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Research Article

Macroinvertebrate Diversity, Composition, and Abundance in Freshwater Wetlands of Southern Ethiopia

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ABSTRACT

The impact of human activity on aquatic environments significantly affects the diversity and abundance of macroinvertebrates. Therefore, this investigation aimed to assess Macroinvertebrate Diversity, Composition, and Abundance in Freshwater Wetlands of Southern Ethiopia. Employing systematic sampling techniques, data were collected from 120 quadrants distributed over eight transects during the rainy season of two consecutive years. Conventional nets were used for collection, and water samples were analyzed to evaluate physicochemical factors influencing macroinvertebrate distribution. Microbial abundance, Composition and diversity in relation to environmental parameters were analyzed using PAST 4.03 software, employing ANOVA and step-wise logistic regression. A total of 3420 individuals belonging to 37 families and 13 orders were identified. Notable macroinvertebrate families included Notonectidae, Coenagrionidae, Thiaridae, Hydrophilidae, Planorbidae, Theraphosidae, Sicariidae, and Gerridae (Hemiptera and Coleoptera orders), while Caenidae, Rhyacophilidae, and Elmidae were less abundant. Variations along transects indicated the influence of anthropogenic activities, which elevated nutrient concentrations in aquatic ecosystems, thus impacting macrofaunal richness, abundance, and diversity. In conclusion, the findings highlight the significant impact of human activity on the diversity, composition, and abundance of macroinvertebrates in wetlands of the study area. The data revealed a rich variety of macroinvertebrates, though certain families were notably less abundant. Anthropogenic factors, particularly elevated nutrient levels, influenced macroinvertebrate distribution and biodiversity, emphasizing the vulnerability of aquatic ecosystems to human-induced changes. This study provides valuable insights into the effects of human activity on freshwater wetlands and stresses the need for effective management and conservation strategies to preserve aquatic biodiversity.

Keywords: Macroinvertebrates, Environmental Parameters Chokare wetland, Richness, Diversity indices,Abundance, degradation.