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ORIGINAL ARTICLE

## Macrobenthos-based RBP II (Rapid Bioassessment Protocol II) as a tool to assess the sediment and water quality in a treated textile effluent receiving stream ecosystem associated with a wetland marsh: A case study from Sri Lanka

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## Abstract

Macrobenthos are important bioindicators of organic and nutrient pollution. The present study used the macrobenthos-based rapid bioassessment protocol (RBP II) to study the effects of treated textile effluent inputs into a natural stream ecosystem connected to a wetland marsh. Three reference sites and three sites receiving point source inputs from a textile effluent treatment plant were selected. The physical and chemical parameters, and the abundance and diversity of macrobenthos at each site, were assessed during the rainy and dry seasons of 2020. Although the water quality parameters at the sites representing the point source inputs did not exceed the standard textile effluent discharge limits, a significant influence on the macrobenthic community composition was observed at the effluent discharge receiving sites. The dominant macrobenthos in the ecosystem (*Baetis* sp., *Leptophlebia* sp; *Tubifex* sp.) exhibited significant correlations with lead, copper, chromium and cadmium concentrations of the water and sediments. The Shannon–Weiner Diversity Index, Family Biotic Index, EPT Index and EPT/C ratio used in the rapid bioassessment protocol indicated significantly strong correlations with the water and sediment quality parameters, demonstrating their suitability to be used as a tool for biological measurements in aquatic ecosystems receiving textile effluents.

## Open Research



### DATA AVAILABILITY STATEMENT

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

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