



## Seeing the forest and the trees

Urban greenery can bring better health, more attractive neighborhoods, and even safer streets **BY CHARLIE LORD**

**SEEN FROM A** satellite high above, 29 percent of the city of Boston is hidden under the leafy canopy of trees during the summer months. That's more shade than exists in many other cities, but it's not enough. As scientists and social planners are discovering, trees are far more than mere ornaments to the urban landscape. The urban forest is a powerful force for social and environmental change. Trees reduce air and water pollution, save energy, increase property values, and improve the social networks that are the backbone of a healthy city.

Boston Mayor Thomas Menino and the Urban Forest Coalition announced last year that they intended to plant 100,000 new trees by 2020, increasing the city's tree canopy to 35 percent. The \$15 million project, called Grow Boston Greener, depends largely on private contributions, with only 15 percent of the initiative funded by the city and the Commonwealth. The nonprofit organization that I direct, the Urban Ecology Institute at Boston College, is proud to chair the Urban Forest Coalition, which also includes the city, the state, and a host of nonprofit and community organizations such as Earthworks of Roxbury and the Franklin Park Coalition.

It's a bold attempt to begin managing Boston's urban forest, something that's never been done before. In the era before affordable satellite imaging and computer mapping systems, cities knew almost nothing about the trees in their midst, and maintenance rested chiefly in the hands of underfunded and understaffed municipal departments. No wonder that Boston until recently had 3,500 empty tree pits lining its streets, amounting to more than 10 percent of all tree pits in the city.

But the management of the urban forest is starting to come into the 21st century. Four years ago, a coalition of nonprofit organizations, universities,

and city and state officials launched a state-of-the-art analysis of Boston's urban forest. Using handheld computers, more than 300 residents fanned out across Boston to identify and evaluate the location, condition, and species of every street tree in the city.

What these urban foresters discovered was that Boston had 34,487 street trees (those planted along sidewalks and maintained by the city), well below the 40,000 that had been forecast. These street trees, combined with backyard trees (maintained by individual landowners), institutional trees (maintained by colleges, hospitals, and churches), and park trees (maintained by the parks department), make up Boston's urban forest.

Satellite images indicated that Boston's 29 percent tree cover, which compared favorably with other Northeastern cities such as Baltimore (20 percent) and New York (25 percent), was not distributed equally around the city. Many of Boston's poorest neighborhoods suffered from reduced tree canopy, with the lowest tree canopy cover and the highest numbers of people per street tree in East Boston, South Boston, North Dorchester, Roxbury, and Allston/Brighton. West Roxbury and Roslindale enjoy the highest percentage of tree canopy in the city.

One of the goals of the tree-planting effort is to bring all neighborhoods up to 50 percent of potential tree cover—that is, having trees in 50 percent of the plantable spaces in each neighborhood. Plantable spaces are those areas on private or public land that are neither paved nor built on, and that could host a tree tomorrow.

Another key finding of the tree census was that 23 percent of the city's street trees are Norway Maples, which are messy and costly trees no longer recommended for urban areas. The city stopped

planting Norway Maples some time ago, and the Urban Ecology Institute's urban tree guide and the training that goes with it now steer residents toward tough and hardy trees that have a chance to adapt to a changing climate—including oaks, silver and paper bark maples, London planetrees, and certain specific flowering trees such as the Kousa dogwood and the flowering crabapple. Though these flowering trees have less tolerance for urban areas, they are good for urban wildlife and do well in small spaces.

The tree-planting initiative in Boston is not unique. New York and Denver each want to add 1 million trees, and Los Angeles set the same goal three years ago. Seattle is working to plant a new tree for every one of its 640,000 residents. On a per-capita basis, the Boston and New York plans are roughly similar in scope and ambition. Seattle, a city with a population similar to Boston's, has chosen for itself the most aggressive plan.

The reason so many cities are focusing on trees is because their environmental benefits are so well-established. The US Forest Service has found that a single mature urban tree, properly situated, reduces the heating and cooling costs (and attendant energy use and climate emissions) of an urban dwelling by 15 percent to 30 percent by blocking

icy winds in the winter and providing shade in the summer.

Urban tree cover also provides a significant service in absorbing storm water and returning it to the local aquifer. According to an analysis by the Urban Forest Coalition, Boston's existing tree cover captures 42 million cubic feet

## Trees remove pollutants such as carbon dioxide.

of storm water per year that would otherwise run into the sewer system. It would cost the city and its taxpayers more than \$142 million to build a system to manage that extra storm water.

Trees remove air pollution and, especially, particulate pollution that has been linked to respiratory ailments in cities. During photosynthesis (the process of transforming sunlight into energy), trees literally bring air in through their leaves and, in the process, absorb pollutants. Particulate pollutants also adhere to the leaves of most trees. According to the Natural Resources Institute at the University of Massachusetts at Amherst, 100 mature trees remove five tons of carbon dioxide and more than 1,000 pounds of other air pollutants each year.



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Eric Seaborn of the Department of Conservation and Recreation with volunteers in Jamaica Plain.

With support from the US Forest Service, the Urban Forest Coalition has created a carbon calculator for Boston and provided scientific confirmation that each urban tree reduces the carbon footprint of an urban area by one ton over its lifetime. Using the calculator, residents and local companies can see their annual climate impacts and can learn how to reduce their carbon emissions.

