

Engineering blue-green infrastructure *for* and *with* biodiversity in cities

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Abstract:

Engineered blue-green infrastructure (BGI) can address numerous urban problems, such as flood risk, increased temperatures, and water pollution. They can also support biodiversity conservation, providing suitable conditions for plants and animals in cities. Yet, BGI are typically designed with engineering objectives in mind, which can reduce their potential for conservation efforts. We contend, however, that it is necessary to address both engineering and ecological objectives before BGI implementation. Through an interdisciplinary review of engineering and ecological literature, we demonstrate that this joint focus will not only strengthen urban biodiversity, but also fulfill engineering expectations of BGI. Here we present how different facets of biodiversity can contribute to increase BGI performance and resilience while decreasing management costs. We then highlight the local and landscape environmental characteristics that shape biodiversity and how adjusting BGI design parameters can improve habitat conditions for species in different BGI elements. Finally, we discuss eventual trade-offs when both engineering and ecological objectives are jointly addressed, and how collaboration between engineers and ecologists can help to reach common solutions.