

# THE SHADE TREE

A BI-MONTHLY BULLETIN DEVOTED TO NEW JERSEY'S SHADE TREES

**Volume 93 – May - June 2020 – Issue 5 & 6**

## *This Issue Presents...*

Director's Discourse

Another Pathogen Poses a Risk to Chestnut Reestablishment

RGGI Update: Murphy Administration Releases RGGI Strategic Funding Plan

An Instrument Maker Is Building Guitars Out of Highway Trees

## **DIRECTOR'S DISCOURSE**

By Donna Massa

Wishing each and every one of you continued health and wellness during these uncertain times. As we continue to be isolated from each other, know that we are optimistic that the isolation will ease and we all can return to what will be a “new” normal routine. Be encouraged by the fact that each day that passes brings us closer to the day of returning to that “new” routine.

Please note that we continue to maintain our office on Rutgers Campus at 93 Lipman Drive in New Brunswick, NJ but our MAILING ADDRESS HAS CHANGED. Our mailing address is now PO Box 6540, Hillsborough, NJ 08844. Be sure to change your records accordingly.

With hopeful hearts, we continue to plan to bring to you an exciting NJ Shade Tree Federation Conference! SAVE THE DATE! The 95th Annual Conference will be held at The Crowne Plaza Philadelphia/Cherry Hill Hotel in Cherry Hill, NJ, Thursday/Friday, October 22-23, 2020.

The beauty of the NJ Shade Tree Federation conference is that it brings together municipal shade tree commissions and professionals in the industry whose services are needed by the commissions. With that in mind, the two-day conference will continue to have a General Session in the morning and two break-out tracks in the afternoon allowing attendees more opportunities to select an afternoon session that best suits their interest.

Join us this year at The Crowne Plaza on Thursday evening, October 22nd during the Conference Dinner as the NJ Shade Tree Federation celebrates 95 years of serving you, the municipalities and tree care professionals throughout the State of New Jersey. The dinner is in the evening of the two-day conference. The Conference Dinner is a networking event that offers an additional opportunity to interact with other shade tree commission members and professionals in the industry both of whom have also been entrusted with the same task of enhancing the care of shade trees. There will be giveaways,

**BULLETIN OF THE NEW JERSEY SHADE TREE FEDERATION**

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ISSN # 0037-3133

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**DIRECTOR'S DISCOURSE**

*Continued from page 33*

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door prizes, and entertainment as we recognize specific municipalities and individuals who have excelled in the industry. A “complete” registration for the conference includes the Conference Dinner.

Look for more detail on the upcoming conference via our website at njstf.org and in upcoming issues of “The Shade Tree.” Plan now to attend the entire conference. We look forward to the end of our isolation and to being together once again at this year’s conference.

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**ANOTHER PATHOGEN POSES A RISK TO  
CHESTNUT REESTABLISHMENT**

By Andrea Watts • The Forestry Source • June 2019 Vol. 24, No. 6

With the 2019 SAF National Convention to be hosted in Louisville, Kentucky, members can look forward to a number of presentations and tours on the White Oak ecosystem that dominates the eastern United States. One notable tree species absent from this ecosystem is the American chestnut (*Castanea dentata*). The fungal pathogen chestnut blight (*Cryphonectria parasitica*) is largely responsible for this loss; this Asian pathogen was detected in New York in 2904, and 50 years later, virtually all mature chestnuts in the eastern United States had been eliminated from the landscape.

Green Forests Work is a nonprofit whose mission is restoring forests on what were formerly surfaces mines in Appalachia. Blight-resistant American chestnut varieties are among the species being replanted; however, there’s yet another pathogen on the landscape that may forestall the chestnut’s return.

