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Study on Odonates as Bioindicator Species of Water Quality in Selected Urban Wetlands**Mohotti, C.R.W.C.^{1*}, Nilakarawasam, N.²**¹*Central Environmental Authority, Battaramulla, Sri Lanka*²*The Open University of Sri Lanka, Nawala, Sri Lanka***chamarimohotti@gmail.com***Abstract**

Wetland ecosystems are vulnerable to disturbances that alter their biodiversity. Monitoring is essential to detect pollution levels and trends. Bioindicators provide a simple, reliable, and cost-effective method for assessing water quality. While odonates have been proposed as bioindicators for assessing wetland quality, their assemblages with reference to habitat water quality and the feasibility of using them as bioindicators have not been widely studied in Sri Lanka. The objective of this study was to assess the feasibility of using odonates as bioindicators of water quality. The study was conducted over a six-month period from June 2018 to December 2018 on selected urban wetlands of the Diyawanna canal system. The water quality of the aquatic systems, especially pH, Dissolved Oxygen (DO), Temperature, Conductivity, Salinity, Turbidity, BOD, COD, Nutrient levels (Nitrate/ Phosphate) is a critical determinant of the odonates ecology alongside the structural habitat heterogeneity like flow rate, vegetation cover and the substrate. Sampling locations were selected based on similar surrounding land use, microhabitat conditions, vegetation cover, and substrate characteristics to minimize variation in environmental factors affecting odonate distribution, other than water quality. Species richness, abundance of odonates and the physico-chemical parameters of water (temperature, pH, DO, BOD₅, Total Dissolved Solids (TDS), Electrical Conductivity (EC) and Salinity) were recorded in each site. The correlation between the species richness, total abundance, Shannon-Weiner diversity index (SWDI) and the relative abundance of each species with the water quality parameters were analyzed using Pearson Correlation Method by R Analysis Software. According to the findings, species richness and the SWDI of the odonates had positive correlations with pH, Temperature and DO and negative correlations with BOD₅, TDS, EC and salinity. Higher relative abundance of dragonflies like *Brachydiplax sobrina*, *Crocothemis servilia*, *Acisoma panorpoides* and *Ictinogomphus rapax* and damselflies *Agriocnemis pygmaea* can be considered as bioindicators of higher DO and lower BOD levels. Higher abundance of generalist species who are resistant to polluted water such as *Brachythemis contaminata* and *Ischnura elegans* dragonflies can be considered as bioindicators of polluted water especially higher BOD values. The identified generalist species can be used as indicators of good habitat conditions rather than as exclusive indicators of water quality. These results should be interpreted together with overall species richness and diversity to improve accuracy. More reliable and descriptive conclusions can be achieved through long-term monitoring across a wider range of sampling locations, incorporating additional water-quality variables such as turbidity and nutrient levels.

Keywords: *Wetlands, Monitoring, Water quality, Bioindicators, Odonates*