

O25.7**Sediment contamination and pollution: Deterrence to mangrove restoration**

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Abstract

The level and ecological impacts of heavy metal contamination and microplastic pollution in the sedimentary environments of mangrove systems in Guyana are poorly understood. This work investigates the distribution of and reports on the mass fractions of physicochemical properties of Mn, Fe, Co, Se, Mo, Ag, Sn, Sn, W, Bi, U and Le; and the lesser fractions of V, Ni, Cd, Hg, Pb, Bi and Th in sediment cores of the East Berbice-Corentyne mangrove restoration sites in Guyana. Their concentrations and enrichment factors were determined. The results show that these metals were mainly concentrated in the top 20 cm of mangrove sediment cores, then declined afterwards. This work further reports on the ecological risks posed by the contamination of these sediments to the survival of mangrove restoration project. The results of the different physicochemical properties indicate that the mangrove sediments are majorly contaminated by Mn, Fe, Cd, and Le concentrations and are of high ecological risks to the survival of replanted mangroves. Microplastic pollution, a common pollutant in marine and coastal ecosystems, is also observed as the pollutants challenging the growth of the replanted mangroves and a direct deterrent to restoration projects. Plastic particles in different sizes, shapes, colours and genera were identified from the sediment cores (0±30 cm depth) sampled from the study sites. The findings from this study have raised the concerns of contamination and pollution, which are principally from anthropogenic activities, as threats to the health of mangrove ecosystems and survival of mangrove replanting and restoration project. It is hoped that it provides insightful information for future management of and planning for mangrove sedimentary environment.

Keywords

Heavy metals, Mangrove sediments, Microplastics pollution, Ecological risk