**What’s in the Soil**

*Phytophthora cinnamomi* – Kenton Sena, a lecturer in Lewis Honor’s College at the University of Kentucky (UK) can rattle off the pathogen’s name without tripping over the consonants. *P. cinnamomic* is more commonly known as ink disease or Phytophthora root rot. Although this pathogen appeared in the southeastern United States in the late 1800s and subsequent chestnut dieback was reported in the 1890s, the pathogen didn’t attract the same notice as chestnut blight.

“The challenge for this particular pathogen is that it didn’t cause dieback at the scale or the rate that chestnut blight did, so it was flying under

the radar,” Sena said.

A volunteer and collaborator with Green Forests Work, Sena studied mine reforestation in eastern Kentucky for his master’s degree at the UK, and his doctoral work, also at the UK, was on *P. cinnamomi*. Specifically, he wanted to know the distribution of this pathogen across the landscape since it could hinder American chestnut reforestation efforts.

“It wasn’t until chestnut blight resistance varieties were developed and being planted out that we rediscovered the reality that *Phytophthora cinnamomi* was present and that it was going to cause problems,” he explained.

The pathogen is an oomycete, which “is similar to a fungus but technically not a fungus,” according to Sena. Instead of being wind dispersed, it travels through water in the soil. When in water, it produces zoospores equipped with flagella that propel it through the soil water to the roots of susceptible hosts. “They’re pretty cool but pretty scary at the same time,” Sena said.

A number of tree species around the world are susceptible to *P. cinnamomi*, and once a host species is found, the pathogen attaches to the root and grows hyphae, which are branching filamentous structures that penetrate in the inner tissue and absorb the cell’s contents. From there, the pathogen enters the tree’s vascular tissue and travels throughout this tissue, disrupting the tree’s ability to pull up water from its roots. American chestnut, which has low levels of resistance to this pathogen, will exhibit chlorosis and symptoms of water stress soon after being infected. If the tree has some resistance, said Sena, the tree may be able to wall off the infected roots. However, “there is a high probability that chestnut will die when it gets infected.”

With *P. cinnamomi* capable of traveling only through water, how it spread northward from its first appearance in the Southeast hasn’t been fully determined. In Australia, where this pathogen is also a major concern, researchers found that animals are a possible vector. *P. cinnamomitic* was found to survive the digestive tract of feral swine. In recent years, the nursery trade is another vector that could explain how the pathogen spread over larger distances at the turn of the century, Sena said. In California, *P. cinnamomi* was introduced to a site, ironically, as part of a restoration project.

### **P. Cinnamomi’s Spread**

To determine *P. cinnamomi*’s extent upon the landscape, Sena collected soil samples at both reforested mine sites and mature forest. At UK’s Robinson Forest, Sena collected soil samples across an environmental gradient from dry ridgetop sites to the valley floor. On reforested mine sites, he collected samples from sites that had been restored 20, 15, 12 and 10 years earlier.



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“In Appalachia, surface mines are often not reclaimed with native soil,” he said. “They’re reclaimed with a crushed rock overburden, the mine soil from the mining excavation operation. So that presents really interesting implications for microbial communities – these sites have basically no microbial community at time zero.”

On sites that were restored 20 and 15 years ago, *P. cinnamomi* was indeed present, but on sites restored 12 and 10 years ago, it was absent. Although chestnut hadn’t been planted at all the sites sampled, on the sites with chestnut trees, the trees weren’t exhibiting noticeable symptoms of *P. cinnamomi* infection.

“This does suggest that over time the pathogen is able to colonize [a site],” said Sena, adding that “we’re still unsure as to what the specific mechanism of dispersal onto those sites could be.” Animal dispersal is a possibility, but he isn’t ruling out that some seedlings could have also been infected prior to planting.

Since had more than 200 soil samples to process and the current culturing method was labor intensive and took a lot of space, he developed an improved method to confirm *P. cinnamomi*’s presence. This was accomplished using a modified baiting method. If the pathogen was present when the soil sample was exposed to water, it was stimulated to produce zoospores to infect a bait consisting of leaf material. A rapid DNA-based assay was then run on the infected leaf to confirm the presence or absence of *P. cinnamomi*. That all this could be done in a test tube reduced the time and space needed process the soil samples, and Sena said the team found detection rates similar to the traditional culturing method.

