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20516 | Macrofauna biodiversity assessment in a real scale constructed wetland for wastewater treatment

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Abstract

In rural and mountain areas there is a lack of adequate infrastructures to cope with sewage. Constructed wetlands (CW) may provide a supporting solution to this problem. CWs are biological treatment systems that mimic the phytoremediation processes found in natural wetlands, with an optimized configuration, for the improvement of water quality. They comprise substrate, selected vegetation and their associated fauna and microbial communities.

The aim of the present study is to assess the long-term performance of a CW implemented in a tourism unit in a rural area. The gradient effect of the nutrient load along the CW is also being investigated. The biodiversity associated to the system is also being assessed, specifically the fauna linked to the CW substrate bed.

The methodological approach has followed the periodical wastewater sampling at the CW inlet and outlet, and in selected sites along the bed, in order to understand the dynamics of the treatment system. Wastewater characterization comprise the analysis of nutrients, organic contents, pH, conductivity, as well as microbial parameters, namely total coliforms, and *Escherichia coli*. The fauna associated to the substrate has been analysed through the periodical setup pitfall traps and through the collection of core substrate along the CW bed.

The results will allow us to infer about the long-term wastewater treatment efficiency of the system and to relate it to the diversity of associated fauna of the CW and the established ecosystem. Preliminary results indicate a robust ecosystem with several trophic levels and a high biodiversity.

Keywords: constructed wetland, phytoremediation, nature-based solutions, wastewater treatment, biodiversity.

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