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Researchers and Students Collaborate to Restore American Elm (*Ulmus americana*) in the Northeast

By **Richard W. Harper, Nicholas J. Brazee, Christopher A. Copeland and Tara M. McElhinney**

American elm (*Ulmus americana*) has long been an important cultural and historical symbol of the North American landscape (Fig. 1). Its graceful form, fast growth and resilience to harsh growing conditions historically made it an ideal tree species for widespread planting. For decades, American elms lined the streets, parks, and private landscapes of communities throughout the United States, Canada, and Europe. With the introduction of Dutch elm disease (DED), caused by the non-native fungal pathogens *Ophiostoma ulmi* and *O. novo-ulmi* around 1930 in Ohio (U.S.), populations of this native tree drastically declined. The absence of medium and large specimens of this tree has created a substantial gap in native forests, particularly in floodplain settings of the Northeast, Midwest, and eastern Canada, where it was considered the dominant, foundational species. Its loss also resulted in a substantial reduction of tree canopy cover in cities and towns. Since its demise was so readily apparent, a heightened sense of urgency occurred in relation to its restoration in the landscape (Jonnes 2016).

Fig. 1. Open-grown American elm (*Ulmus americana).* Photo: N. Brazee, UMass.

Management

Attempts to protect American elms from DED have traditionally focused on three fronts: vector control of native, European, and banded elm bark beetles (*Hylurgopinus rufipes, Scolytus multistriatus,* and *S. Schevyrewi,* respectively), disease management with chemicals (i.e., fungicide injection), and exploitation of natural host plant resistance (Jin et al. 1996).

Fig 2. Student planting. Photo: J. Solem, UMass.

Host plant resistance research at the University of Massachusetts

In 2016, Drs. Nick Brazee, UMass Extension and Rick Harper, UMass Dept. of Environmental Conservation, and students (Fig. 2) from the UMass Urban Forestry/Arboriculture program established the first American elm host plant resistance research trials at the UMass Agricultural Learning Center's Dakin Field (Fig. 3, next page). One thousand seeds consisting

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Fig. 3. Elm research plot, Dakin Field, UMass Agricultural Learning Center. Photo: N. Brazee, UMass.

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of four genotypes of American elm purported to be resistant to DED were obtained from the USDA Forest Service elm research laboratory in Delaware OH. These seeds were planted at the College of Natural Sciences Greenhouses in spring 2016. That autumn, over 200 of these seedlings were transplanted to Dakin Field. In 2018, a second cohort of an additional six American elm genotypes were germinated and planted in the field by students. These elms represent crosses of numerous American elm varieties, including 'New Harmony' and 'Valley Forge', that have demonstrated high levels of DED resistance based on previous research and observation by USDA Forest Service scientists and specialists. As part of this long-term study, researchers and students at UMass will collect growth and survival data during the early seasons of establishment. They will also monitor these trees for structural/aesthetic performance, compatibility with urban environments, response to transplant, and long-term survival.

An important consideration among putatively resistant American elm cultivars is their structural integrity. Some commonly used DED-resistant cultivars appear to fail at a rate that is substantially higher than other tree species. This may be especially evident after a wind or storm event, where elm failure rate may be two to three times higher than other trees (Giblin & Johnson 2016). A second trend that has been observed is that elm trees may be substantially smaller at the time of failure, compared to other tree species (Giblin & Johnson 2016). Failures seemed to be predominantly associated with poor branch structure, rather than the presence of wood decay (Giblin & Johnson 2016). In fact, examination of urban and suburban American elms using sonic and electrical resistance tomography (Fig. 4) revealed that these trees suffer from a relatively low incidence and severity of internal decay (Brazee and Marra 2020). As such, special attention will be given to monitoring tree branch habit and growth form at the UMass field trials, with the potential of attempting to address poor branch attachment and form through pruning of juvenile trees.

Conclusion

The American elm was designated the official tree of the Commonwealth of Massachusetts in 1941. Since DED established itself in Massachusetts decades ago, it has been estimated that localized populations may have been reduced by as much as 80% (Huntley 1982). Work with these resistant genotypes by

Fig. 4. Dr. Nick Brazee examining Ulmus spp. using sonic & electrical resistance tomography. Photo: R. Harper, UMass.

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passionate specialists and students alike has spurred optimism that this iconic tree species may one day return to its former stature on the landscapes of the Northeast, eastern Canada, and the Midwest.

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Celebrating Arbor Day

Arbor Day is April 30, 2021

Once again, Arbor Day will look different this year, but we've got lots of ideas for how your community can safely celebrate.

Some Arbor Day celebrations in MA in 2020:

- Holding a socially distanced tree planting for a limited group of volunteers
- Virtual program with schools using Zoom or another virtual platform
- Distributing seedlings
- Planting 1-2 trees using municipal staff (or holding a 'limited' in-house planting
- Conduct a virtual tree tour (Northeastern).
- Identifying shade trees with sidewalk chalk (Lowell)

Ideas based on suggestions from the Arbor Day Foundation

Hold a **poetry contest** for kids and adults and publish the winners in the local paper ☼ Host a Tree **ID Challenge** encouraging citizens to send in a photo of themselves with a tree they identified using the "What Tree is That?" guide in exchange for a piece of "swag." ☼ Host an interactive "**Ask the Arborist**" Q&A session allowing homeowners to ask tree care questions virtually. ☼ Hold a **virtual presentation** by a tree expert to inform your community about recommended tree choices. ☼ Invite local youth to **submit a tree-related question** to your tree warden via email and answer the questions via video posted on your community's website or social media. ☼ **Partner with local restaurants** to give away free **tree seedlings** with takeout orders. ☼ Develop and roll out your tree program's **social media pages**. ☼ **Sponsor one or more teachers** in your community to attend an online Project Learning Tree professional development workshop.