Using this improved baiting method: “We basically detected the pathogen across a range of environmental conditions and we were unable to develop a model that successfully predicted where it wouldn’t be,” Sena said. “That suggested it was capable of persisting across a wider range of environmental conditions than we were expecting.”

He also ran several correlation models of white oak distribution with the pathogen, but found no strong association.

What this suggests to Sena is that the presence of the pathogen doesn’t necessarily mean a host tree will become infected. Certain environmental conditions, such as soil moisture or temperature, may be required for *P. cinnamomi* to cause root rot. “We do know that the pathogen doesn’t do well in freezing temperatures,” he explained.

Looking ahead, “if we continue to visit [the reforested] sites and these chestnuts survive even with the pathogen present, that suggests that maybe the environmental conditions, such as the soil moisture conditions on these sites,

may not be favorable for disease formation, which would be really crucial,” said Sena.

With his position as a lecturer in Lewis Honor’s College at the UK, Sena has less time to spend in the field or lab, but he would love to do future research on *P. cinnamomi*. An important next step, he said, is planting susceptible host species across a range of environmental conditions and determining if the trees become infected or survive in spite of the pathogen’s presence.

As for the current reforestation efforts, “we shouldn’t treat these reforested mine sites as pathogen-free over the long term,” he said. “My findings support the need for ongoing research in developing chestnut varieties that are resistant to both chestnut blight and *Phytophthora cinnamomi*. We’re basically saying the pathogen is present everywhere. We’re not going to get around the problem by just planting it where the pathogen is not, because those sites may not exist.

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## **Important RGGI Update: [GOVERNOR] MURPHY ADMINISTRATION RELEASES RGGI STRATEGIC FUNDING PLAN**

NJDEP News Release April 17, 2020

The Department of Environmental Protection (DEP), Board of Public Utilities (BPU) and Economic Development Authority (EDA) today released a strategic funding plan for investing the state’s auction proceeds from the Regional Greenhouse Gas Initiative (RGGI), the cap-and-trade pact among northeastern states dedicated to reducing greenhouse gas emissions from the electricity generating sector. New Jersey plans to invest an estimated \$80 million each year in programs that reduce greenhouse gas emissions, drive forward projects that boost clean energy and create jobs, protect the health of residents in environmental justice communities, and increase the resiliency of coastal communities.

The RGGI Strategic Funding Plan released today guides how the proceeds from this and future auctions over the next three years will be spent, under four broad initiative areas:

- **Enhancing Forests and Urban Forests:** The DEP also will focus on projects that restore and improve the health of forests, including urban and community forests. Forests play a critical role in the carbon cycle, serving as a stock of sequestered carbon and continually removing and storing additional carbon from the atmosphere. Additionally, urban and community forests provide shade and reduce the need for energy produced for air conditioning.

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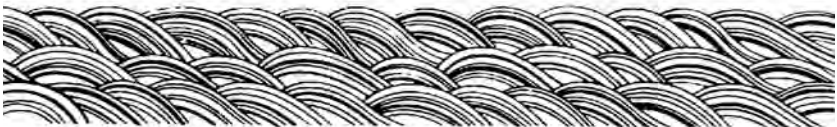
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- **Catalyzing Clean, Equitable Transportation:** All three agencies will work on projects that spur clean and equitable transportation by accelerating the transition to electric transportation throughout the state, with a heavy focus on projects that help environmental justice communities.

- **Promoting Blue Carbon in Coastal Areas:** New Jersey’s coastal ecosystems are particularly vulnerable to the impacts of climate change, including sea level rise. The DEP is responsible for funding initiatives that will protect and enhance ecosystems such as salt marshes, tidal wetlands and seagrass beds, which are particularly important in the fight against climate change. Blue carbon is the carbon stored by the soils and plants in these marine systems. These ecosystems also create resilience by creating buffers that help protect communities from storms and flooding.

