

ABSTRAK

NISSA AZZAHRA PRATIWI. 2026. **Analisis Kelimpahan Makrozoobentos sebagai Bioindikator Kualitas Air di Sungai Cikalang Manonjaya**. Jurusan Pendidikan Biologi, Fakultas Keguruan dan Ilmu Pendidikan, Universitas Siliwangi.

Penurunan kualitas air sungai akibat aktivitas antropogenik, seperti pembuangan limbah domestik, kegiatan pertanian, dan penggunaan bahan kimia, dapat memengaruhi keseimbangan ekosistem perairan. Salah satu organisme yang dapat digunakan sebagai bioindikator kualitas air adalah makrozoobentos karena memiliki mobilitas rendah, siklus hidup relatif panjang, dan sensitif terhadap perubahan kondisi lingkungan. Sungai Cikalang Manonjaya merupakan salah satu sungai yang dimanfaatkan masyarakat untuk berbagai kebutuhan, namun hingga saat ini masih terbatas data mengenai kondisi kualitas air berdasarkan komunitas makrozoobentos. Penelitian ini bertujuan untuk menganalisis kelimpahan makrozoobentos sebagai bioindikator kualitas air di Sungai Cikalang Manonjaya serta mengkaji potensinya sebagai sumber belajar biologi. Penelitian menggunakan metode deskriptif kuantitatif dengan pengambilan sampel makrozoobentos menggunakan **Surber net** pada tiga stasiun pengamatan yang mewakili bagian hulu, tengah, dan hilir sungai. Parameter lingkungan yang diukur meliputi suhu, pH, *dissolved oxygen* (DO), dan intensitas cahaya. Data dianalisis menggunakan indeks keanekaragaman Shannon-Wiener, indeks keseragaman, indeks dominansi, serta *Canonical Correspondence Analysis* (CCA). Hasil penelitian menunjukkan bahwa ditemukan 21 spesies makrozoobentos yang termasuk ke dalam Filum Mollusca dengan dominasi kelas Gastropoda. Distribusi makrozoobentos berbeda pada setiap stasiun pengamatan sesuai dengan karakteristik kondisi lingkungan. Hasil analisis CCA menunjukkan bahwa DO dan intensitas cahaya merupakan faktor lingkungan yang paling berpengaruh terhadap distribusi makrozoobentos, sedangkan pH dan suhu memberikan pengaruh terhadap kelompok tertentu. Genus *Lymnaea*, *Indoplanorbis*, *Gyraulus*, dan *Sulcospira* berasosiasi dengan kondisi perairan yang memiliki DO dan intensitas cahaya tinggi, sementara genus *Melanoides* lebih dipengaruhi oleh kondisi pH. Secara umum, hasil penelitian menunjukkan bahwa kualitas air Sungai Cikalang masih tergolong relatif baik dan mampu mendukung kehidupan makrozoobentos. Temuan penelitian ini juga menunjukkan bahwa hasil analisis makrozoobentos berpotensi dimanfaatkan sebagai sumber belajar biologi dalam bentuk e-booklet pada materi pencemaran lingkungan dan ekologi perairan sehingga dapat mendukung pembelajaran yang kontekstual dan berbasis lingkungan.

Kata kunci: bioindikator, kualitas air, makrozoobentos, Sungai Cikalang, sumber belajar biologi.

ABSTRACT

NISSA AZZAHRA PRATIWI.2026. *Analysis of Macrozoobenthos Abundance as Bioindicators of Water Quality in the Cikalang River, Manonjaya.*

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*The decline in river water quality due to anthropogenic activities, such as domestic waste disposal, agricultural practices, and the use of chemical substances, can disrupt the balance of aquatic ecosystems. One of the organisms that can be used as a bioindicator of water quality is macrozoobenthos because it has low mobility, a relatively longlife cycle, and high sensitivity to environmental changes. The Cikalang River in Manonjaya is one of the rivers utilized by local communities for various purposes; however, data regarding its water quality based on the macrozoobenthos community remain limited. This study aimed to analyze the abundance of macrozoobenthos as a bioindicator of water quality in the Cikalang River, Manonjaya, and to examine its potential as a biology learning resource. This research employed a quantitative descriptive method. Macrozoobenthos samples were collected using a **Surber net** at three observation stations representing the upstream, middle, and downstream sections of the river. Environmental parameters measured included temperature, pH, dissolved oxygen (DO), and light intensity. The data were analyzed using the Shannon–Wiener diversity index, evenness index, dominance index, and Canonical Correspondence Analysis (CCA). The results revealed the presence of 21 macrozoobenthos **species** belonging to the phylum Mollusca, with the class Gastropoda being the dominant group. The distribution of macrozoobenthos varied among the observation stations according to the environmental characteristics of each site. The CCA results indicated that dissolved oxygen (DO) and light intensity were the environmental factors with the greatest influence on macrozoobenthos distribution, whereas pH and temperature affected specific taxa. The genera *Lymnaea*, *Indoplanorbis*, *Gyraulus*, and *Sulcospira* were associated with waters characterized by high dissolved oxygen and light intensity, whereas the genus *Melanoides* was more strongly influenced by water pH. Overall, the findings indicate that the water quality of the Cikalang River remains relatively good and is capable of supporting macrozoobenthos communities. Furthermore, the findings demonstrate that the results of the macrozoobenthos analysis have the potential to be utilized as a biology learning resource in the form of an **e-booklet** for environmental pollution and aquatic ecology topics, thereby supporting contextual and environment-based learning.*

Keywords: bioindicator, water quality, macrozoobenthos, Cikalang River, biology learning resource.