ABSTRACT

THESIS: **The influence of macrophytes on benthic nutrient dynamics in an urban wetland**

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Wetlands in urban-dominated watersheds can serve an important role in nutrient cycling, including removal of excess nutrients associated with anthropogenic inputs. These ecosystem processes can be mediated by macrophyte-microbial interactions. I measured benthic microbial nitrogen (N) and phosphorus (P) cycling, as well as benthic physicochemical characteristics associated with wetland macrophytes (individual species and functional groups) and unvegetated sediments (control) in a central Indiana urban wetland. Benthic physicochemical characteristics were measured *in situ*. Benthic microbial activity (as nutrient uptake and respiration) was measured *in vitro*. The benthic material of deep-rooted macrophyte species had higher organic matter content than the benthic material associated with shallow-rooted macrophyte species. Across macrophytes, benthic microbial activity was positively correlated with organic matter content. Benthic nutrient uptake rates were also correlated with benthic respiration rates. These data provide insight into the influence of macrophyte diversity on benthic microbial nutrient cycling which may be important in wetland restoration and nutrient mitigation in urban landscapes.