ABSTRAK

Pemantauan struktur komunitas makroinvertebrata menjadi salah satu cara untuk menilai kondisi ekosistem perairan sungai secara biologis. Kajian ini dilakukan di bagian hulu dan tengah Sungai Logawa, Kabupaten Banyumas, guna menggambarkan struktur komunitas makroinvertebrata serta hubungannya dengan kualitas air. Bagian tengah Sungai Logawa diketahui telah mengalami tekanan aktivitas manusia seperti penambangan pasir, pemukiman, dan pembuangan limbah domestik, sehingga berpotensi memengaruhi karakteristik habitat dan komunitas bentik. Pengambilan sampel dilakukan pada bulan Juli–September 2024 di delapan stasiun menggunakan metode purposive sampling. Parameter kualitas air yang diamati meliputi suhu, pH, kecepatan arus, dan oksigen terlarut. Nilai kelimpahan, indeks keanekaragaman, indeks keseragaman, dan indeks dominansi di bagian tengah lebih tinggi daripada bagian hulu sungai. Nilai indeks kesamaan menunjukkan komunitas makroinvertebrata bagian hulu dan tengah sangat mirip. Pola distribusi lebih banyak spesies yang beraturan daripada mengelompok. Keberadaan spesies pada stasiun hulu ditandai dengan karakteristik wilayah yang memiliki oksigen terlarut dan arus yang kuat sedangkan spesies di hilir ditemukan pada bagian perairan yang memiliki pH dan suhu yang tinggi. Hasil analisis NMDS memperlihatkan terbentuknya dua wilayah yaitu hulu dan tengah dengan karakteristik yang berbeda. Analisis CCA menunjukkan bahwa komposisi makroinvertebrata dipengaruhi oleh variasi kualitas air.

Kata kunci: *Cannonical Correspondence Analysis, Distribusi, Non-Metric Multidimensional Scaling, Komposisi.*

ABSTRACT

Monitoring the structure of macroinvertebrate communities is one way to biologically assess the condition of river aquatic ecosystems. This study was conducted in the upper and middle reaches of the Logawa River, Banyumas Regency, to describe the structure of macroinvertebrate communities and their relationship to water quality. The middle reaches of the Logawa River are known to have experienced pressure from human activities such as sand mining, settlements, and domestic waste disposal, potentially affecting the characteristics of the habitat and benthic communities. Sampling was conducted from July to September 2024 at eight stations using a purposive sampling method. Water quality parameters observed included temperature, pH, current velocity, and dissolved oxygen. Abundance, diversity index, evenness index, and dominance index values in the middle reaches were higher than in the upper reaches. The similarity index value indicated that the macroinvertebrate communities in the upper and middle reaches were very similar. The distribution pattern of more species was regular rather than clumped. The presence of species at the upstream stations was characterized by areas with high dissolved oxygen and strong currents, while species in the downstream stations were found in waters with high pH and temperature. The results of the NMDS analysis showed the formation of two regions, namely the upstream and middlestream, with different characteristics. CCA analysis showed that macroinvertebrate composition was influenced by variations in water quality.

Keywords: *Cannonical Correspondence Analysis , Composition, Distribution, , Non-Metric Multidimensional Scaling*