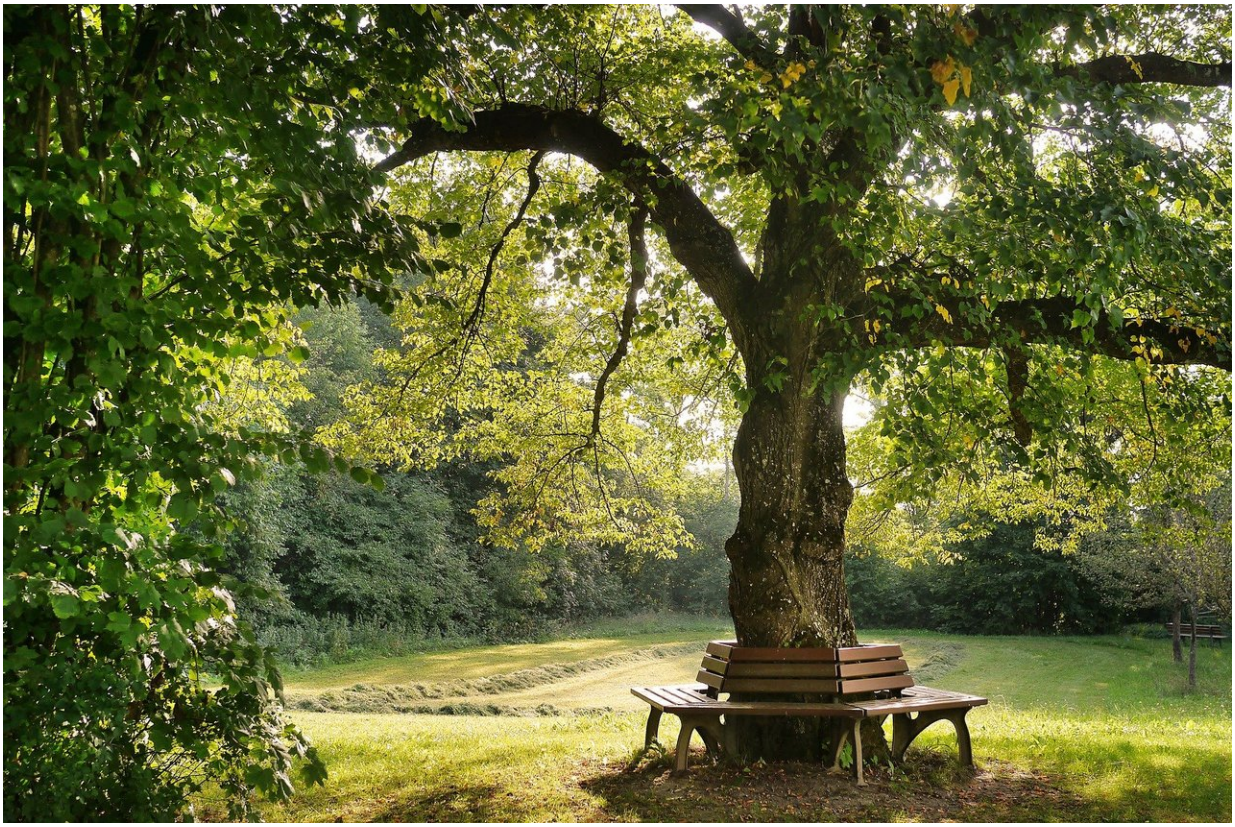
Urban forest-mapping with help from public and private data

January 10 2023, by Patrick Lejtenyi



Credit: CC0 Public Domain

A Concordia project cataloging the diversity of the urban forest in a Montreal residential neighborhood is now complete, and the researchers behind it say the results highlight the importance of a diverse city tree

population.

The project found that private residences and institutions such as schools and places of worship usually had different tree populations from those planted by municipal authorities in city parks and roadways or sidewalks. While the city-planted trees tended to be bigger and more resilient to stressors like drought or salt, the often-smaller private trees served other functions such as providing fruit, flowers or aesthetic beauty.

"Our findings likely reflect the different motivations, goals and aims among decision-makers of where trees were planted," says MSc student Kayleigh Hutt-Taylor, who co-led the project with assistant professor of biology Carly Ziter. A municipal land manager will have a different set of priorities from a resident with a small backyard, for instance.

"This leads to measurable differences in which trees are planted where, because we all have unique motivations for why we are planting a tree in a particular spot."

The full findings are published in the journal *Urban Forestry & Urban Greening*.

The more species, the better

The researchers solicited residents and institutions such as schools and churches around Concordia's Loyola Campus in the Notre-Dame-de-Grâce neighborhood. They asked them to measure the circumference of the trees on their property, photograph their bark and leaves and submit their data to the Montreal Tree Project website for analysis.

Over the summer of 2020, they received 98 submissions from landowners in the neighborhood and used the City of Montreal's open data public tree inventory to analyze trees in public spaces. In total,

almost 4,300 trees on both private and public lands were counted.

Norway and silver maples accounted for more than 30 percent of the tree population, making it the most common species in the area surveyed. Five species accounted for nearly half of the total tree population: the maples, the eastern white cedar, the littleleaf linden and the green ash.

Private residences were found to have the highest richness in species diversity while institutional lands—mostly schools and churches—were found to have the lowest. This high diversity of trees on private land represents the critical contribution landowners make toward the urban forest. Nevertheless, the researchers say, even areas with lower species diversity play an important role in providing services such as shade, temperature regulation and fighting air pollution.

"From an ecological standpoint, having a diverse tree population leads to a more multifunctional landscape," says Hutt-Taylor, now the project coordinator of nature-based solutions at Concordia's Loyola Campus. "It can also provide a more resilient forest to events like climate change, changes in the environmental fabric of the city as well as to pests and disease."

She points to the damage the invasive emerald ash borer inflicted on the that particular species as an example of the importance of a diverse population: "If the emerald ash dominated the landscape, we could have lost 50 percent of our trees."

Recruiting citizen scientists

"When it comes to understanding and strengthening our urban forests, trees on private land are a critical, but sometimes overlooked, piece of the puzzle. Citizen science offers a way to collect this data while

engaging members of the community," Ziter adds.

For residents who are inspired to plant trees in their backyards, Hutt-Taylor suggests they opt for trees that are both native to their region and are of a different species to the trees in their neighbors' yards.

"It's a nice way to create a more diverse population of trees within the landscape and to have that promoted across our neighborhoods."

More information: Kayleigh Hutt-Taylor et al, Private trees contribute uniquely to urban forest diversity, structure and service-based traits, *Urban Forestry & Urban Greening* (2022). DOI: 10.1016/j.ufug.2022.127760

Provided by Concordia University