Species Spotlight

American Mountain Ash, *Sorbus americana*

By **Mollie Freilicher**

American mountain ash leaves, Virginia Tech.

Native to northeastern North American, American mountain ash (*Sorbus americana*) is a small tree or shrub with clusters of white flowers, showy red fruit, and a rounded, open crown. There are several species of mountain ash and mountain ashes, generally, are also known as dogberry or rowan trees. American mountain ash is one of two species native to Massachusetts; the other is showy mountain ash (*S. decora*) found in Berkshire, Essex, and Plymouth counties. *Sorbus* is the classical Latin name for mountain ash and americana is the Latin for American (i.e., 'of North or South America). Mountain ash is not a true "ash" tree. True ash are in the olive family, in the genus *Fraxinus*, and are opposite. American mountain ash is in the Rosaceae and is alternate.

American mountain ash is found growing native in much of Massachusetts, with the exception of southeastern Mass. It can be found growing naturally in sites that are cool and moist, like the borders of swamps, but it can also be found in drier and poor soils. In his *Report on Trees and Shrubs Growing Naturally in Massachusetts*, G.B. Emerson notes that it could be found growing "abundantly" around Wachusett and in other "mountainous situations" in the state. It typically reaches a height of 20 to 25 feet, with a spread of about 20 feet. It is hardy to USDA hardiness zone 2 and can even grow in cooler parts of zone 6 to 7.

American mountain ash flowers, Virginia Tech.

Leaves of mountain ash are alternate and pinnately compound with 11 to 17 leaflets (including a terminal leaflet), one-and-a-quarter to four inches long and a half to three-quarter-inch wide. The leaflets are oblong to lanceolate, with serrated edges that go almost all the way to the base. They are dark green above and paler on the underside. In fall, leaves may turn red-orange to purple.

Twigs of American mountain ash are stout and gray to reddish brown and shiny. The leaf scars are narrow. Buds are three-eighths to a half-inch long and purply-red and sticky. Often a flower bud, the terminal bud is pointed. The bark gray, thin, and smooth, with horizontal lenticels.

American mountain ash fruit, Photo: jpc raleigh

American mountain ash blooms in late spring to early summer—May and June. Flowers are white and appear in corymbs, three to five inches across. The round fruit, which matures in August, is bright orange-red and a quarter-inch wide. The fruits are showy and may persist. Birds and small mammals eat the fruit, while moose and white-tailed deer will browse the foliage. People can eat the fruits too, though they are acidic and are best cooked or as a jelly. Fruits from the related European mountain ash (*S. aucuparia*) are commonly made into jellies and have been a traditional accompaniment to wild game dishes. (There are lots of recipes online.)

American mountain ash is a good, small, native tree selection for cooler sites. It is

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Species Spotlight

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susceptible to fire blight, cytospora canker, and other diseases, as well as mountain ash sawfly, scales and borers. To reduce the chance of infection or problems with insects, ensure the tree is sited in a low-stress site, in well-drained soil. American mountain ash is not commonly found in nurseries. There is one cultivar Red Cascade™ 'Dwarfcrown,' though that is also not common in nurseries in Massachusetts. More commonly found in the trade in the United States is the European mountain ash.

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Growing on Trees

Street Tree Essentials

April 1, 5, 6, 2021 | 8:00 - 11:30 a.m.

Virtual three-part class from BayState Roads that provides an overview of planning, selecting, caring for and protecting street trees. Find out more at BayState Roads.

EPA Soak up the Rain

April 13, 2021 | 10:00 - 11:30 a.m.

A Tree Grows in Chelsea: Greening our Gateway Cities

Bob O'Connor, MA Executive Office of Energy and Environmental Affairs; **Mathew Cahill**, MA Dept. of Conservation and Recreation, Fidel **Maltez**, City of Chelsea, **Ibrahim Lopez-Hernandez**, GreenRoots

Find out more and register at epa.gov.

EPA IPM Webinar Series

April 13, 2021 | 2:00 - 3:30 p.m.

Integrated Pest Management for Spotted Lanternfly

Free webinar from the U.S. EPA.

Urban Forest Connections

April 14, 2021 | 1:00 - 2:15 p.m.

Trees, Woodlands, Lawns and Right-of-Ways: Best Practices for Biodiversity

Susannah Lerman, PhD., Vince D'Amico, PhD., USDA Forest Service, and **Randy Miller**, CN Utility Consulting. Find out more: Urban Forest Connections website.

Tree Fund Webinar

April 20, 2021 | 1:00 - 2:00 p.m.

Planning for the Next Three Letter Urban Tree Canopy Changer

Richard Hauer, PhD, University of Wisconsin – Stevens Point

Free, registration required at treefund.org.

Urban Forestry Today

May 6, 2021 | 12:00 - 1:00 p.m.

