

FORESTS IN CITIES: THE IMPORTANCE OF FORESTED NATURAL AREAS ACROSS THE U.S.

What are forested natural areas?

Across the United States, there are more than one million acres of forests embedded in urban landscapes. “Forested natural areas” are distinct from other parts of the urban forest, like street and park trees in terms of size, biodiversity, species composition, and how they’re managed. These forests are more than a collection of trees. They support plant and animal communities from the soil underfoot to the leaves in the top of the forest canopy.

68%

OF ALL URBAN PARKLAND IN THE U.S. IS COMPRISED OF NATURAL AREAS

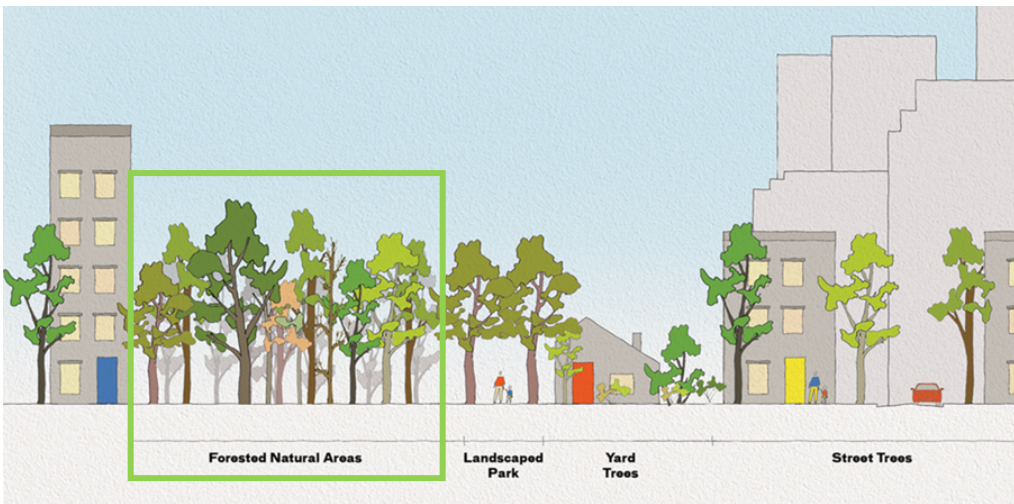
BENEFITS OF FORESTED NATURAL AREAS

> 68% of urban parkland—1.7 million acres, larger than the state of Delaware—in the U.S. is comprised of natural areas (1). These areas provide multitude social and ecological benefits to urban residents.

> Safe access to urban nature is critical for city dwellers. This is especially true for low-income individuals, who are less able to travel to experience nature outside of cities. In New York City, 50% of park users reported experiencing nature ONLY in urban parkland. (2)

> Urban forests are one of the most effective ways to reduce the urban heat island effect (3) and moderate rising temperatures. Forests can also save energy by reducing air conditioning needs by 30%. (4)

> Forests mitigate the impacts of climate change by absorbing carbon dioxide, storing carbon in their wood and leaves and stabilizing carbon stored in the soil. In New York City, forested natural areas account for 69% of the carbon stored and 83% of the carbon sequestered across the city. (5)



Forested natural areas are the “woods” in cities, distinct from street trees and trees in landscaped parks

Forests are a critical resource for cities.

All trees provide benefits. However, forested natural areas can provision some benefits at disproportionately higher rates per area compared to designed parkland. For example, forests can have a greater cooling effect on cities than designed greenspaces, and the bigger the forest, the greater the effect (6). In addition, forested natural areas provide critical habitat for native plants and animals, safeguarding and connecting local biodiversity in a fragmented landscape (7). Ecosystem services and protection of

biodiversity are two commonly reported metrics in city sustainability goals (8). These spaces also provide safe access to urban nature, which is especially important for low-income individuals, who are less able to travel to experience nature outside of cities. They function as critical pieces of city infrastructure and contribute meaningful public health and environmental benefits to city residents. Forests mitigate the impacts of climate change by absorbing carbon dioxide, reducing high urban temperatures, and improving air quality. However, these areas are often not recognized as critical urban infrastructure that need formal protection and long-term investment to thrive.

