

Cities such as La Crosse use trees for a variety of cost-saving reasons, not to mention beautifying the landscape.

# From ashes to diversity

THROUGHOUT THE STATE, URBAN FORESTS PROVIDE A BOUNTY OF BENEFITS.

*Adityarup Chakravorty*

It started to drizzle as we searched for the tree we wanted — a beautiful chinquapin oak. We found it sandwiched between a sour gum and a Kentucky coffeetree, leaves glistening in the spring rain.

“That’s our guy,” Evan Slocum said. So I picked up the tree and we walked back to the hole we had dug in a stranger’s backyard.

I was out volunteering in the Bram’s Addition neighborhood on the south side of Madison with Slocum, founder and president of the Urban Tree Alliance nonprofit group. For the past several hours, we had been driving around in a truck and planting a variety of saplings — musclewoods, pecans, catalpas, cucumber magnolias, ironwoods — in backyards, by front porches and at the edges of small lawns.

And it’s not just us. Across the state, nonprofit organizations, municipalities, university researchers and private citizens are coming together to increase the size, health and diversity of Wisconsin’s urban forests.

## Appreciating assets

The maples, oaks, ashes, honey locusts and other trees that line Wisconsin streets and shade our backyards are very different from the mango, tamarind, plumeria and coconut trees I grew up around in Kolkata, India. But whether in a giant tropical metropolis or a small Wisconsin village, urban forests provide a bounty of health and social benefits, far beyond what it costs to plant and maintain them.

“The money and resources spent on urban forests is repaid with interest,” said Richard Hauer, a professor of urban forestry at the University of Wisconsin-Stevens Point. “Trees are the only assets in an urban environment that appreciate with time, and while it may take 10 to 20 years for a tree to pay off the initial investment, on average, every dollar spent on urban forests is repaid three times.”

Of course, money doesn’t grow on trees, as the old saying goes. Urban forests repay us not with cash but with a host of social, economic, environmental and health benefits. According to a 2012 review that looked at 115 research papers, some of the more common ways urban forests impact our lives include: providing shade on those hot summer days and reducing temperatures and urban heat-island effects; moderating storm water runoff and flooding; increasing property values and aesthetics; and lowering energy use in our homes and businesses.

Perhaps most importantly, urban forests play a crucial role in keeping us healthy. They sequester carbon, filter the air and remove pollutants — such as carbon monoxide, ozone, nitrogen dioxide and particulate matter — that can cause or worsen health issues, including asthma, bronchitis and other respiratory problems.

“I think people get it that trees are good for urban environments,” Hauer said, “but they are often surprised by the magnitude of those benefits.”

For example, a 2014 study estimated that urban forests in Wisconsin removed more than 7 tons of air pollution in a year, with an associated value of about \$48 million. According to 2013 figures from the U.S. Forest Service, Milwaukee’s urban forest saves the city \$15 million a year by reducing storm water runoff. And the public trees in the Fox Valley area



save the cities in that region — Appleton, Greenville, Kaukauna, Kimberly, Little Chute, Menasha and Neenah — almost \$1.5 million per year in energy costs.

I wanted to get a more personalized estimate of the value an urban tree brings. There is a beautiful black walnut tree right outside my bedroom window, and I used an online tool at [itreetools.org/](http://itreetools.org/) to calculate how much value it provided last year.

Turns out, this single tree contributed \$167 in storm water, pollution and energy savings, not to mention giving me the gift of waking up to the gentle swish of green leaves swaying and fluttering in a warm summer breeze.

### A deadly emerald

So, go urban forests, right? Absolutely yes, and Wisconsin does have fairly extensive urban forests. The DNR's "Urban Forests of Wisconsin, 2012" report found there were about 42.8 million trees in Wisconsin's urban forests — that's nearly 11 trees for each person living in census-designated urban areas in the state.

But we can't miss the trees for the forest. While the size and extent of urban forests are undeniably important, some tiny new visitors to America's shores have made it vital that we take a closer



The emerald ash borer (enlarged to show detail) has ruined ash trees statewide.

DEBBIE MILLER USDA FOREST SERVICE

look at how best to plan for both healthy and diverse urban forests.

One of these international interlopers is smaller than a penny, yet it can kill trees that are thousands of times its own size. The emerald ash borer (EAB) is a jewel beetle, native to the forests of northern China, Mongolia and eastern Russia. It probably arrived in the United States as a passenger on shipping pallets or packaging material.

Adult emerald ash borers are an iridescent green and are relatively harmless, chomping on ash leaves for dinner; their larvae are another matter entirely. The EAB lays its eggs in cracks and crevices of the bark of ash trees. When the eggs hatch, the larvae bore through the bark into the living tissue of the trees. Their feeding creates long, serpentine tunnels that disrupt the ability of trees to transport water and nutrients.

In areas where the EAB is native, ash trees have coevolved with it, and the two are able to coexist. But in North America, emerald ash borers have been cutting a swath through the native ash populations, tunneling them into nonexistence.

