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Urban Reforestation as Reclamation: Exploring opportunities for reclamation in an urban context

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Given that the human population is becoming more concentrated in urban areas, both in the US and globally, mitigating the negative ecological effects of urbanization is critical. The Lexington-Fayette Urban County Government (LFUCG) has conducted an annual reforestation project within the city since 1999, establishing over twenty discrete planted forest sites, but their ecological structure and function have not been assessed. In 2020, we collected a suite of ecosystem data from twenty Reforest the Bluegrass sites to evaluate whether planted trees developed forest structure and function over time. Trees and shrubs were surveyed in fixed radius plots. Understory non-woody plants were tallied by percent groundcover within the overstory plots. Finally, reforested riparian sites were evaluated for effects of reforestation on stream-water quality. Overstory trees were primarily native species that had been planted as part of the Reforest the Bluegrass program, but the shrub layer was dominated by invasive species such as Amur honeysuckle and Callery pear, especially in older sites. Furthermore, the understory plant community shifted from dominance by grasses in recently planted sites to dominance by forbs in older sites. Increasing invasive species importance was associated with reduced understory species richness. These observations underscore the key role of invasive species in structuring plant communities in urban forests, particularly in planted urban forests. Finally, water quality improved in some planted sites as streamwater passed through the reforested riparian areas. While macroinvertebrate community data were inconclusive, improved water quality in some sites suggests that riparian reforestation could help alleviate some of the water quality impacts of urbanization.

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