Managing Fruit Trees in the Landscape

Wes Autio, PhD, University of Massachusetts-Amherst
Free. Register here or find out more at urbanforestrytoday.org.

From the Woods

Notes from a Wonderful Book about Trees

Around the World in 80 Trees, by Jonathan Drori and illustrated by Lucille Clerc

By **Douglas Hutcheson**

Some gifts resonate with the receiver, some don't. This past Christmas my parents (my mother's favorite tree is sugar maple, my father's is dogwood) gave me Jonathan Drori's book, *Around the World in 80 Trees,* which falls decidedly in the former category. The author provides ecological, historical, and cultural insights into eighty trees from eleven different geographic regions. His text is accentuated by evocative illustrations by Lucille Clerc. As a forester most familiar with the white pine/oak/mixed hardwood forests of southern New England, the book's global perspective is enlightening.

Below, I've chosen one tree which, in my opinion, has a particular fascinating history and/or characteristics noted in the book, from the eleven regions. I also provide a link to a webpage with more information about each particular tree. Choosing eleven trees from the eighty highlighted is silly of course, as every tree has wonderful attributes, so just go find the book in your local library or bookstore and read about all eighty!

Region One: Northern Europe
Country: Germany
Tree name common: Lime tree, linden
Tree name Latin: *Tilia x europaea*
Webpage: Wikipedia.org

German villages often have a central Lime Tree which served as a meeting place for residents. "Sub tilia" legal judgements were considered authentic, meaning they were made under the Lime Tree. The tree is also the source of romantic or nostalgic memories for many Europeans.

Region Two: Southern Europe and North Africa
Country: Spain
Tree name common: Holm oak
Tree name Latin: *Quercus ilex*
Webpage: jamon.com.

Holm oak in Ambite, Madrid. Photo: Wikimedia.

From personal experience, I can say no country does ham like Spain, where my wife and I vacationed in 2013. During our three days in Madrid, we offset the gluttonous amounts of *jamon iberica* we consumed (mostly me) with walks in the lovely Parque del Buen Retiro, the "Park of the Pleasant Retreat." The park is home to the city's oldest tree, referred to as "Ahuehuete," a Montezuma Cypress from Mexico planted circa 1630. An Iberian pig's diet consists entirely of Holm Oak acorns, as much as 22 lbs. a day! The rearing of these pigs amongst the Holm and Cork oaks is an example of successful agroforestry and is holding development pressure at bay as a viable use of the land.

Region Three: Eastern Mediterranean
Country: Cyprus
Tree common name: Mediterranean cypress
Tree name Latin: *Cupressus sempervirens*
Webpage: Wikipedia.org

The symbol for Copper in the periodic table is Cu. It was derived from the Roman word for copper, *cuprum,* meaning "metal from Cyprus" where it was mined. Copper mixed with tin makes bronze, which the Romans used in weapons and armor. Cyprus is named for the Cypress tree which is native to the island.

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Notes from a Wonderful Book about Trees

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Region Four: Africa

Country: Somalia
Tree name common: Frankincense
Tree name Latin: *Boswellia sacra*
Webpage: Wikipedia.org

My long-time friend Keith D'Alessandro and I were cast for many years as two of the three Wise Men in our church Christmas pageant. We each had a turn at delivering gold, frankincense, and myrrh. Frankincense was originally prized by the Egyptians as a resin for embalming their dead. At the time of Jesus's birth, it was coveted by multiple civilizations and transported via heavily guarded caravans on the Incense Route between southern Arabia and the Mediterranean -prompting debate about which was the most valuable gift presented to Jesus.

Region Five: Central and Southern Asia

Country: Kazakhstan
Tree name common: Wild apple
Tree name Latin: *Malus sieversii*
Webpage: Wikipedia.org

DNA evidence places the ancestors of the apples we eat today in the Tian Shan region of Kazakhstan. Many ancient apple trees grew taller than a height one could easily pick from and there was great diversity in flavor, both tasty and not so tasty. To solve the problem of efficient harvesting height and reliable taste, grafting was developed which remedied those issues and made possible the orchards of today. Global apple production, like industrial scale agriculture of other fruits and vegetables, has focused on just a handful of genetic strains. The seed collection and banking of the remaining varieties of wild apples is critical in diversifying the gene pool to address current and future cultivation challenges. Side note-my top four favorite apples-Gala, Empire, Honeycrisp, and Macintosh.

The foothills of the Tian Shan mountains in Kazakhstan were once blanketed with *Malus sieversii* trees (Photo: Maxim Pushkarev/Alamy)

Region Six: East Asia

Country: Japan
Tree name common: Yoshino cherry
Tree name Latin: *Prunus x yedoensis*
Webpage: festival.si.edu

The Yoshino Cherry is of massive cultural significance to the Japanese. *Hanami* is the ritual of mass gathering under flowering cherry trees by friends, families, and the general population. The Buddhist emphasis on appreciating the present moment is inspired by the tree's brilliant but short-lived blossoms. The blossoms are called *Sakura* and they bloom in early spring. In the United States we enjoy the blooming cherry trees on the National Mall in Washington, D.C. which were planted there in 1912, a gift from the City of Tokyo.

