Determining Vegetation Effects on Sulfide Production

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Constructed wetlands have been used to remediate contaminated water. In addition to the aesthetic qualities these wetlands provide, they have been used to treat water contaminated with metals, by forming metal-sulfide complexes with toxic cationic metals, such as Cu2+, Zn2+, Pb2+, and Hg2+. In the anaerobic regions of wetlands sulfide (S-2) is produced by sulfate reducing bacteria (SRB). Metabolism of organic material produced by vegetation serves as an energy source for SRB. The objective of my study was to compare the amount of S-2 produced and SO4-2 used, in model constructed wetlands with both vegetated and unvegetated treatments, with data generated previously. I also measured the effect of replacing the vegetation with an intrusive plant (Juncus effusus). Switching model wetlands to Juncus effusus increased S-2 production in all cases except when the previous plant was Carex stricta. I conclude that Juncus effuses and Carex stricta are more effective at remediation of metal contaminated water than Pontederia cordata, Canna spp. or unvegetated control.

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