**Trees can suffer a variety of diseases and destruction from invasive species — the photo below shows the damaging bark tunnels of emerald ash borer larvae — which is why diversity in planting is so important.**

There are millions of ash trees in Wisconsin. The DNR's 2012 "Urban Forests" report estimated that 7.6 percent of trees in the state's urban areas were ashes. In Green Bay, ash trees made up more than 21 percent of street trees in 2009, and about 900,000 of the Madison-area's urban trees were green or white ashes as of 2015.

The effect of the EAB will only become more apparent with time, Slocum said. "We don't always notice ash trees, but this spring there were many ash trees that didn't leaf in Madison, and now we notice them."

### Strength in diversity

Devastation by an invasive species is not new, though. In the 1950s, streets in towns and cities across the United States were lined with majestic elm trees. Then came Dutch elm disease, and within a generation, the elms were gone.

"I remember the tree cathedrals over our local streets," Jay Weiss of Cambridge said, "and I remember what the Dutch elm disease did to them."



KEVIN WESTPHAL



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KEVIN WESTPHAL

**In Cedarburg and cities all over the state, fall brings a blast of added color thanks to the existence of urban forests.**

Now, Weiss is working to make sure the Cambridge urban forest is more resilient in the face of the emerald ash borer's onslaught. He founded the Cambridge Tree Project, which provides affordable trees to the public and uses profits to bolster the urban forest in the parks, schools and streets of Cambridge and nearby Rockdale.

The project has greatly increased the diversity of the village's urban forest: In 2006, maple and ash trees comprised 70 percent of the Cambridge community forest. Today, that number is down to 22 percent, which means that a single pest or disease will not be able to wreak large-scale destruction.

"We now have over 100 species planted throughout our village: sassafras, persimmon, bald cypress, tupelo and 14 different oaks, to name a few," Weiss said. "It's basically an arboretum experience at every turn, with each block and park dotted with interesting trees."

Street trees or trees in public places make up only a part of the urban forest. In Madison, for example, "the majority of ash trees — maybe as much as 70 to 75 percent of them — are on private properties," Jeremy Kane, associate director of the Urban Tree Alliance, said.

The Urban Tree Alliance has been providing free trees to residents of several neighborhoods in Madison and neigh-

boring Fitchburg to expand the canopy cover and increase the diversity of trees on private properties.

"We work with individuals and take into account the planting area and surroundings to choose appropriate trees," Kane said. "People really value that they are able to have a say in choosing what tree they want."

Greening Milwaukee is a Milwaukee nonprofit with a similar goal: making the Cream City greener. It has various programs it says are designed to "promote greening activities that improve the

urban environment, educate and train citizens, and increase community wealth." Through its Adopt-a-Tree Initiative, Greening Milwaukee provides one free tree every growing season to residents and property owners in Milwaukee.

A more diverse urban forest is more resilient not only to pests or diseases but also to environmental factors, such as ice storms.

"Black walnut trees, for example, are coarse-branched and better able to withstand damage from ice storms than, say, elm trees," Hauer said. "And I think we can all agree that ice storms can be a huge factor in Wisconsin."

### Partnerships pay off

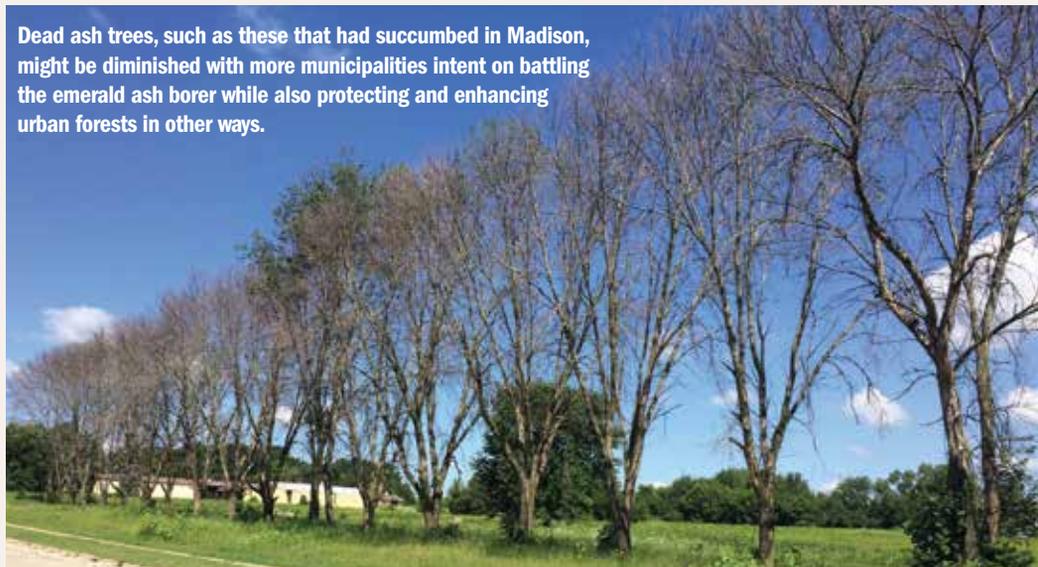
The onslaught of the emerald ash borer and a renewed interest in maintaining and expanding our community forests has led to a slew of partnerships between citizens, government bodies and organizations. Municipalities across Wisconsin are finding that these partnerships can help balance budgets while allowing them to continue to manage and diversify their urban forests.