Region Seven: Southeast Asia

Country: Borneo
Tree name common: Gutta-percha
Tree name Latin: *Palaquium gutta*
Webpage: golfball-guide.de

As an avid golfer, I read the description of this tree with great interest. The first golf balls were made out of wood, probably beech or boxroot. They were replaced with "featheries," mushy orbs made from leather and feathers which were time consuming and expensive to make by hand, and didn't fly very far. The development of the "guttie" improved greatly upon the first two

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renditions. The latex of the Gutta-percha tree was heated and cooled enabling it to be molded. It could be produced in greater quantities cheaper than the feathery. Its lower retail price led to an explosion of interest among citizens of average financial means. It was more durable and golf ball designers began to experiment with altering the cover with aerodynamic designs. The tree's latex has also been used in, yawn, insulating international underwater communication cables and dentistry, ho-hum stuff compared to revolutionizing the performance of a golf ball!

Region Eight: Oceania

Country: Australia
Tree name common: Wollemi pine
Tree name Latin: *Wollemia nobilus*
Webpage: Wikipedia.org

Until 1994, botanists were aware of this tree from fossils and rock layers but believed it to be extinct. In that year, a park ranger in the Wollemi National Park in New South Wales northwest of Sydney discovered a small stand in an isolated canyon within the park. It's not a pine by genus or family but part of the *Araucariaceae* family of coniferous trees widespread in the Jurassic and Cretaceous periods; so its discovery is miraculous. To protect the tree in the field, visitors aren't allowed. The lack of genetic variation in the population makes it susceptible to pathogens they could unknowingly transport in. The Australian government has sponsored a world-wide sapling planting program in hopes of ensuring the tree's survival should it fail in the wild.

Wollemi pines at Wakehurst, Hayward's Heath, UK. Photo: Treesandshrubsonline

Region Nine: South America

Country: Ecuador
Tree name common: Balsa
Tree name Latin: *Ochroma pyramidale*
Webpage: Wikipedia.org

Reading about this tree reminded me of carving model airplanes from balsa wood as a kid. The wood of this tree is extremely light but surprisingly strong. In 1947, Thor Heyerdahl built the raft *Kon Tiki* out of balsa logs and sailed 5,000 miles from Peru to Tahiti retracing a possible trade route between South America and Polynesia. The author casually mentions that Thor couldn't swim, which I find mind-boggling; ponder that the next time you're considering overcoming a personal challenge. During WWII, the British de Havilland Airplane company built the Mosquito fighter plane out of balsa wood when aluminum wasn't available.

Region Ten: Mexico, Central America, and the Caribbean

Country: Jamaica
Tree name common: Breadfruit
Tree name Latin: *Artocarpus altilis*
Webpage: smithsonianmag.com

The fruit of this tree is bowling ball-sized, full of carbohydrates, and can be harvested by picking them or retrieving them off the ground. This combination of ease of harvest and nutritional value led British plantation owners in Jamaica to invest in growing it there. In 1787, a British ship, the HMS Bounty, was dispatched from England to collect the fruit in Tahiti and deliver it to Jamaica. Breadfruit seeds are sterile and the tree can only be established by propagation from cuttings. Consequently, the crew of the Bounty had to wait six months before the fruit they gathered took root. The sailors weighed the pros and cons of staying or leaving the island and chose to stay. 175 years later, Marlon Brando starred as 1st Lt. Fletcher Christian in the famous film we're all familiar with, *The Mutiny on the Bounty*

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Notes from a Wonderful Book about Trees

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Black walnut, Photo: Jean-Pol Grandmont

Region Eleven: North America
Country: United States
Tree name common: Black walnut
Tree name Latin: *Juglans nigra*
Webpage: Wikipedia.org

My neighbor grew up in Missouri where the majority of the U.S. black walnut harvest comes from. He has fond memories of earning pocket change as a kid by collecting walnuts in the fall and the industrial strength nutcracker used by his grandfather. Older generations of his family proudly recall making enough walnut money to enjoy the luxury of buying clothes rather than having to make them themselves. The tree is allelopathic; it contains juglone, an herbicide that deters plants from growing near it and insects from feeding on it. Walnut has a history of military uses. Its wood was used for gunstocks, thus the term, "shouldering walnut" which indicated military service. The dye from walnut husks was used in the Civil War to color Confederate uniforms brownish grey. Propellers made from walnut were installed in WWI-era fighter planes. A type of dynamite was created by combining walnut shells and nitroglycerine.

***Douglas Hutcheson** is a Service Forester with the MA DCR Service Forestry Program and covers Hampden and eastern Hampshire counties.*

Grants

EPA Announces Up to $6 Million in Annual Environmental Justice Grants

The U.S. Environmental Protection Agency (EPA) has announced the availability of up to $6 million in grant funding under The Environmental Justice Collaborative Problem-Solving (EJCPS) Cooperative Agreement Program and The Environmental Justice Small Grants (EJSG) Program.

EPA will be giving special consideration to the following focus areas:

- Addressing COVID-19 concerns faced by low-income communities and communities of color
- Climate Change and Natural Disaster Resiliency outreach and planning
- New applicants to either opportunity
- Ports Initiative to assist people living and working near ports across the country
- Small non-profits

EPA anticipates awarding two cooperative agreements of $160,000 each within each of the 10 EPA Regions. To learn more about pre-application assistance calls and how to apply, please visit: epa.gov.

