A Socio-Ecological Framework for Assessing Stormwater Infrastructure Equity: A Case Study of New York City

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The array of socio-ecological benefits associated with green infrastructure has elevated it as a panacea for mitigating stormwater impacts, however very few studies have examined the aggregate socio-ecological impacts of stormwater green infrastructure (SGI) that may shed light on its viability as a sustainable stormwater management approach (Pennino et al., 2016). This project uses New York City as a case study to examine cumulative socio-ecological impacts of SGI - an urban area experiencing the multiple pressures of rapid growth, climate change, and aging stormwater infrastructure. We examine the efficacy of SGI to mitigate runoff by evaluating the frequency and volume of combined sewer overflows (CSOs), we study spatial relationships that can shed light on access equity via SGI distribution across neighborhoods, and we explore the role of governance in a holistic approach to SGI accountability, including site evaluation. This case will help answer the overarching question: how are decisions on SGI location influencing socio-ecological outcomes, and how are socioecological outcomes influencing decisions on SGI location? (Wolch et al., 2014; Heckert & Rosan, 2016). We will accomplish this through: 1) spatial analysis of SGI across neighborhoods of varying socioeconomic status, watersheds and sewersheds of varying water quality and combined sewer overflows; 2) content analysis of SGI documents to describe the mechanisms of governance that explain the results of our spatial analysis; and 3) establishing a framework for assessing SGI development and governance. In an increasingly urbanized and climate uncertain world, exploring equity through the lens of governance and environmental realities contributes a unique analysis to enhance discussions on the role of green infrastructure in stormwater management.

References:


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