- **Establishing a New Jersey Green Bank:** The EDA will establish a Green Bank to leverage funding and stimulate financial opportunities in New Jersey’s clean energy innovation economy. Consistent with the Plan’s overall environmental justice objectives, a substantial focus of a New Jersey Green Bank will be improving capital access for those who have traditionally had more difficulty in accessing the benefits of participation in the green economy. In addition to driving new investments and creating new jobs, Green Bank financing mechanisms will accelerate the deployment of clean energy and drive the evolution of the grid and energy infrastructure to be more flexible, resilient, and cost-effective. For example, a Green Bank could support projects such as rooftop solar in low-income areas or energy efficiency retrofits for smaller main street businesses. A Green Bank will also give priority to those projects that provide training and create high-quality jobs for New Jerseyans seeking to benefit from the state’s clean energy transition.

These initiative areas reflect the mandates of the Global Warming Solutions Act, extensive public feedback collected during the 2018 RGGI rulemaking as well as feedback from a public scoping process. The state received valuable input from diverse stakeholders including municipalities, unions, environmental groups, environmental justice advocates, transportation planners, the energy sector and resource conservation groups.

- The RGGI Strategic Funding Plan can be accessed at: <https://nj.gov/rggi/>

- Additional information about the plan is included in the administration’s 4/17/2020 news release: [gov/dep/newsrel/2020/20\\_0016.htm](https://www.nj.gov/dep/newsrel/2020/20_0016.htm)



# AN INSTRUMENT MAKER IS BUILDING GUITARS OUT OF HIGHWAY TREES

By Ethan Millman • [RollingStone.com](https://www.rollingstone.com) • April 24, 2020

Your next luxury guitar may not be made of treasured mahogany from the forests in Guatemala, nor from the long-revered rosewood of India — but from the lumber of a tree off the side of a Los Angeles highway.

Taylor Guitars, one of the most well-known acoustic guitar manufacturers in the world, is beginning to integrate urban wood — sourced from trees found in cities rather than from industrial suppliers or faraway overseas locales — into its guitar manufacturing. The company has been developing the new process for months, due to tightening global regulations around the use of exotic woods and a desire to be more sustainable with its production process. While urban wood is often considered less attractive by manufacturers, Taylor is taking the opposite approach: It's building high-end, \$3,000 guitars with the material.

“We have vision for the future. The new world is coming, and we have to face the inevitable,” Taylor Guitars' founder and longtime president Bob Taylor tells *Rolling Stone*. “In 1835, if I was a whaler, I could stop by the Galápagos and I could've thrown a bunch of turtles on board and I could eat them later, and there was nothing wrong with that then. But we know everything that's wrong with it now. A hundred years ago, the forest was logged just fine, but the closer we get to today, it's being logged worse and worse. The situation has changed, and what do we do with the situation now?”

The more common woods typically used for guitars — mahogany, maple, and rosewood among them — are the industry standard, and the few times a guitar maker goes an untraditional route, it's typically been done as a one-off gimmick. That's not the case here, Taylor says. The exotic tonewoods that luthiers have used for decades are becoming more complicated to source with increasing environmental legislation, and eventually, they may not be accessible enough in quantities needed for mass production of instruments.

Hoping for a longer-term sustainable solution, Taylor started wondering if the trees found in urban environments could be used for high-end instruments. He sicced Scott Paul, Taylor's director of natural resource sustainability, on the case — and extensive searching and testing posed an answer. The new material, which Taylor is calling “Urban Ash,” is being sourced from Mexican Shamel Ash trees planted throughout California just after the WWII era. The trees are nearing the end of their life cycle and need to be chopped down anyway — perfect for a guitar maker.