For Kevin Westphal, city forester for Cedarburg, near Milwaukee, canopy retention was the best choice to deal with the EAB.

"We calculated that it's cheaper for Cedarburg to keep our ash trees alive than replace them," he said. "So whenever possible, we are trying to keep alive healthy ash trees with good growing space, and the majority of our ash trees are surviving with treatment."

But Cedarburg and Westphal realized the municipality could not do it by itself

**Dead ash trees, such as these that had succumbed in Madison, might be diminished with more municipalities intent on battling the emerald ash borer while also protecting and enhancing urban forests in other ways.**



JEREMY KANE



ALEXIS BOURGEOIS

**Evan Slocum of the Urban Tree Alliance, left, and author Adityarup Chakravorty plant a Kentucky coffeetree sapling in the Bram's Addition neighborhood of Madison. The Urban Tree Alliance is among a growing number of groups dedicated to improving Wisconsin's urban forests.**

— the city needed help. “We established Cedarburg Green, a nonprofit organization, because we understood that city tax dollars would not be enough to meet our upcoming urban forestry needs,” Westphal said.

Planting, maintenance, education and outreach all require funds to be carried out effectively. “Increasing canopy cover and a healthy urban forest improves lives of residents and visitors, so we wanted to bring them in to help us,” Westphal said.

In addition to private funding, grants

and support from the DNR have allowed many communities to pursue urban forestry initiatives. The DNR offers urban forestry grants to cities, villages, towns, counties, tribes and 501(c) (3) nonprofit organizations involved in or conducting projects in Wisconsin.

The City of Horicon was one of the recipients of an urban forestry grant from the DNR in 2016, which allowed the city to subsidize property owners with \$50 or 50 percent of the cost of a new tree. The EAB has not yet been detected in Horicon, but volunteer city forester Ted Pyrek suspects it’s just not been found yet. Horicon city officials participated in DNR urban forestry training for municipalities a couple of years ago, which motivated the city to proactively plan for the emerald ash borer and diversify the community forest.

“Our goal is to replace all the 250-300 ash trees in Horicon,” Pyrek said. “And in their place, we are planting a diverse array of trees, not only maples.”

In and around Oshkosh, the Oshkosh Area Community Foundation has planted more than 2,400 trees over the past

several years. Bill Wyman, foundation president and CEO, said that “partnership between the DNR, the city, the foundation and community members and private individuals was vital for us to be able to carry out this project.”

Over the past three years, the DNR has awarded more than 100 urban forestry grants totaling more than \$1.5 million. Some of these funds supported my own tree-planting trip around Madison neighborhoods with Slocum and the Urban Tree Alliance.

I often find myself thinking about those trees we planted, especially the chinquapin oaks, which are my favorite. They can live for 200 years, and I hope that long after my time on Earth is done, they continue to grace the urban forest of this city I have come to love. ❧

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## >>> A COMMUNITY TREE TELL-ALL

**Ever wonder what kind of tree that is just outside your office building or near your favorite city park bench? If you live in one of the 44 municipalities with data now available on the Wisconsin Community Tree Map, you can find out easily with a quick web-based search.**

**The recently launched online tree map, part of DNR’s Wisconsin Urban Forest Assessment Program (WisUFA), offers access to a wealth of information about urban forests in participating communities. The searchable map identifies every inventoried tree with information such as species, diameter and health condition as well as overhead and some street view photos.**

**Did you know, for example, that Freeman maples dominate West Wisconsin Avenue near Milwaukee’s Marquette University campus, or that a vast majority of Appleton’s 490 white oaks are found in the city’s Pierce Park? Onalaska has 228 blue spruce on record, most of them in the Onalaska Cemetery, and Chippewa Falls has documented 1,150 green ash trees and just two Scotch pines.**

**The Community Tree Map lists nearly 425,000 trees — including the recently mapped State Capitol Park grounds — in inventories kept by organizations, usually municipalities, to help manage urban forests. The new application also is connected to the U.S. Forest Service’s i-Tree database, which tracks the benefits of urban trees.**



ERIK BARBER

**Jeff Roe, DNR urban forestry team leader, said the map is an excellent resource for informing the public while aiding communities in urban forestry efforts. “This new tool will help explain the value of urban forests and their ability to improve air quality, reduce energy use, increase property values and control storm water,” Roe said. “This will help communities make data-driven decisions for their urban forest management strategies.”**

**The Wisconsin Community Tree Map is a work in progress, with more tree data to be added as it becomes available. Communities that want to upload or update their inventories, or are interested in creating one, can contact [DNRUrbanForestryAssessment@wisconsin.gov](mailto:DNRUrbanForestryAssessment@wisconsin.gov).**

**To access the map and learn more about DNR’s WisUFA program and other urban forestry work, go to [dnr.wi.gov](http://dnr.wi.gov) and search “urban forest inventory.”**

**The Community Tree Map includes information about trees such as those at the State Capitol, recorded through the work of people like DNR’s Brian Wahl.**