

GROWING a Greener City

How Botanic Gardens Can Support the Urban Forest

BY OLIVIA PRICE AND
EMMA THORDSEN

Across the country, botanic gardens play a vital role in inspiring the public to care for urban forests. From conducting research to offering hands-on education on tree selection and care, these institutions are helping to shape greener, cooler and more resilient cities.

University of Washington Botanic Gardens Curator of Living Collections Ray Larson says, “Public gardens have a big and increasing role to play in providing training, information and inspiration for the larger community. Who better to promote the benefits of trees and plants?”

The Washington Park Arboretum and Center for Urban Horticulture are living laboratories for tree science, care and conservation. But our work doesn’t stop there: We are also committed to supporting trees throughout Seattle’s entire urban forest.

INCREASING CANOPY COVER

What exactly is the urban forest? Well, it includes every single tree in an urban area—from trees along sidewalks to those in yards, parks, school grounds, places of worship, commercial

areas and public spaces. Together, these plants form an interconnected network that cleans the air, reduces heat, improves health outcomes, remediates pollution, and supports biodiversity.

Seattle is fortunate to have a diverse population of urban street trees. In her recent book, “Street Tress of Seattle,” author Taha Ebrahimi writes, “Seattle has over 730 different kinds of street trees across 150 genera—one of the most diverse collections in the country, with a community of street trees more than double the diversity of the average community of street trees on the East Coast and triple the diversity of those in the Midwest.”

While biodiversity is an essential marker of the health of an urban forest, so are protection of current trees and planting of new ones. Canopy cover is the percentage of the city that is covered by trees, as seen by aerial view. Seattle’s goal, established in 2007, is to reach 30 percent canopy cover by 2037, as well as to improve tree health and equitable distribution of trees to support community health and resilience to climate





UW Botanic Gardens staff collecting data on the health of street trees planted through the Trees for Neighborhoods program.

change. However, the City of Seattle’s most recent canopy cover study, using data from 2021, found that the city lost 255 acres of tree canopy between 2016 and 2021 (declining from 28.6 percent to 28.1 percent coverage).

Our city has work to do, and—luckily—credible community groups, coalitions, and established planting programs are here to help.

SEATTLE’S TREES FOR NEIGHBORHOODS

A key leader in Seattle’s urban forestry effort is the Trees for Neighborhoods Planting Program (seattle.gov/trees/trees-for-neighborhoods), led by Seattle Public Utilities (SPU). Residents who participate in the program can receive free powerline-approved trees, funded by Seattle City Light, for planting locations near high voltage power lines. Participants can also receive free street trees and trees for their yards. Every tree comes with a watering bag and bag of mulch!

Since 2009, the program has helped residents plant more than 15,400 trees in yards and along streets across Seattle. The initiative focuses on increasing urban canopy cover, with a strong

emphasis on tree equity—encouraging planting in hotter neighborhoods with lower existing tree cover. These “priority census tracts” tend to have lower income households and more BIPOC residents, and they are in closer proximity to environmental health stressors such as highways, airports and industrial sites. Through Trees for Neighborhoods, residents in these and other Seattle neighborhoods gain access to expert advice, workshops, and follow-up-care guidance, turning tree planting into a long-term community investment.

For the past eight years, SPU has contracted with UW Botanic Gardens (UWBG) to conduct the program’s field work. Every summer, UWBG staff members evaluate the health of all street trees planted through the program in the prior two years. This provides the City with data on how the trees are faring, as well as feedback to participants on how well they are caring for their trees. We also support the program’s educational goals by leading workshops for participants on proper tree planting techniques, and by creating video content.

In addition, the Center for Urban Horticulture acts as a tree depot for the program. Young, future street and yard trees are delivered to a temporary nursery here, and our staff cares for the plants (and protects them from bunnies!) before delivering them to their final homes. Thanks to generous support from the Seattle Garden Club and the Peach Foundation, UWBG has been able to further support the program through outreach, in-person consultations on tree selection, and deliveries of replacement water bags, mulch, and staking materials to participants in priority census tracts.

Seattle’s urban forest is a shared resource that requires shared responsibility. Trees for Neighborhoods helps distribute that responsibility equitably across the city, while UWBG provides knowledge and expertise to support it.



Data Collection at Work

Duwamish Valley Youth Corps participants being trained on how to select the appropriate tree for a given planting space.

The data that UW Botanic Gardens collects influences the tree species on offer in the Trees for Neighborhoods Planting Program. For example, last year, in addition to monitoring 2022 and 2023 planted trees, we assessed the health of the 2014 cohort of trees. We noticed that most ‘Autumn Brilliance’ serviceberries (*Amelanchier* × *grandiflora* ‘Autumn Brilliance’) from 2014 had rust or powdery mildew and somewhat sparse growth. This particular cultivar (cultivated variety) is known to have good disease resistance, however, it is susceptible to a variety of fungal diseases, including rust, leaf blight and powdery mildew. As a result, the program isn’t planting the cultivar anymore.

More significantly, the data we collect on the overall health of the trees is used to inform programmatic decisions. For instance, it helps

to know what percentage of program trees are showing signs of water stress in the summer. In 2024, this was 22 percent of the young trees (planted in 2022 and 2023). Preliminary data for 2025—which had a very dry summer—is telling us that 48 percent of young trees (planted in 2023 and 2024) are showing signs of water stress (yellowing, browning or wilting leaves, and suckering). Knowing this helps inform how much we reinforce the importance of watering and mulching in our educational workshops. It also helps us consider better ways to get folks fresh mulch, which significantly aids with water retention and soil health. Some trees this year are also looking especially top heavy, so it’s helpful for us to follow up with residents who may need structural pruning guidance.



