

Abstract

Jafar Abdullah. 24020122130073. **Spatio-Temporal Variation of Phytoplankton Communities and Water Quality in Lake Hanjalutung, Palangka Raya City, Central Kalimantan.** Laboratory of Ecology and Biosystematics, Faculty of Science and Mathematics, Universitas Diponegoro, under the supervision of Tri Retnaningsih Soeprbowati and Yustiawati.

Lake Hanjalutung is an oxbow lake located in Palangka Raya City, Central Kalimantan, which plays an important ecological and social role. Its unique characteristics and environmental changes, particularly variations in rainfall, have the potential to affect ecosystem stability and water quality. Phytoplankton are used as biological indicators because they respond quickly and sensitively to changes in aquatic conditions. This study aimed to analyze the spatio-temporal structure of the phytoplankton community and its relationship with water quality based on physicochemical parameters and the saprobic index using Canonical Correspondence Analysis (CCA). Sampling locations were determined using a purposive random sampling method at five observation stations. Phytoplankton samples were collected according to the Indonesian National Standard (SNI, 2008) for plankton testing procedures, conducted in August 2024 (dry season) and May 2025 (rainy season). Water quality measurements were carried out in situ using a water checker. The results showed that 12 phytoplankton species were found during the dry season, while 11 species were recorded during the rainy season. Phytoplankton abundance indicated a moderate fertility level (mesotrophic), ranging from 2,835–12,950 ind/L in August 2024 and 1,645–4,725 ind/L in May 2025. The diversity index (H') ranged from 0.87–1.82 (low to moderate diversity), indicating ecosystem conditions from unstable to relatively balanced. The evenness index (e) ranged from 0.382–0.803, indicating species distribution from uneven to highly even. The dominance index (D) ranged from 0.221–0.485, indicating that no single species dominated the waters. Water quality in both seasons tended to be acidic with pH values ranging from 4.25–6.61, along with low dissolved oxygen levels, indicated by Dissolved Oxygen values ranging from 1.6–5.07 mg/L. The saprobic index values in Lake Hanjalutung ranged from –0.3 to 0.66, indicating a moderate level of pollution (mesosaprobic). The results of the Canonical Correspondence Analysis (CCA) showed that physicochemical factors of the water, such as pH, dissolved oxygen (DO), and temperature, are related to the composition of phytoplankton species in Lake Hanjalutung.

Keywords: Community Structure, Oxbow Lake, Saprobic Index, Canonical Correspondence Analysis.