The EJSG Program estimates five awards per EPA region in amounts of up to $50,000 per award. This includes the EPA's Ports Initiative program which anticipates funding up to six additional projects that address clean air issues at coastal and inland ports or rail yards. To learn more about pre-application assistance calls and how to apply for funding, please visit: epa.gov/environmentaljustice.

Applicants interested in either opportunity must submit proposal packages **on or before May 7, 2021** to be considered. For more information on environmental justice grants, funding, and technical assistance: https://www.epa.gov/environmentaljustice/environmental-justice-grants-funding-and-technical-assistance .

Beetle Bites

To Every Thing There Is A Season

Beetle Bites is a new section from the DCR staff of the Asian Longhorned Beetle Cooperative Eradication Program.

By **Rich Anair, Jr.** Winter – 'tis the season for many things; for me, winter is a time of reflection and future-planning. The snow in our area has been consistent for the past two months: nothing too severe but occurring at regular enough intervals to constantly bathe the landscape in a new covering. As I look out from my window into the swampy woodlands, across the beaver-created impoundment, my eyes are drawn to the lines of white against an almost-black backdrop: the snow-blanketed arching branches of maple trees standing in the foreground of the darkness created from a pine dominated forest in the distance. Soon the temperatures will be conducive for the maple trees to awaken, which means I need to start preparing for the ever-so-brief sap season to come upon us once again.

The tools of the trade, an antique bit-and-brace along with a rubber mallet are all I need to install the stainless-steel spiles from which sap will flow. To the spile is attached a drop tube which drains the sap directly into a five-gallon bucket. Depending on the sap flow, it could take a few hours to many days for the tree to produce enough sap from the single tap to fill a bucket. I try to make the trek to each bucket once every other day in the beginning of the season to monitor the progress of the sap production; this may eventually become increased to once or twice a day if the buckets are filling too rapidly. Once I have collected about 50 gallons of sap, then I begin the boiling process.

Tools of the trade: A rubber mallet and an old bit-and-brace.

Illustration of the bucket technique described in this article.

To keep with the time-honored way of creating syrup from sap, I utilize a sap-boiling pan (a stainless-steel pan, two feet wide by four feet long by seven inches high) placed over a wood-fueled fire. The pan is a simple pan in which the syrup is produced in batches, and not run through a gauntlet of dividers, as seen in a flow-pan. As sap evaporates (at a rate of 4-6 gallons per hour), additional sap is added to the pan and is repeated until all of the sap is reduced to syrup. This iconic method of creating syrup is very appealing to the senses: visually you can see the color of the syrup developing over time; you can smell not only the aroma of the boiling sap/syrup but also the scent of the fire; you can hear the crackling and popping of the burning wood along with the roll and hiss of the sap; you can feel the heat of the fire along with the humidity of the steam rising from the pan coupled with the cold air enveloping you as the evening temperatures fall; and finally, after a long night of stoking the fire and reducing the sap volume by approximately 97%, you can taste fresh maple syrup still warm from the fire. I feel truly blessed to be allowed to make this product that is supplied from the trees.

Many people search for a little piece of heaven on earth, and for me, being able to work the forest with old-fashioned methods is mine. Not only is it a return to simpler times, but I believe it is my need to connect with each tree that

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To Every Thing There Is A Season

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Capturing the beauty of the morning sun shining onto some spring runoff during sap season.

requires me to collect sap in individual buckets instead of the more modern use of lines that connect each tree to one another. At one time I was checking upwards of 125 buckets and hauling them out of the woods, two at a time, back to the boiling station. This may still be considered a "hobby" or "backyard operation" in terms of making a product, but this small undertaking was what I enjoyed about making syrup, and why I still use simple tools and methods. This old-fashioned way of creating syrup may be slow and outdated but by utilizing the bucket technique to collect sap, I can assess each tree's sap flow, making mental notes on which taps capture the most sap and adjusting for next year. Plus, the rhythmic thumping the buckets make as sap begins to flow into them is reminiscent of a distant heartbeat, like the pulse of the forest, and this sound can be a very satisfying sound to hear after a long, cold, silent winter.

The Amish have a saying: "No winter lasts forever; no spring skips its turn." In the not-so-distant future, the sap will be flowing, and I will find myself walking amongst the maple trees, with an antique bit-and-brace and a rubber mallet, installing spiles into the selected trees for this year's sap collection. However, for now at least, the trees are cloaked in a new coating of snow. Hibernation continues for a while longer.

Rich Anair Jr. is a DCR forester with the Asian Longhorned Beetle Cooperative Eradication Program, in Worcester. He also owns and operates Riggity Alps Homestead, where old-fashioned techniques, self-sustainability ideas, and community friendships are coupled with farming experiments and knowledge sharing.

Find out more about the Asian longhorned beetle in Massachusetts.

The finished product, in three colors: early, mid, and late season syrup.

Growing on Trees

Mass Tree Wardens' and Foresters' Association Seedling Sale

Each spring, the Massachusetts Tree Wardens' and Foresters' Association (MTWFA) sells seedlings to support the MTWFA Scholarship Fund. Many municipalities and organizations use these seedlings in their Arbor Day or Earth Day celebrations. Arbor Day is a great opportunity to advertise the message of trees—by supplying the gift of seedlings for both children and adults, and by encouraging them to plant and care for trees. Some species available this year: balsam fir, white spruce, Douglas fir, persimmon, sweetgum, chokecherry, and more. The deadline to order trees is April 16. To find out more about the program, go to the MTWFA website.