It's a high-quality wood too, Taylor says. There's a large supply, two

truckloads of the wood is enough for 4,000 guitars, and the company can continue using the supply for the foreseeable future — although it's unclear how much of wood from the existing trees meet its requirements for instruments.

The guitar-playing audience can be resistant to change, as shown through the infamously mixed reception on Gibson's high-tech self-tuning guitars from the mid-2010s. While the community can be a fickle group when it comes to modifying the formula, Taylor says he doesn't think it will be difficult to sell players on the new woods, based on the company's consistent reputation in making high-quality guitars. The company has sold 750 of the pricy guitars so far and expect to surpass 1,000 by the end of April.

Paul, who'd previously worked as forest campaign director at Greenpeace, says various environmental legislations taken in recent years have highlighted instrument makers' need to think toward the future.

"The world is changing very fast. A decade ago, everybody shut their eyes and reached into the grab bag and pulled out the forest products they needed, and it was no problem because it was what we'd done for 200 years," Paul says. "All of this infrastructure is coming into place, not by accident, but because the world is changing quickly in terms of the natural resources we have used without a forethought for hundreds of years. Ultimately the species we use or don't use today may be very different in as little as 10 years. That's why this concept of urban wood and a new source to get wood may be increasingly important in coming decades."

Taylor, based out of El Cajon, California, searched around the world for a potential urban wood supplier — and the best option was practically in their backyard via Southern California company West Coast Arborists. WCA handles tree removal for 280 municipalities and cities, and it keeps a meticulous database on all 7 million trees within its jurisdiction, from their species to lifespan. When it's time for a tree to be removed, it's WCA's job to figure out what to do with the wood. WCA has run an urban wood program for 25 years, ramping it up more recently. For every tree chopped down, WCA tries to plant two more, the arborist says. It used to dump the trees in landfills, but years ago, officials instituted a fee to offset the trees, so they started making mulch and firewood instead.

There's plenty of high-quality wood, says WCA urban wood supervisor "Big" John Mahoney, but urban trees have often been looked at as inferior material to the exotic woods from abroad, so demand has been low. Interest has slowly increased, Mahoney says, and other companies like furniture maker Room and Board have gone to WCA for materials — but there's intense room for growth, and a prominent guitar maker like Taylor can help popularize the practice both for WCA individually and across the country.



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“Showing off what this wood could be really helps further the movement. When we first started, urban wood had a stigma about it,” Mahoney says. “It can’t be good, they’re subpar trees,” people usually think. Taylor building a high-end guitar proves that stigma wrong. If people think it wouldn’t be any good, I’ve got a tune I can strum for ‘em.”

Annually, Taylor manufactures over 160,000 guitars, making the urban wood initiative right now a small part of its output. Tropical tonewoods aren’t going anywhere yet, the company says, and Taylor has to be careful on where it prioritizes wood. Taylor’s Mahogany, for example, is sourced from small villages in Guatemala, and the company keeps the demand in the area. Pulling resources can lead to further deforestation, according to Paul. Paul also acknowledges that while high-quality guitars can be made through urban woods, some of the highest-quality materials still come from elsewhere.

It will take time, and wider adoption across the industry, before urban wood can make a larger dent. And for the largest manufacturers churning out significantly more guitars each day than Taylor, there likely wouldn’t be enough volume to meet their need. But that’s not to say other guitar makers haven’t shown interest; Mahoney says Fender, one of the biggest and most well-known guitar brands in the world, has worked with experimented with WCA wood as well, and while he declined to give specifics, Mahoney said other guitar companies are now gauging interest for projects too.

“There’s endless potential, you’re only limited by your creativity,” Mahoney says. “What are we planting? Let’s plant more of these woods for the future. It’s been a discounted resource just going in the trash. The writing’s on the wall, exotic woods are not going to be so available in 20 years. We don’t need to go too far for alternatives, and now their eyes can open to it.”

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