PLANTING, CITIZEN SCIENCE AND RESEARCH INITIATIVES

Other botanic gardens around the U.S. are involved in similar programs to support their urban forests. For example, the Chicago Region Trees Initiative (CRTI), a program of the Morton Arboretum, seeks to make the benefits of trees available to everyone in the Chicago area and beyond. (See mortonarb.org/plant-and-protect/chicago-region-trees-initiative.) In honor of the Arboretum's centennial in 2022, the program helped plant more than 3000 trees in the Chicago region.

Beyond inspiring individual action through planting trees, CRTI engages citizen scientists to track the trees in their neighborhoods; brings tree experts and communities together to provide education about tree planting and care; and facilitates stakeholder working groups on forest composition and green infrastructure, among other topics. CRTI also provides local governing bodies—such as school districts, municipalities and parks departments—the tools they need to support the preservation of Chicago's urban

forests through trainings, tree inventories, and guidance on developing tree protection and tree preservation ordinances.

As climate change continues to alter growing conditions in urban environments, research conducted by botanic gardens will be pivotal in determining which trees should be planted in the future. In 2021, the High Line Canal Conservancy planted 225 trees along the High Line Canal Trail, a popular 71-mile, multi-use trail in Denver. These plantings included both native riparian (river-bank) species and common, xeric (dry-habitat) tree species that can be found in Denver (such as honey locust, Kentucky coffee tree, *Catalpa*, and several oak species). In partnership with the University of Colorado Denver, Denver Botanic Gardens is monitoring these newly planted trees to collect data on how effectively they establish based on their site conditions. Gaining a better understanding of which trees survive to maturity, and developing hypotheses as to why these trees survive, can help local municipalities better predict appropriate urban tree species for increasingly warm and dry summers.





The 2024 pop-up Trees for Neighborhoods nursery at the Center for Urban Horticulture included chinkapin oak, honey locust and Japanese snowbell.

LOCAL PLANT EXPERTISE

Because of the diversity of plants they contain, botanic gardens like Washington Park Arboretum can act as laboratories for climate change research, monitoring the performance of current collections and trialing new tree species for warming cities. And because of their expertise in growing plants in designed landscapes, botanic gardens can become educational and outreach hubs for urban forestry and other greening projects.

Great Plant Picks (greatplantpicks.org), a program of the Elisabeth C. Miller Botanical Garden in Seattle, already provides home gardeners and professionals alike with recommendations of plants that will thrive in the maritime Northwest. Their selection committee for trees includes a number of staff from botanic gardens across the Pacific Northwest. The Great Plant Picks website allows users to search for tree species by characteristic, including shape, hardiness, water needs, fall foliage, powerline friendliness and more.

In partnership with other local organizations, such as Plant Amnesty, UW Botanic Gardens hosts

two annual conferences that provide continuing education opportunities for tree-care professionals: Urban Forest Symposium and Futures in Applied Arboriculture. Themes of previous Urban Forest Symposia have included “Sustaining the Urban Forest During Densification” and “Trees for the Future: The Critical Role of Urban Forests in Combating the Climate Crisis.” See botanicgardens.uw.edu/education/adults/conferences-symposia for more information.

Once trees are out in the world, botanic gardens can play a pivotal role in helping to ensure that they survive to maturity. Like many major public gardens, UW Botanic Gardens provides a treasure trove of onsite and online educational resources (many of them free) to help the public and professionals care for their street and yard trees. From the Miller Library’s Plant Answer Line (206-897-5268; hortlib@uw.edu) to our adult pruning classes to our social media posts about which species you can apply to receive from Trees for Neighborhoods, we are doing our part to collaborate in urban forestry efforts and help make our city a healthier, greener place.



UW Botanic Gardens staffer marking a planting strip for a new street tree.

Street Tree Application & Assessment Process

As of press time, these trees are still available this year through the Trees for Neighborhoods Program: grand fir, Douglas fir, deodar cedar, Turkish filbert, and sawtooth oak. Seattle residents can apply for up to three free trees per year for a lifetime maximum of six trees per property. The online application process takes about 20 minutes. See seattle.gov/trees/trees-for-neighborhoods.

When a Seattle resident applies for a street tree through the program, it requires permitting. Trees for Neighborhoods handles this for residents. The UW Botanic Gardens crew is the first one on site, and we determine whether the potential planting location checks the many required boxes as a viable spot for a tree—such as distance from underground utility lines (5 feet minimum) and distance from other trees (at least 20 feet from

trunk). If we conclude that there is room for a tree, we will mark the entire planting strip with white paint. This will trigger various utilities—water, sewer, gas and electric—to visit the site and mark where their underground lines are. SDOT arborists are the last crew to visit a site, and they will hammer a sign into the ground exactly where an approved tree can be planted by the resident. 🌱

OLIVIA PRICE is the Adult Education Programs Supervisor at UW Botanic Gardens.
EMMA JO THORSEN is the Adult Education Program Coordinator at UW Botanic Gardens.

References

Alba, Christina. "Made in the Shade: Planning a future where trees and people thrive." Denver Botanic Gardens blog. March 24, 2022. botanicgardens.org/blog/made-shade-planning-future-where-trees-and-people-thrive

Cavendar, N. & Donnelly, G. "Intersecting urban forestry and botanical gardens to address big challenges for healthier trees, people, and cities." "Plants, People, Planet." Volume 1; Issue 4. October 2019.

Ebrahimi, Taha. "Street Trees of Seattle: An Illustrated Walking Guide." Sasquatch Books: Seattle. 2014.

Trees for Seattle. "Seattle's Canopy Cover." seattle.gov/trees/management/canopy-cover

Weinberger, H. "Seattle has a Green-Lake-sized hole in its tree canopy, study finds." "Cascade PBS." March 2, 2023.