Growing on Trees

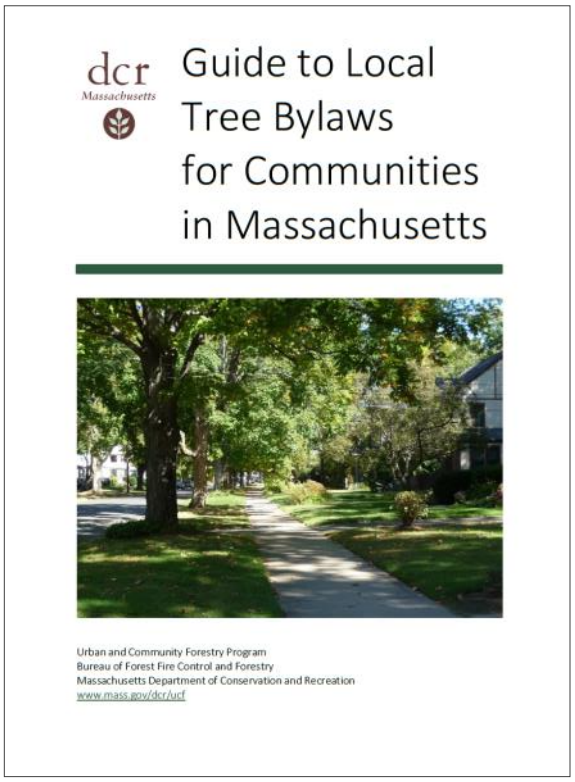
New Resource for Municipalities

Guide to Local Tree Bylaws for Communities in Massachusetts

The DCR Urban and Community Forestry Program has just completed a guide on local tree bylaws and ordinances for cities and towns in Massachusetts. This guide is designed for communities beginning the process of developing a local tree bylaw or ordinance. It can also be used to assist in the review of an existing one.

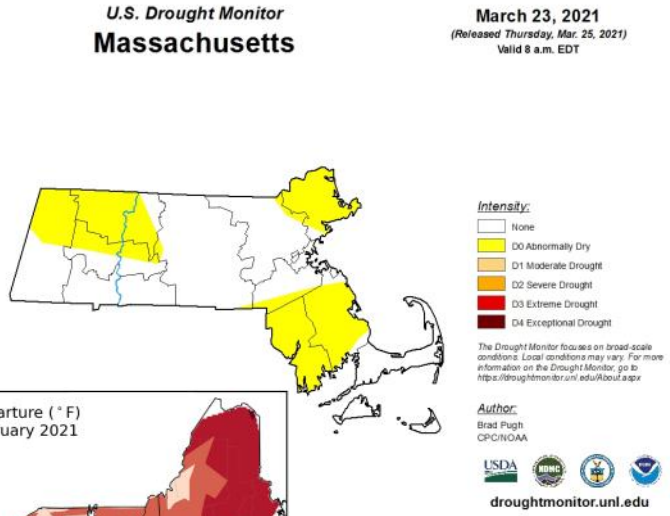
Trees are critical resources in our communities and a local tree bylaw can help protect this vital asset. In this guide, we have taken examples from bylaws and ordinances in Massachusetts and guidelines from the International Society of Arboriculture and other sources, and brought them together to provide relevant examples and advice for communities in the Commonwealth.

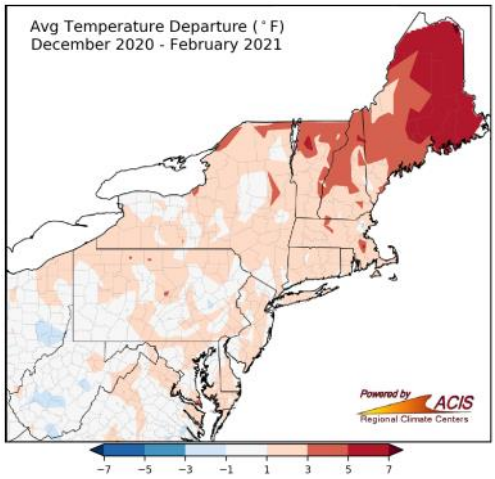
Check out the guide (PDF) on our Urban and Community Forestry Resources page.



Weather and Climate

As of March 23, 2021, despite some precipitation, parts of Massachusetts are considered abnormally dry. Abnormally dry conditions have been identified in much of Berkshire, Franklin, and Hampshire counties in the west, and Plymouth, Bristol, and Essex counties in the east. For the period from December to February, much of Massachusetts also saw warmer than usual temperatures. In most places, temperatures were one to three degrees warmer, but in northwest Worcester County and in parts of Plymouth, Bristol, and Norfolk counties, temperatures were at three degrees or more above average.