### TREES AS CRIME-FIGHTING MACHINES

Trees provide economic benefits for urban communities as well. A US Forest Service study suggests that a front yard tree can add 1 percent to the sale price of a home, and that large specimen trees can add 10 percent to the value of a home. Studies show that planting and maintaining 100 urban trees will cost \$82,000 over the lifetimes of the trees while generating \$225,000 in economic benefits, specifically storm water and air pollution control and increased real estate value.

Increasing the size of the urban forest can also transform the social landscape of a city. On a summer Saturday in 2007, I stood up to my waist in the soil of Boston in a vacant lot near Tremont Street. I was working with a neighbor who lived next door to the vacant lot, which had until recently been the site of drug deals among the overgrown weeds. He looked across the lot at young children planting flowers in flower pots and his neighbors planting trees in several other pits and said, "I wish the television cameras were here now. This is what our neighborhood is really about: People helping people."

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## PERSPECTIVES

A recent study in Baltimore by Morgan Grove of the US Forest Service supports my tree-planting friend. The study found that neighborhoods with higher tree cover had stronger social connections, and residents had a significantly lower desire to move away, presumably because trees increase the attractiveness of the area.

A landmark Harvard University study of a dozen Chicago neighborhoods found only one variable that explained lower crime rates in otherwise virtually identical communities: the extent of social cohesion. The critical factor is “people’s willingness to look out for each other and especially for each other’s children,” according to the study, which pointed to an urban garden as emblematic of the sort of neighborhood collective action that is at the core of increased public safety.

The data suggest that Grow Boston Greener and similar projects in cities across the country are a crucial component in building safe urban neighborhoods. The available evidence also suggests that social and environmental transformations in cities are inextricably linked.

In New York, 50 percent of the city’s tree-planting project is being funded by the parks budget, and much of the work is being done by municipal workers. Municipal funding would seem to be a blessing, but there are some reasons why private and nonprofit plantings may be the best approach.

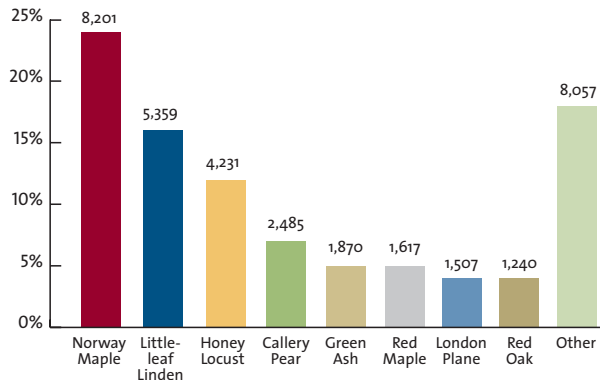
Urban tree projects that rely on neighbors for ongoing maintenance, such as watering and pruning, can arguably have the same effect on neighborhood cohesion as an urban garden. Also, “we feel that community-based planting programs, coordinated with neighborhood volunteers, provide protection against vandalism,” says John Walkey, director of the Sustainable Cities Program of the Urban Ecology Institute in Boston, which is heading the Urban Forest Coalition.

Still, problems do crop up. Just one day after a large planting in a Boston park in April, 18 of the 50 new trees planted by the coalition and corporate volunteers were found ripped from the ground. The city and the Grow Boston Greener team were able to replant the trees immediately, and the new ones were thriving as the summer began.

A planting from the summer of 2007 illustrates the challenges of asking residents to become tree stewards. The coalition worked with two neighbors to plant trees along the sidewalk in their front yards. One resident has become a passionate tree lover, and waters her tree each week. Right next door, her neighbor received the training, planted his tree, and has not tended to it since. In adjacent lots, the living tree and its dying neighbor illustrate the challenges of asking community residents to take on the transformation of the urban forest.

Boston’s Urban Forest Coalition has developed several program models for working with urban residents to plant and maintain the trees that will get the city to its goal,

**BOSTON'S STREET TREE BREAKDOWN**



including training and supporting neighborhood tree captains, working with large community organizations such as churches and community development corporations, and even setting up neighborhood workshops where each participant goes home with a tree.

In the Grove Hall section of Boston, where a Grow Boston Greener pilot project was launched last summer, youth leaders were hired as neighborhood tree captains to organize residents, identify planting opportunities, train residents in tree planting and maintenance, and

plant the first of the city's 100,000 new trees. Some of the youth worked weekends into the fall after their summer stipends had disappeared.

Despite the costs and the challenges with maintenance and vandalism, the Urban Forest Coalition and the city made real progress during the first year of Grow Boston Greener. By the one year anniversary of the project, the partners had planted over 3,000 new trees in the city — 1,000 of them in April alone.

The implications of the project may run deeper than the number of trees planted over the next 12 years. To the extent that Grow Boston Greener is successful at connecting environmental and social transformation, it stands as evidence of the fabled “third wave” of environmentalism in this country that connects labor, community development, environmental justice, and sustainability projects. As a “third wave” project, Grow Boston Greener is working toward a globally sustainable economy, while at the same time addressing the related crises of our urban neighborhoods, such as unemployment, youth violence, and poor health. **CW**

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