

Sediment contaminant chemistry and toxicity of freshwater urban wetlands

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ABSTRACT

Wetlands provide many critical functions in urban ecosystems, including habitat for wetland dependent fauna and enhancement of water quality. Interest in restoring or creating wetlands to enhance these functions is increasing due to the scale and extent of wetland loss and water quality problems associated with urbanization. One of the most pressing questions associated with urban wetland restoration is to what extent urban wetlands tend to concentrate contaminants, and if so, is there an associated risk to wildlife. The goal of this study was to better understand these potential risks, and the associated trade-offs with using wetlands to passively or actively treat urban runoff. Sediment toxicity, chemistry, and benthic community metrics were measured in 21 southern California wetlands that receive urban runoff as their primary water source. Benthic organisms in 18 of the 21 urban wetlands examined were considered to be at risk due to sediment contaminants. Most of the sites were either toxic to the amphipod *Hyalella azteca*, exceeded a sediment quality guideline, or both. Sediment chemistry and toxicity identification evaluation studies (TIEs) suggest that pyrethroid pesticides may have been responsible for much of the toxicity documented in this study. The mean Probable Effects Concentration quotient (mPECq; an index of degree of sediment contamination) was found to negatively correlate with benthic macroinvertebrate diversity in these wetlands suggesting that toxicity was affecting organisms at the base of the food chain in these wetlands. Sediment toxicity and chemistry concentrations in treatment wetlands were not significantly different than that observed in habitat wetlands.

Full Text

ftp://ftp.sccwrp.org/pub/download/DOCUMENTS/AnnualReports/2008AnnualReport/AR08_271_287.pdf