Find out More

The Northeast Regional Climate Center

The U.S. Drought Portal

National Climate Report

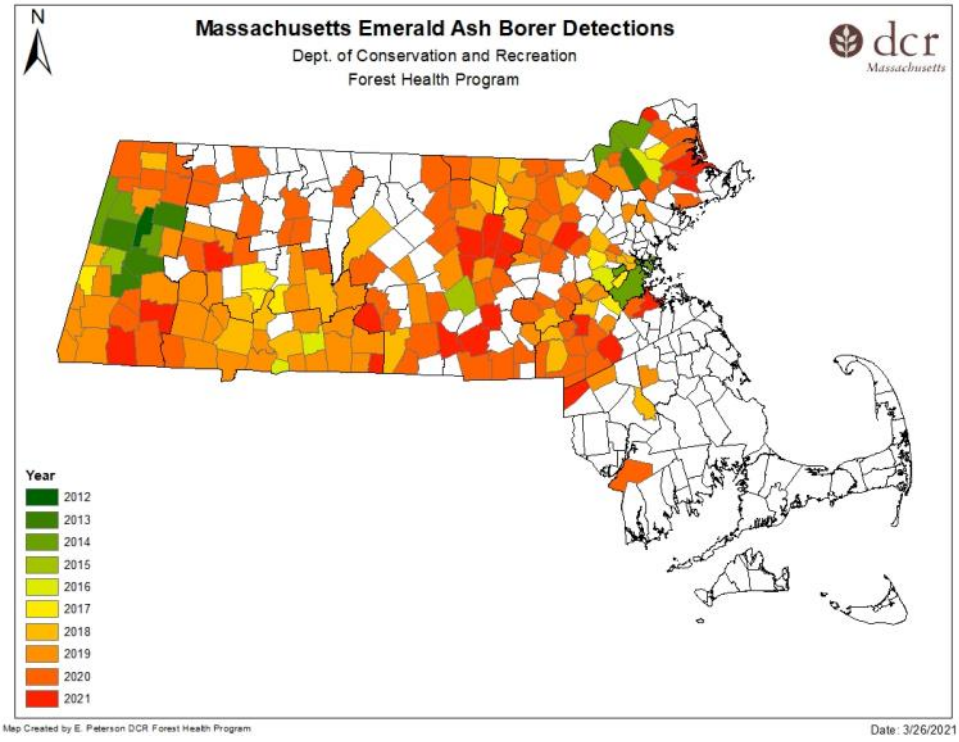
Growing on Trees

EAB Update

As of March 26, 2021, the emerald ash borer (EAB) has been detected in 191 communities, including 22 in 2021. The latest communities with detections include Berlin, Bolton, Clinton, Concord, Grafton, Hamilton, Ipswich, Lancaster, Medfield, New Marlborough, Otis, Sharon, Sterling, Sutton, Warren, and West Boylston

Barnstable remains the only county on the Massachusetts mainland without a known detection of EAB. EAB also has not been detected on the islands.

For information on what to look for go to www.emeraldashborer.info/.



Call for Proposals — Partners in Community Forestry Conference

Are you interested in speaking—in person or virtually—during the 2021 Partners in Community Forestry Conference? The Arbor Day Foundation would love to have you share your talents with this audience of urban forestry professionals. Proposals due April 30, 2021. Find out more at arborday.org.

Call for Proposals—ISA International Conference and Tradeshow—Virtual!

The International Society of Arboriculture is seeking proposals in a variety of subject areas. Proposals are due May 14. Submit your abstract.

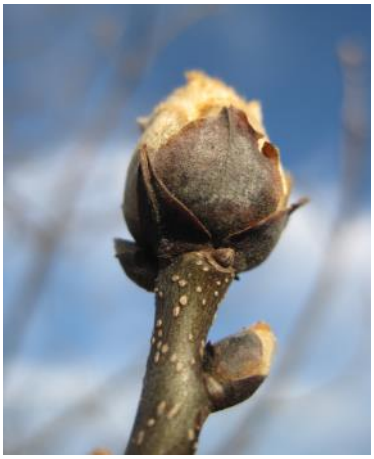
Gleanings

Winter Buds: Tiny Packages of Potential

By **Susan Shea**

The bare branches of the trees outside my window seem lifeless in late winter. However, each twig holds many buds – small, wrapped packages of potential awaiting the spring. These buds formed last summer and are designed to withstand snow, ice, and subzero temperatures. By withdrawing water from them before winter, deciduous trees protect their buds from frost damage.

Read the full story at Northern Woodlands.



Shagbark hickory bud (*Carya ovata*). Photo: Mollie Freilicher

Gleanings

Seeing the City for the Trees

By **Morgan Heim**

Eboni Hall spends her days split between research, increasing urban forestry education at institutions, assisting youth in navigating their urban forestry career path and mentoring students, all while working to achieve Tree Equity. Photo: Courtesy of Eboni Hall.

When Eboni hall first entered college, she thought for sure she was going to become a sports therapist. She wanted to learn kinesiology, the study of body movement and muscles. It was a sensible choice, something familiar, and a far cry from her ultimate path in urban forestry.

She'd grown up in Baton Rouge, La., entrenched in a love for natural areas, her childhood full of making mud pies, climbing trees and reading books outside. Despite that connection to nature, she'd never really thought about urban forestry as a concept, let alone a potential career path. "I remember thinking, urban forestry? That sounds like some- thing for tree huggers," she says.

It was during a summer program called BAYOU, Beginning Agricultural Youth Opportunities Unlimited, at Southern University and A&M College in Baton Rouge, that Hall's world changed. Hall is young, Black and a woman, quite different from the typical description of a forester, a field long dominated by white men. "People of color don't have a reflection of themselves in this field, and they get discouraged," says Hall. "Maybe if people see I'm able to do it, they'll think they can."

