



**SUSTAINABLE CITY  
NETWORK**

For Leaders in Government, Education & Healthcare

## The Role of Urban Forests in Sustainable Communities

A Mix of Native and Non-Native Trees Is Best

Tweet

Like 249

Posted: Wednesday, October 24, 2018 4:00 pm | Updated: 3:51 pm, Thu Oct 25, 2018.

By Julianne Couch

Urban trees should not be an afterthought or taken for granted like, well, something that grows on trees. Instead, they should be included in all stages of planning for sustainable communities.

Whether you see urban trees as art, infrastructure or the lungs of a city, they are important assets in a community. They not only help establish a [sense and pride of place](#), but they also [provide many critical ecosystem services](#) along with measurable benefits related to human health and infrastructure.

In spite of the irony of housing developments being named for the trees they've displaced, Dan Buckler of the Wisconsin Division of Natural Resources argues that people do like and value trees, both at the personal and community level. Findings from a recent [Wisconsin DNR study](#) showed people value trees for the way they improve the appearance of property, provide shade on hot days, improve air quality, and make the neighborhood a better place to live.

Buckler said trees can be the answer to bringing life back to urban environments that have become hot, depressing "cathedrals of concrete."

Trees provide three important benefits that make their incorporation into city planning vital:

- 1) Environmental benefits, such as erosion control, air purification, storm water management and carbon reduction.
- 2) Economic benefits such as higher property values, environmental savings, more money spent in an area that is regarded as pleasant, and more jobs.
- 3) Social benefits including improved human health and a sense of place and beauty. A neighborhood with trees is also correlated with lower crime, because they improve walkability, putting more people on the street and lowering opportunistic crime.

"Trees are more than just pretty," Buckler said. "They are doing heavy engineering work. If we've recognized the benefits, then we should plan for that."

The good news is that there are tools planners can use to incorporate trees into their communities. The [iTree suite](#) of software is a free tool communities can use to map their urban tree canopy, inventory existing trees and calculate the ecological, economical and health benefits of current or future plantings.

"By knowing the leaf area of a tree or group of trees you know how many pollutants it can remove," Buckler said. That way its value can be quantified, which goes a long way at city budget time.

The iTree tool helps planners know where to put trees and how to put the right tree in each location.

"You can put in your priorities, and it can show a general area where trees can do the most good," Buckler said. For instance, if your priority is public health, you might be looking at how to make the air cleaner to breathe in an area with heavy traffic or industry. Planting trees there could be part of a strategy to improve the air in that vicinity.

Buckler said there are observable and predictable public health patterns related to demographics. There is a consistent correlation between income and canopy cover, with concentrations of minority populations typically corresponding to areas where trees are scarce. That's why trees should be included in the environmental justice aspects of city planning, he said.

"We are going to put trees where they are most needed to make it equitably," Buckler said.

Putting the right tree in the right place has been a concern for humans dating back centuries, said Justin Evertson, assistant director of the Nebraska Statewide Arboretum. He understands the tension between the desire to plant only native vegetation for ecological reasons, as well as the desire for decorative non-native trees that tend to be drought and insect resistant.

"People and animals have been moving plants around for a long time," Evertson explained. Describing the phytogeography of the area around Lincoln, Neb., at the time of settlement, Evertson said the city in the 1850s was a treeless plain. "Now we're a community of forests because we understood the benefits of trees before air conditioning."

Evertson takes a long view of which plants are native and which are not. How far back does a tree's credentials need to go? After all, glaciation was a major contributor to the shifting of where plants could grow. Since the vast ice sheets melted, the last 10,000 years have provided a warming and drying period that has dramatically changed the landscape.

Evertson said some trees are "ghosts" of another time that survived because they were eaten and distributed by big herbivores that existed in the Pleistocene epoch. The ginkgo tree is an example of a Nebraska native tree that flourished 50 to 60 million years ago. Today, people are planting them again, with success, although their appeal to current wildlife species may be limited.

A native tree can support hundreds of native bird and insect species. For example, an oak tree supports more than 500 species of moths and butterflies. By contrast, the frequently planted and non-native ornamental pear tree is not known to provide habitat to any moths or butterflies.

Trees that are native or near-native have an important role to play, Evertson said. They offer adaptability, survivability, cultural connections, a sense of place and biodiversity. However, they can't do it alone. "Trees aren't native to a place. They are native to ecosystems. Trees in the forests share canopy and root space and help sustain each other."

This doesn't mean communities and individuals should feel free to plant anything, whether native or non-native, because anything can get out of control and become undesirable. For example, the only evergreen native to Nebraska is the eastern red cedar. "It used to be planted in small pockets as farmstead windbreaks. Now it has run amok in woods and is overtaking grasslands, advancing north and displacing prairie where we raise beef," Evertson said.

Native plants alone cannot be chosen for planting in an urban environment, because that landscape itself is not native. There are conflicts, such as pavement being poured around and over the top of tree roots; trees being absent from subdivisions but marshaled into unnatural rows on their edges; pavement conflicts; poor nursery stock and poor care. There are also lawn-related impacts such as trees taking overspray from lawn herbicides or damaged by



weed-whackers. There are also insects, diseases, and climate change exacerbated by heat islands and low biodiversity. All this adds up to the idea that it is preferable to make room for non-natives plants. "We need these immigrants to help us out," Evertson said.

Non-natives can successfully ward off insects that could quickly bring down a native. For example, the Japanese beetle is an insect that seemingly has never encountered a leaf it wouldn't eat, but not so, Evertson says. The silver linden is a non-native plant that the insect doesn't like.

Another virtue of non-natives is that they help expand the palate of suitable trees for landscape use. Many are highly tolerant of urban conditions, including horse chestnut, Miyabe maple, and European beech.

Evertson says the line between native and non-native is "not a litmus test" to determine what to plant. Species are only "invasive" when they are "non-natives that harm native ecosystems."

Non-natives have a role to play because native plants are often not suitable to urban conditions. Some native species are fussy about where they are sited. They can be prone to invasive insects and diseases. They produce fruits and seeds which may make an unwelcome mess on public sidewalks or other locations where trees cannot receive constant attention.

Non-natives have disadvantages too, because many are invasive, many are over planted, and they do relatively little to sustain biodiversity.

Evertson says communities are contrived spaces that can't function like native ecosystems, because there are too many human needs and desires in conflict with natural processes. However, people can do much more within communities to help sustain native biodiversity. "We should strive for a smart balance of native and non-native species. Perhaps 50/50 would be a good ratio."

#### More about News

- **ARTICLE:** Allies Sue over EPA Smog Decision that Puts Millions in Danger
- **ARTICLE:** Trump Administration Withholding Lifesaving Protection for 78 Species
- **ARTICLE:** Definitive Guide to Piloting Autonomous Vehicles Unveiled
- **ARTICLE:** Launching Greater Houston Regional Resilience Initiative

#### More about Parks-forestry

- **ARTICLE:** State Sets Stage for Forest Protection Through Cap-and-Trade Program
- **ARTICLE:** Great Lakes Commission Releases Green Infrastructure Policy Recommendations
- **ARTICLE:** Report: Forest Soils are Absorbing Less Methane
- **ARTICLE:** Governor Directs \$2.4 Billion to Climate Change Adaptation Legislation

Tweet

Like 249