Challenges in the management of forested natural areas

Urban forested natural areas face many common challenges. These places have limited formal protection from development and face multiple and magnified stressors due to the urban context. Challenges include climate change, human impacts dumping, fires, invasive species, and deer browse. These factors decrease both the quality of visitor experience and the health of the forests themselves. More concerning is that many organizations say there is a lack of awareness that natural areas even exist in their city. Another threat is development and competing land use. Over a period of five years (2104-2019), natural area parkland decreased by 4% (or 15,264 hectares) (10). Forested natural areas need management and continued investment. Combined with increased and exacerbated effects of urbanization and climate change, forests in cities are at risk without increased attention and funding. Across 10 cities in the U.S., 80% reported loss of forested natural areas in the last 10 years.



Forest conservation work in the Thain Family Forest, Photo courtesy of The New York Botanical Garden

THREATS AND CHALLENGES TO FORESTED NATURAL AREAS:

A survey of US organizations managing forested natural areas (9) asked respondents to list the management challenges and ecological threats to forests in their cities.

Top challenges to urban forest management:

- > Limited funding or staff (94%)
- > Limited data (77%)
- > Low awareness of forested natural areas (70%)
- > Uncertainty in management approach (56%)

Top ecological threats to conserving and managing healthy forested natural areas :

- > Invasive species (94%)
- > Altered ecological processes due to the urban context (67%)
- > Negative human use (e.g., dumping, camping, fires) (65%)
- > Climate change stressors (e.g. changing temperatures, severe storms) (68%)
- > Wildlife impacts (e.g. deer)(63%)

Forests in cities require more funding and ongoing care

Like all types of parkland, forested natural areas require care to ensure the continued provision of ecological, economic, and social benefits. Government actors, non-profit organizations and volunteers are working to care for forests in cities across the U.S. The five most applied management activities conducted by over 80% of organizations are: Invasive understory species removal, trash or debris removal, trail formalization (86%), canopy management (85%), planting tree seedlings. Even with these efforts, forested natural areas are consistently underfunded. More funding, awareness, and resources are needed. The [Forest in Cities Network](#) is working to nurture and grow a national network of experts, advance urban forest science and practice, and advocate for increased resources and support for these spaces.

Resource List

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5. Pregitzer, C.C., Hana, C., Charlop-Powers, S, M.A. Bradford. 2020. Carbon Accounting for New York City Natural Area Forests. Natural Areas Conservancy Report.
6. Jaganmohan, M., Knapp, S., Buchmann, C. M., & Schwarz, N. (2016). The bigger, the better? The influence of urban green space design on cooling effects for residential areas. *Journal of environmental quality*, 45(1), 134-145.
7. Ives, C. D., & Kelly, A. H. (2016). The coexistence of amenity and biodiversity in urban landscapes. *Landscape Research*, 41(5), 495-509.
8. Nilon, C. H., Aronson, M. F., Cilliers, S. S., Dobbs, C., Frazee, L. J., Goddard, M. A., ... & Yocom, K. P. (2017). Planning for the future of urban biodiversity: a global review of city-scale initiatives. *BioScience*, 67(4), 332-342.
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10. Pregitzer, C. C., Charlop-Powers, S., & Bradford, M. A. (2021). Natural Area Forests in US Cities: Opportunities and Challenges. *Journal of Forestry*, 119(2), 141-151.

Forests in cities require investment and protection:

A sharper focus on managing and supporting forested natural areas is essential to ensuring healthy urban communities for the future. Success will require investment and interest from practitioners, federal agencies, researchers, and the philanthropic community.



Green Seattle Day 2019. Photo: Christine Stephens