The BAYOU program introduced Hall to an array of environmental science disciplines and job opportunities that redefined urban forestry for her. She went on to study the discipline at Southern, the only four-year university that offers a bachelor's degree in urban forestry. Eventually, she earned her Ph.D. and now works as the senior manager of urban forestry education at American Forests.

Read the full story from the Winter/Spring 2021 magazine of American Forests.

10 New Projects in Online Exhibition Demonstrate Value of Landscape Architecture as a Climate Solution

The American Society of Landscape Architects Smart Policies for a Changing Climate Online Exhibition demonstrates how landscape architects are designing smart solutions to climate impacts, such as flooding, extreme heat, drought, and sea level rise. 10 new projects added to the exhibition exemplify best practice approaches to landscape architecture in the era of climate change.

The projects include a mix of landscape-based and often nature-based solutions across the U.S., which range in scale from residential and school landscapes to master plans for entire cities and counties. There is also a focus on projects that address climate injustices and meet the needs of historically-marginalized and underserved communities.

Explore all the projects including Rain Check 2.0 a program to reduce stormwater runoff with green infrastructure in Buffalo, NY and the Cuyahoga Greenways Framework Plan, in Cuyahoga County, OH, which aims to have 71% of residents living within one mile of a regional trail. Read it all in *The Dirt* from ASLA.org.

Gleanings

The Landscape Message is Back for 2021

Along with returning birds and emerging amphibians, another sign of spring is the return of the Landscape Message from its seasonal hiatus.

The Landscape Message is an educational newsletter and update intended to inform and guide horticultural professionals in the management of our collective landscape. Scouts compile and record environmental and phenological data for locations throughout Massachusetts to aid in the monitoring of plant and pest development, the planning of management strategies, and the creation of site-specific records for future reference. Detailed reports from Extension specialists on growing conditions, pest activity, and cultural practices for the management of woody ornamentals, trees, and turf are regular features.

Approximately 21 messages are published each year. A new message is available weekly during the heart of the growing season, bi-weekly in mid to late summer, and monthly in the fall. We expect the messages for the 2020 season to resume on April 8, 2020. Subscribe to the UMass Extension e-mail list to receive notification in your inbox when each new message is posted.

Connect with Us!

It's now easier to get to the DCR Urban and Community Forestry Website

Try out our new shortened URL – www.mass.gov/dcr/ucf

Also, did you know DCR has an Instagram and that every Friday is #forestryfriday? Find out more by checking out @massdcr on Instagram.

Headlines in Brief

Massachusetts

Holyoke Looking for Community Input in Developing Urban Forest Equity Plan and Holyoke to Create More Green Spaces under Urban Forest Equity Plan

Green Cambridge Takes on Gift of Alewife Land, Kept from Developers by Hill Family since 1636

Tree Spree Coming to Salem Starting This Spring

Parts of Elm Tree Outside Neilson Library Reappear Inside As Furniture

Weak Trees: How Climate Change Is Affecting the Region's Woodlands

National & International

Cities Are Sinking Under the Weight of Urban Development

Can Planting More Trees Keep Cities from Heating Up?

Why You Should Plant Oaks

Lawmakers Want to Restore Native Plants at National Parks

Green Health: A Tree-Filled Street Can Positively Influence Depression, Study Finds

'A Bit of a Haven': Southwest Baltimore Church Reclaims A Dying Urban Forest and Creates a Community Oasis

Constant Construction Projects Damage the Urban Forest Infrastructure

Smoke from Wildfires Wiped Out the U.S. Pandemic-Related Clean Air Gains in 2020

Carbon Stored in Elizabeth Township Forest Will Help Pay for Its Preservation

City of Seattle Releases Online Tree Selection Tool

UNH Niche Syrup Research Aims to Tap Trees Besides Maples for New Markets

On the Horizon

Apr 1 Webinar: Establishing Trees in the Urban Landscape, Coastal ME Botanical Gardens

Apr 1 Virtual class: Street Tree Essentials begins, baystateroads.org

Apr 9 Native Plants and the Future of Public Spaces Symposium, 1pm

Apr 13 Webinar: IPM for Spotted Lanternfly, 2pm

Apr 14 Webinar: Trees, Woodlands, Lawns and Right-of-Ways: Best Practices for Biodiversity, Urban Forest Connections, 1pm

Apr 20 Webinar: Planning for the Next Three Letter Urban Tree Canopy Changer, 1pm

Apr 30 Arbor Day in Massachusetts

May 4 Webinar: IPM After the Storm, 2pm

May 6 Virtual Class: ISA Board Certified Master Arborist Prep Course, New England ISA

May 11 Webinar: LiDAR-Based Urban Tree Inventory, 1pm

May 13 Webinar: Drought and Urban Trees, Tree Wardens Association of CT, 12pm

June 22 Webinar: Why Do Some Trees Transplant Better than Others?, TREE Fund, 1pm

Due to the ongoing COVID-19 pandemic, DCR will not be hosting Park Serve Day / Earth Week events in 2021. The Volunteers in the Parks season opens June 1—connecting volunteers with stewardship projects at DCR parks, forests, shorelines and reservations.

The New England Chapter-ISA maintains a calendar with many online opportunities. Check it out here: https://newenglandisa.org/events

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If you have a topic you'd like to see covered or want to submit an item to *The Citizen Forester* (article, photo, event listing, etc.), contact Mollie Freilicher.