampling method with a 500 m line transect and 1 × 1 m quadrats sampled in three repetitions. Data analyses included density, species composition, Shannon-Wiener diversity index (H'), evenness index (E), dominance index (C), water quality assessment, and sediment texture analysis. The results showed that the highest density and species composition were found in the Gastropoda class, particularly the Potamididae family, with *Cerithidea obtusa* reaching a density of 128 individuals/m² and a species composition of 57%. The diversity index ranged from 1.39976 to 1.91496 (moderate category), the evenness index ranged from 0.563006 to 0.746588 (moderate category), and the dominance index ranged from 0.174417 to 0.381896 (low category), indicating that the waters were classified as lightly to moderately polluted. Overall, the measured water quality parameters met the environmental standards for marine organisms, while the sediment was predominantly sandy clay loam, providing suitable habitat conditions for macrozoobenthos. These findings indicate that macrozoobenthos can serve as effective biomonitoring organisms for assessing the ecological condition of the Bancaran mangrove ecosystem.

Keywords: Macrozoobenthos, Mangrove, Bioindicator, Biological Index, Water quality, Sediment